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# Situated Learning, Distributed Cognition: do Academics really need to know?

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## **‘Situated learning’, ‘distributed cognition’: Do academics really need to know?**

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The dominant approach to the study of learning throughout most of the twentieth century was to view learning as cognitive only, as if it were a process contained in the mind of the learner, decontextualised from the lived-in world. There is now, however, a growing interest in the study of learning as *situated* in a specific time, place and social activity – as ‘situated learning’ – and to view the locus of learning not as in the brain of the single individual (person-solo) but as ‘distributed’ among person, language, artefacts, activities and environment (person-plus) ([see Lave and Wenger, 1999; Salomon, 1993; Brown, Collins and Duguid, 1989](#)).

What have been emerging in the last twenty years are *ideas* about learning which conceptualise the relationships between person, activity, situation and artefacts in a process of learning without necessarily encompassing each concept in a theoretical entity. What is being sought, rather, is a more inclusive, intensive development of the socially situated character of learning activity in theoretically consistent terms ([Chaklin and Lave, 2003](#)).

In these new ideas it may not be sufficient to say that designated cognitive theories of learning can be ‘amended’ by adding a dimension of ‘situatedness’ or ‘distribution’, for instance, and by forcing a connection between theories from psychology and theories from sociology. The emergent theories of situated learning and distributed cognition essentially do not separate action, thought, feelings and values ‘from their collective, cultural, historical forms of located, interested, conflictual, meaningful activity’ ([ibid.](#)), but in doing so are both a synthesis of some existing ideas about the nature of learning together with new ways of conceptualising it.

If we follow the logic of this argument we might, then, doubt the definition of learning as cognitive acquisition alone – whether of facts, knowledge, problem-solving strategies or metacognitive skills – and we might regard learning more as a construction of present versions of past experiences for several persons acting together. We might also, then, reconceptualise notions about ‘bodies of knowledge’ and about the transmission of such bodies of knowledge in formal learning settings. We might furthermore concede that knowledge always undergoes construction and transformation in use, and that learning is always complexly problematic. Thinkers about education such as [Rogoff \(1990\)](#) and [Salomon \(1993\)](#) have given us new conceptualisations and a revised language to express these concepts. Lave and [Wenger \(1991\)](#), for example, hold that knowledge and learning will be found through the complex structures of person-acting-in-settings: therefore learning cannot be pinned down to the head of the individual, or to assigned tasks, to external tools or to environment, but lies instead in the distributed relations among them.

Essentially then, in this new conceptualisation of learning, the physical and social experiences and situations in which learners find themselves and the tools they use in that experience are integral to the entire learning process ([Merriam and Cafferella, 1999](#)).

### **Co-habiting twentieth-century paradigms of learning**

The development of the new academic disciplines of cognitive psychology, developmental psychology, computer science, anthropology, linguistics and neuroscience has advanced our understanding of how learning happens and how knowledge is constructed and transmitted. The notions of ‘communities of practice’ learning through ‘legitimate peripheral participation’, and the re-discovery of Vygotsky’s ‘zone of proximal development’, have generated renewed

thinking about how formal educational curricula are constructed, how learning is supported and how learning is assessed ([Brown, Collins and Duguid, 1989](#); [Wenger, 2003](#)).

Throughout the twentieth century there were phases when specific learning paradigms were relatively dominant. [Pellegrino, Chudowsky and Glaser \(2001\)](#) argue that the educational researchers of the early twentieth century were concerned predominantly with differential intellectual ability and its distribution. Associated with this interest was scholarly-scientific research into stimulus-response association in learning, followed by a growing interest in linguistics, computer science and neuroscience, offering new perspectives and new technology to observe and measure human behaviour and human brain function.

[Greeno, Pearson and Schoenfeld \(1999\)](#) suggested that four perspectives on learning and mind can be identified as illustrative of the chronological development of theories about learning over the last century: 'differential', 'behaviourist', 'cognitive' and 'situative'. They further suggest that all current approaches to learning, teaching and assessing can be broadly located within these four perspectives.

A similar idea has been illustrated by [Shepard \(2001\)](#) in a diagrammatic chronology of twentieth-century learning theory. This model indicates a shift in dominant paradigms over the century. In the model the predominant paradigms are viewed in relation to the predominant philosophical perspective on the role of the educational curricula, the predominant theoretical perspective on the learning process, and the predominant modes of assessment.

Figure 1 Source: [Desforges, C. and Fox, R. \(2002\)](#) (end of doc)

In this model the predominant view of the purpose of the curriculum throughout the twentieth century is social efficiency, the potential to learn is regarded mostly as hereditary, approaches to teaching are mostly behaviourist, and approaches to assessment mostly as scientific measurement at the level of the individual. The predominant theorists informing this paradigm are listed by Shepard as [initials?] Thorndike, [B.F.?] Skinner and [Robert?] Gagne.

Shepard argues that throughout the 1980s and 1990s, however, the paradigm shifted towards more constructivist theories regarding the nature of learning, and towards more 'situative' approaches to curriculum design, teaching approaches and assessment strategies. In this 'reformed' paradigm the predominant theorists are not necessarily only from the latter decades of the century, however, but theorists, such as [Lev?] Vygotsky, whose ideas span the decades.

**The principles underpinning this contemporary cognitivist-constructivist learning paradigm include the following beliefs:**

- a. intellectual abilities are socially and culturally developed
  - b. learners construct knowledge and understandings within a social context
  - c. new learning is shaped by prior knowledge and cultural perspectives
  - d. intelligent thought involves 'metacognition' or self monitoring of learning and thinking
  - e. deep understanding is principled and supports transfer
  - f. cognitive performance depends on disposition and personal identity
- (ibid page 237)

**Cognitive, social and emotional situatedness**

[Illeris \(2001 and 2003\)](#) further develops the notion of the social situatedness of learning by including the dimension of 'emotion'. His argument has been developing, not so much as a general contribution to theories of learning *per se*, but as a direct critical response to current trends towards competence-based learning which he describes as 'international and societal

development expressed in terms such as “late modernity”, “globalisation” and the “knowledge society” (Illeris, 2003).

For Illeris an understanding of learning implies an understanding of the human and psychological mechanisms involved in the process, an understanding of the external conditions, and an understanding of the adequacy of these conditions:

The point of departure for my concept of learning is that learning must be understood as all processes leading to permanent capacity change – whether they be physical, cognitive, emotional or social in nature – that do not exclusively have to do with biological maturation or aging. This means that the learning concept also extends to such functions as personal development, socialisation, qualification and competence development, as the difference between these terms is mainly the point of view towards learning which is adopted. (ibid.)

Figure 2 Source: [Illeris, K. \(2003\)](#) (end of doc)

Illeris proposed that there are three interrelated dimensions of learning – cognitive, emotional and social. Through the cognitive dimension, knowledge, skills, understanding, meaning and functionality are developed. Through the emotional dimension, patterns of emotion and motivation, attitudes, sensitivity and mental balance are developed. Through the social-societal dimension, potentials for empathy, communication, co-operation and sociality are developed.

Two processes operate within the three dimensions. These are *interaction* processes between the learner and the surroundings, and inner mental *acquisition and elaboration* processes by which new interactions are linked to earlier learning. For Illeris these interaction processes are social and cultural in nature, while the acquisition processes are psychological in nature. The acquisition processes, furthermore, involve an integration of the cognitive with the emotional and, even with maturation, they are never entirely separate.

Illeris maps the development of his theories around influential theorists, not chronologically as does Shepard but relative to their emphasis on the three dimensions of learning: cognitive, social and emotional. For Illeris there has not necessarily been a paradigm shift evident in recent decades, as Shepard argues. Rather, twentieth-century theorists can be placed in terms of their relative ‘positions in the tension field’ in four broad categories of:

- developmental psychology
- activity theory
- socialisation theory
- societally and socially oriented theory

Consequently, there are inevitable tensions within institutionalised learning where there are tensions between competing perspectives.

Figure 3 Source: [Illeris, K. \(2001\)](#) (end of doc)

### **So, do academics need to know?**

Essentially, then, what is significant about ‘situative’ learning and about ‘distributed cognition’ in third-level learning and teaching? The direct answer is that ideas such as these represent approaches to the management of teaching, learning and assessment which shift practice from a behaviourist-cognitivist approach to a cognitive-constructivist approach.

[Driscoll \(2000\)](#) illustrates it as follows: Figure 4 (end of doc)

In Driscoll’s first diagram, the behaviourist-cognitivist approach to learning is primarily about internal processing of ‘input’ at the individual level. In the community of practice-situative

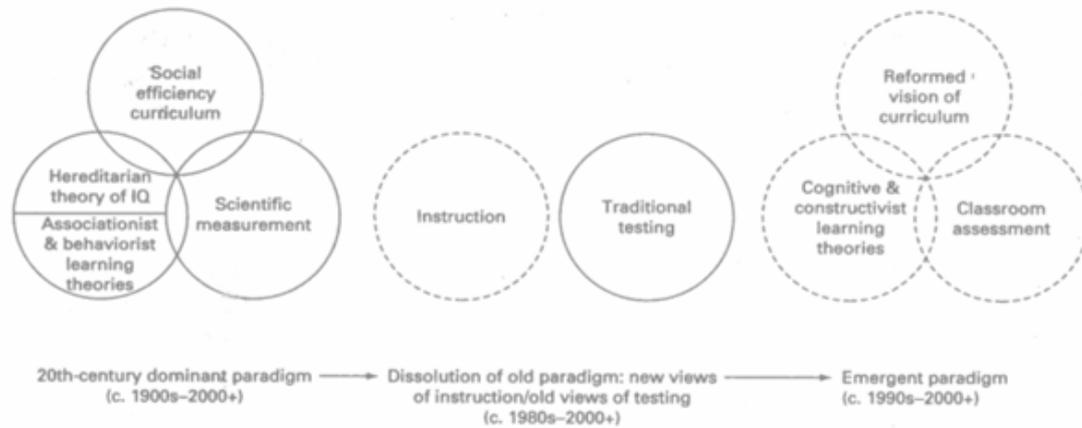
learning context, in the second diagram, learning is a joint enterprise among learners and 'teachers'. It could be remarked that by representing learning processes in this way there is a suggestion that Driscoll has a value-laden preference for a particular paradigmatic approach to education. However, Driscoll's analysis of currently emerging situative learning theories does not lead her to conclude that there will be a significant revolution in thinking about learning, or that such theories will yield sufficiently robust educational models to make a sustainable impact.

If we contest Driscoll's conclusion we will perhaps be obliged to articulate and defend the learning theories underpinning new forms of knowledge production through the use of artificial intelligence and information technology. We will also have difficulties in accommodating the unfolding impact of a knowledge-based society, and the inevitability of varying forms of lifelong learning.

If we accept Driscoll's position that there is unlikely to be a major shift in favour of situated learning and teaching strategies however, then there just might be some merit in the wise conclusion attributed to Goethe, that everything has been thought of before: the task is to think of it again in ways that are appropriate in one's current circumstances!

So, as academics, when it comes to evaluating contemporary theories of learning, teaching and assessment, perhaps there is merit in taking time to think about what appear to be 'emerging' theories, to assess the degree of 'robustness' in them, and to consider both their sustainability and their appropriateness, before deciding to apply them.

**Figure 10.1** An historical overview illustrating how changing conceptions of curriculum, learning theory, and measurement explain the current incompatibility between new views of instruction and traditional views of testing



Source: Desforges, C. and Fox, R. (2002) Teaching and Learning: the essential readings, U.K. Blackwell Publishing

**Figure 2: The processes and dimensions of learning**

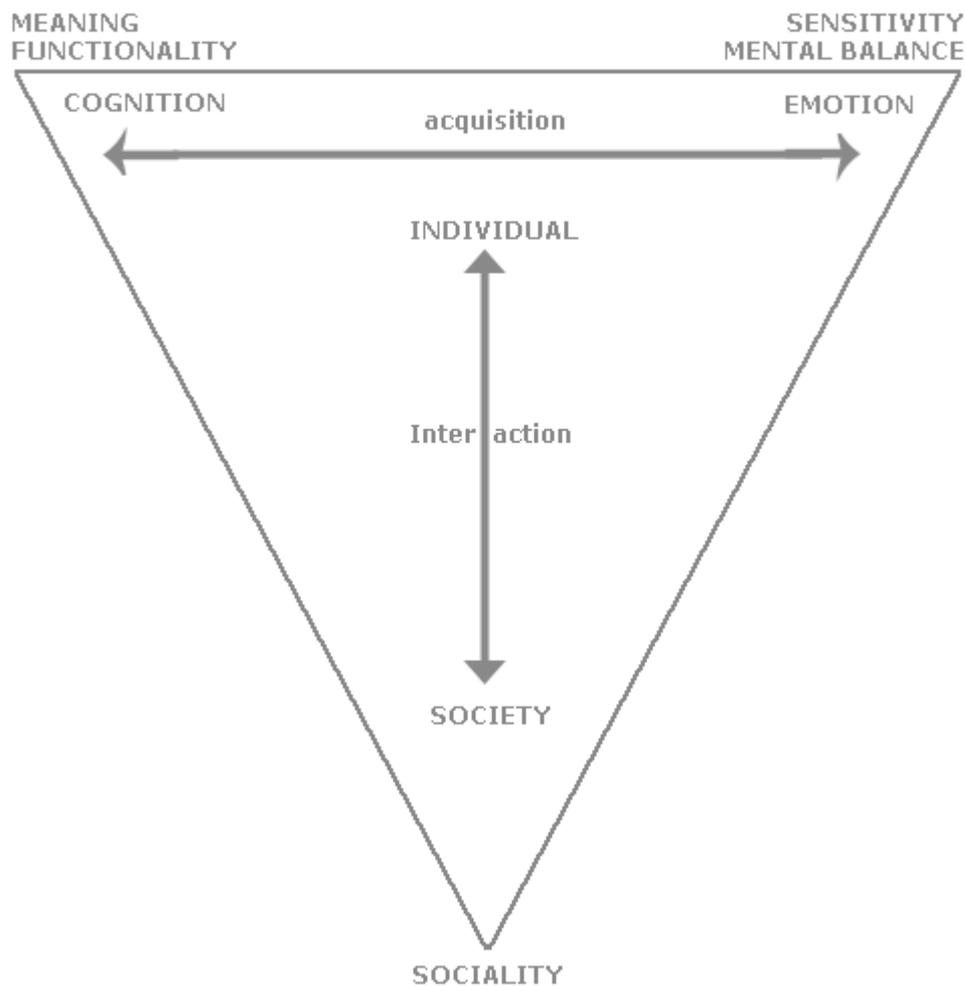


Figure 3: Developmental psychology oriented positions

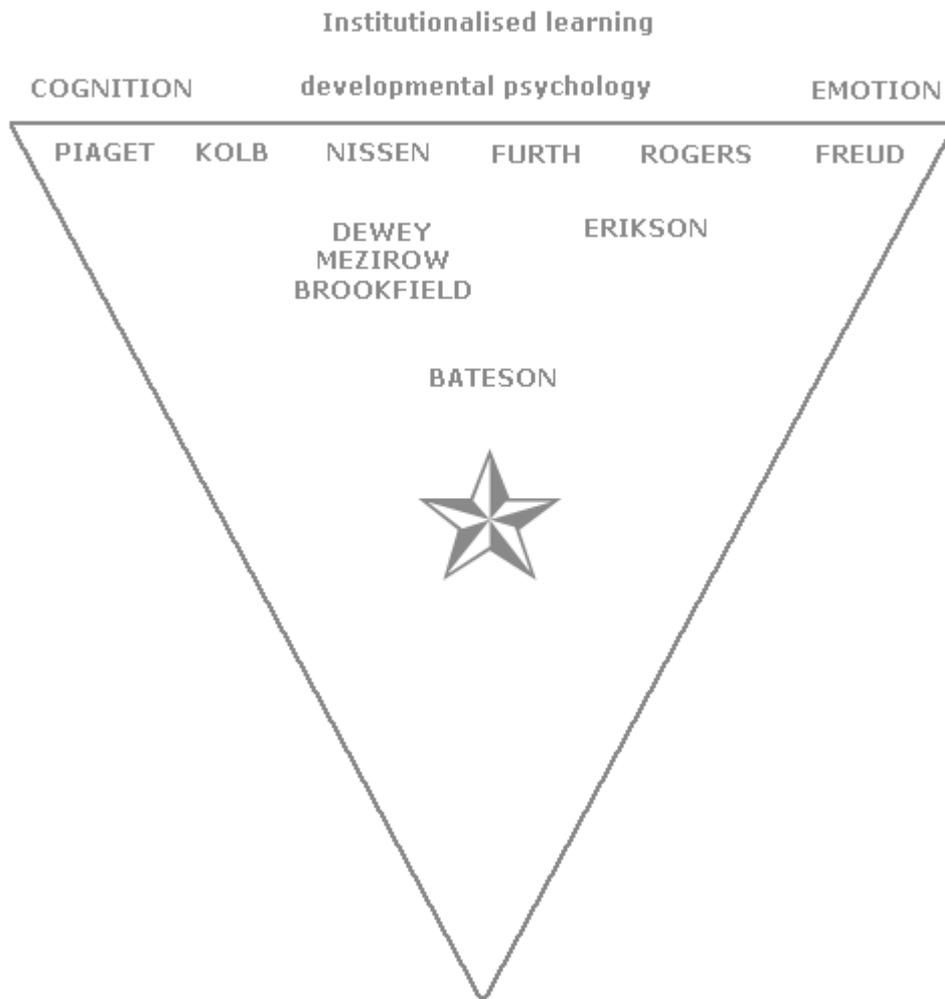


Figure 3b: Activity theory oriented positions

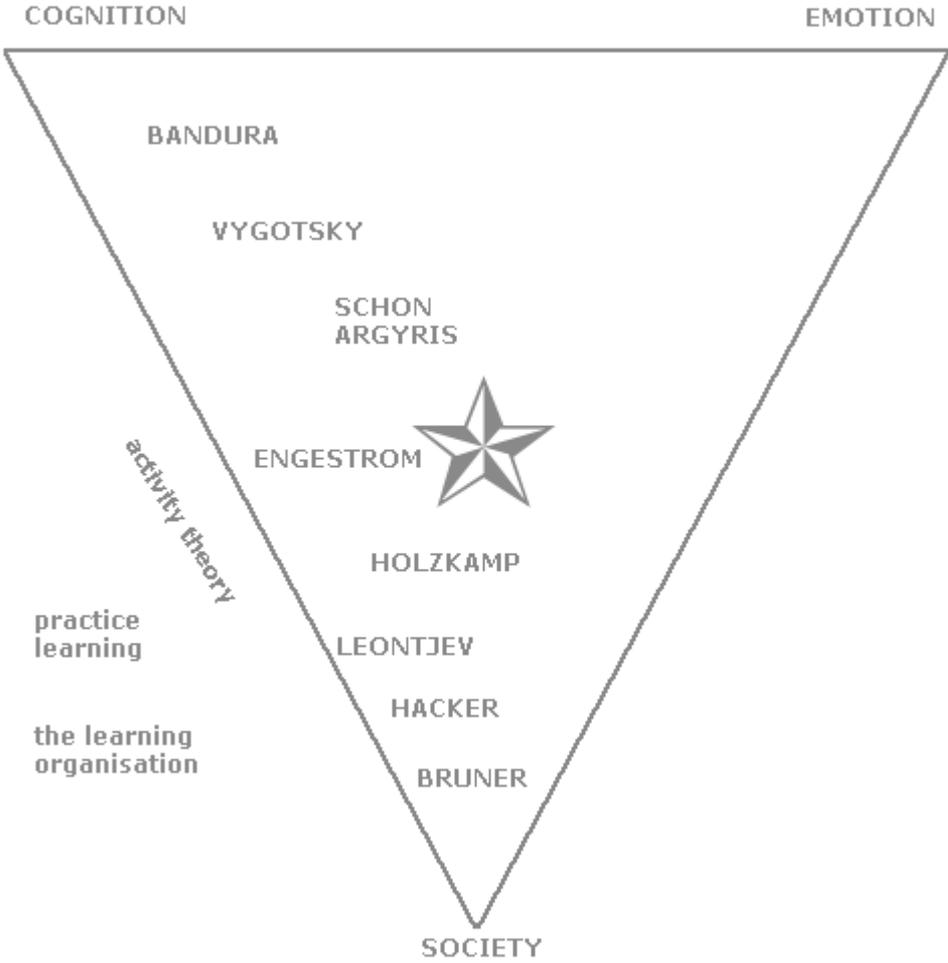


Figure 3c: Socialisation theory oriented positions

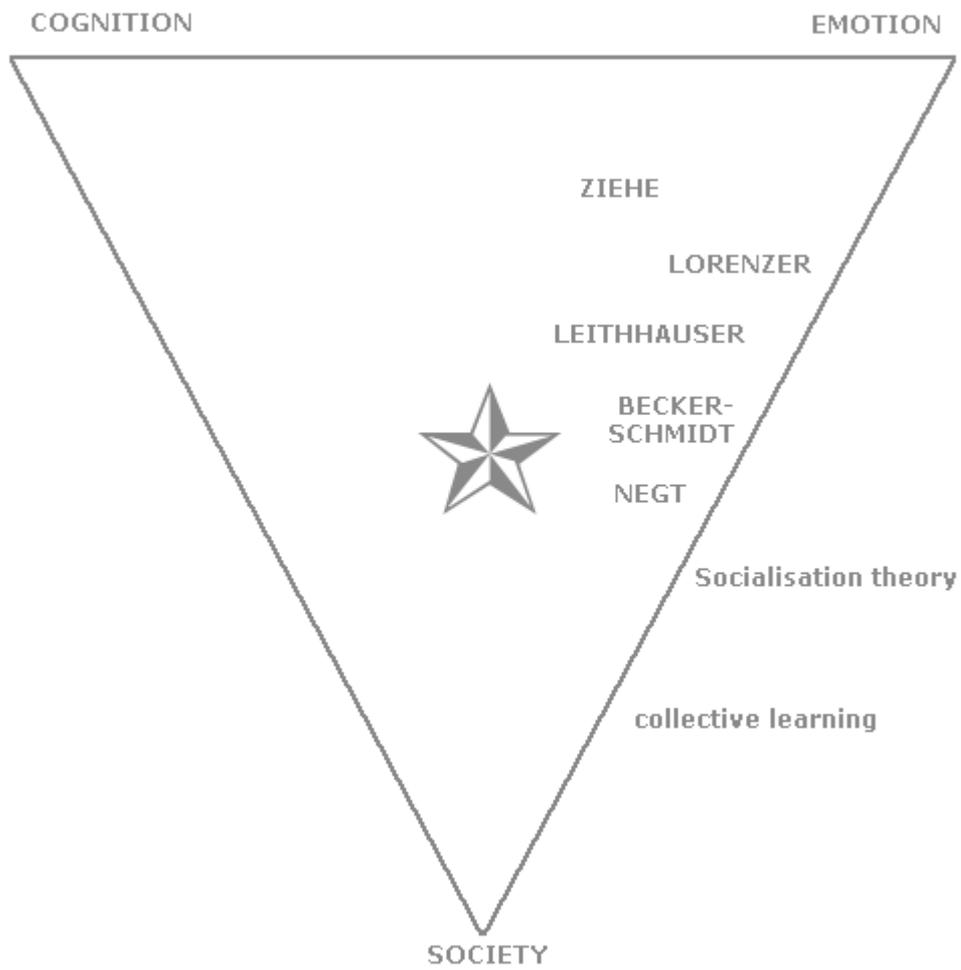


Figure 3d: Societally and socially oriented positions

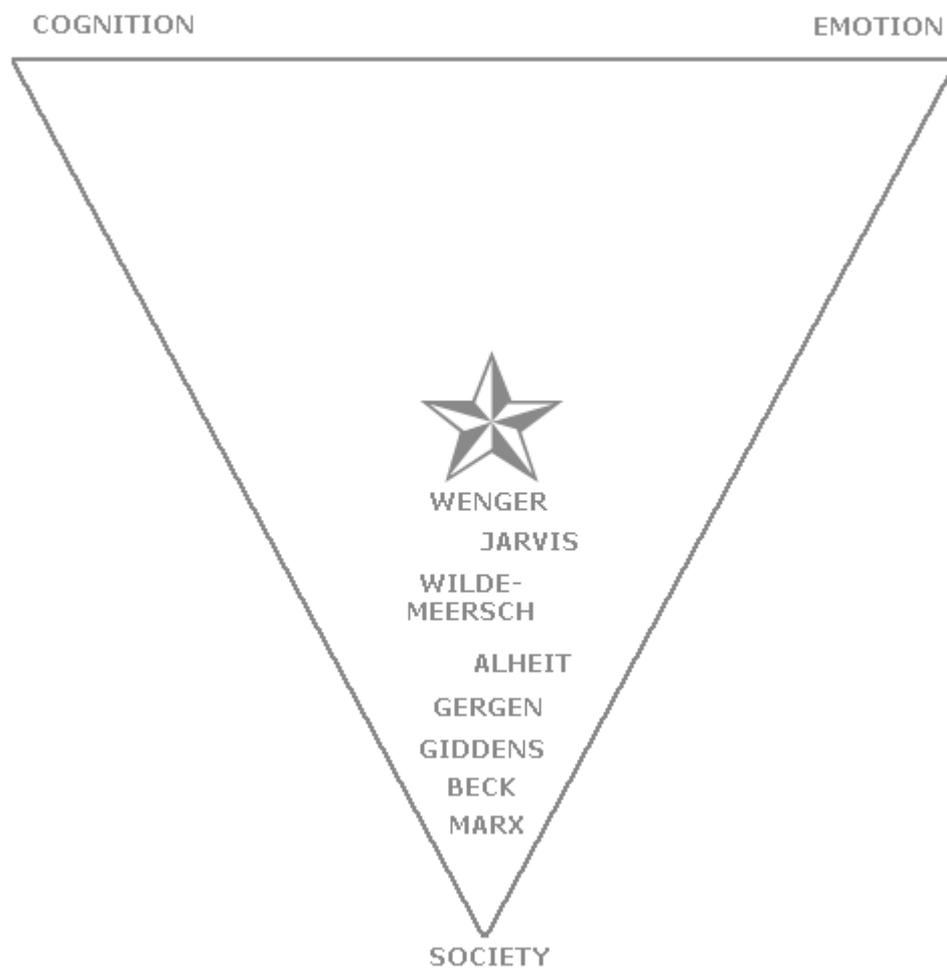


Figure 3e: Positions in the learning theoretical tension field

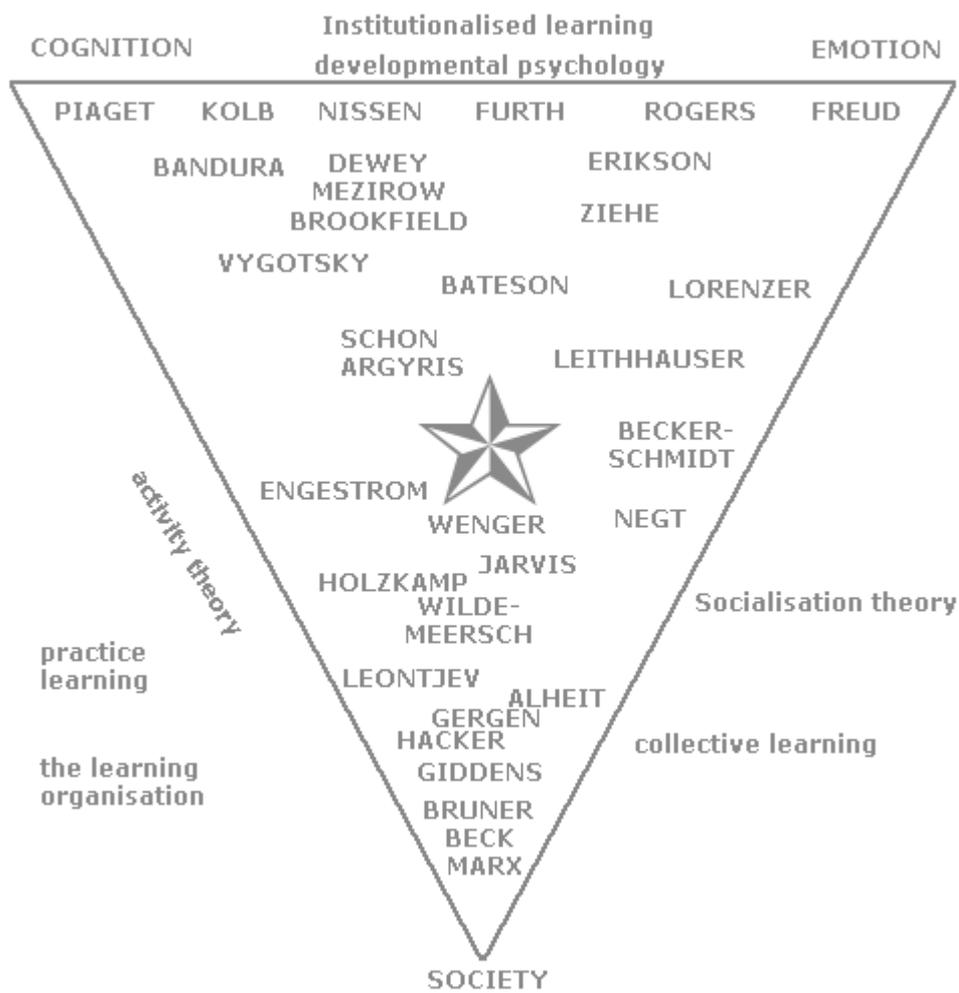


Figure 4: Learning as internalisation in the cognitive perspective

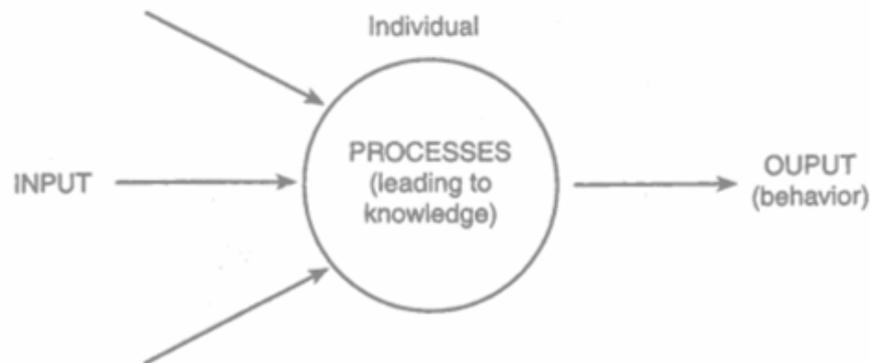


FIGURE 5.1 Learning as Internalization in the Cognitive Perspective

Figure 4.1: Dimensions of a community practice



## References

- Brown, J.S., Collins, A. and Duguid, P. (1989) 'Situated cognition and the culture of learning' in *Educational researcher*, 1989, 18 (1): 32–42.
- Chaklin, S. and Lave, J. (2003) **Understanding practice: perspectives on activity and context**, Cambridge: Cambridge University Press.
- Desforges, C. and Fox, R. (2002) **Teaching and learning: the essential readings**, Oxford: Blackwell Publishing.
- Driscoll, M. (2000) **Psychology of learning for instruction**, Boston: Allyn & Bacon.
- Greeno, J. G., Pearson, P. D. and Schoenfield, A. H. (1999) 'Achievement and Theories of Knowing and Learning', in R. McCormick and C. Praechter, (1999) *Learning and knowledge*, London: Paul Chapman Publishing with the Open University.

*Illeris, K. (2001) **The three dimensions of learning***, Denmark: Roskilde University Press.

*Illeris, K. (2003) 'From vocational training to workplace learning'*, paper from CRLL conference proceedings, Experiential: community: workbased: researching learning outside the academy, Glasgow: Glasgow Caledonian University.

*Lave, J. and Wenger, E. (1999) **Situated learning: legitimate peripheral participation***, Cambridge: Cambridge University Press.

*Merriam, S. B. and Cafarella, R. S. (1999) **Learning in adulthood***, San Francisco: Jossey-Bass.

*Pelligrino, J.W., Chudowsky, N. and Glaser, R. (2001) **Knowing what students know: the science and design of educational assessment***, Washington DC: National Academy Press.

*Rogoff, B. (1990) **Apprenticeship in thinking: cognitive development in social context***, Oxford and New York: Oxford University Press.

*Salomon, G. (1993) **Distributed cognitions: psychological and educational considerations***, New York: Cambridge University Press.

*Shepard, L. (2002) 'The Role of Assessment in a Learning Culture'*, in C. Desforges and R. Fox (2002) *Teaching and learning: the essential readings*, Oxford: Blackwell Publishing.

*Wenger, E. (2003) **Communities of practice: learning, meaning and identity***, Cambridge: Cambridge University Press.