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Vygotsky and educational psychology: Some preliminary remarks

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Abstract

In this short article I will discuss some of the key elements of developments in psychology that have been attributed to the work of L.S. Vygotsky. He drew attention to the way in which humans use tools, such as speech, which mediate their engagement with the world. This understanding of mediation was central to his analysis of the social, cultural and historical influences on the formation of mind. I will provide a brief summary of the key elements of this theory which carry with them radical implications for the work of applied psychologists working in education.

THERE IS A growing interest in what has become known as 'sociocultural theory' and its near relative 'activity theory'. Both traditions are historically linked to the work of L.S. Vygotsky and both attempt to provide an account of learning and development as mediated processes. In sociocultural theory the emphasis is on semiotic mediation with a particular emphasis on speech. In this account cultural artefacts such as speech serve as tools which both shape possibilities for thought and action and are in turn shaped by those who use them. In activity theory it is activity itself which takes the centre stage in the analysis. Both approaches attempt to theorise and provide methodological tools for investigating the processes by which social, cultural and historical factors shape human functioning. Neither account resorts to determinism in that they both acknowledge that in the course of their own development human beings also actively shape the very forces that are active in shaping them. This mediational model, which entails the mutual influence of individual and supra-individual factors, lies at the heart of many attempts to develop our understanding of the possibilities for intervention in the processes of human learning and development. For many educators it provides important tools for the development of an understanding of pedagogy. Importantly, this body of theoretical work opens up, or rather insists upon, a pedagogic imagination that reflects on the processes of teaching and learning as much more than face-to-face interaction or the simple transmission of prescribed knowledge and skill. In this article I will present some of the key elements of the Vygotskian thesis by way of an introduction to the articles that follow in this special issue.

These ideas were originally forged at a time of rapid and intense social upheaval – the Russian Revolution. They were developed by someone who was charged with developing a state system for the education of 'pedagogically neglected' children (Yaroshevsky, 1989, p.96). This group included the homeless, of which there were a very large number, and those with special needs. In July 1924 the 28-year-old Lev Vygotsky was appointed to work in the People's Commissariat for Public Education. He argued that the culture of education as it had existed was itself in need of profound transformation and that this was possible in the new social circumstances that obtained in Russia. He embarked on the creation of psychological theories which he and others used as tools for the development of new pedagogies for all learners.

The development of psychology as a discipline has passed through several stages. Each part of this history provides an important legacy for the next. One of the reasons why so many Western psychologists are reading the writings of a long dead Russian may

be that they are seeking to extend the insights of the so-called cognitive revolution and yet are painfully aware of the shortcomings of so many of its products (e.g. Hirst & Manier, 1995). The research practice of experimentation in artificial situations has provided valuable insights but incurred significant costs. Context, however defined, remains under-theorised and its effects remain under-researched.

Vygotsky developed a theory within which social, cultural and historical forces play a part in development. His attempts to theorise interpersonal and intrapersonal processes provide an important opening for discussions of determinism, reductionism and agency within a framework of social formation. His free-ranging cross-/multidisciplinary contribution to 20th-century intellectual life was supported by his own interpretation of both fellow Russian and European thinkers. He was developing a way of thinking that also found parallels with others beyond his place and time.

This creative fusion and development of many perspectives and persuasions was cast adrift in the tragedy that befell the Soviet Union under Stalin. It was selectively moulded, transformed, developed and, in no small part, suppressed for many years. Although the texts themselves did achieve some small notoriety in unpublished form, both in the Soviet Union and the West, they only really became known in the West in the 1970s.

One way of understanding Vygotsky is as a cultural psychologist. Michael Cole opens the first chapter of his recent book entitled *Cultural psychology* with a discussion of Wundt's conception of a psychology comprised of two parts. One part was the then (1880) new psychology of experimentation; the other, much less widely discussed, part of Wundt's contribution was concerned with 'the task of understanding how culture enters into psychological processes' (Cole, 1996, p.7). The work of the Russian school of Vygotsky, Luria and Leont'ev has influenced many of the 20th-century social theorists who sought to address this agenda. A central theme for them was that of mediation.

Bakhtin's (1981, 1986) suggestion that language is 'over populated with the intentions of others' reminds us that the processes of mediation are processes in which individuals operate with artefacts (e.g. words/texts) which are themselves shaped by, and have been shaped in, activities within which values are contested and meaning negotiated. In this sense cultural residues reside in and constrain the possibilities for communication. Thus the mediational process is one that neither denies individual or collective agency nor denies social, cultural, historical constraint. The operational definition of those issues which are to be regarded as 'social, cultural and historical' affects the breadth of the conception of pedagogy. If a broad range of factors is seen to be potentially formative at the psychological level then questions must address the pedagogy of such a process of formation. There is considerable tension and debate as to the nature of such factors. The tensions are revealed in competing definitions of 'culture' and the labelling of contemporary theoretical approaches as, for example, either sociocultural or cultural-historical. There are similar debates about the means of mediation. Some approaches have tended to focus on semiotic means of mediation (Wertsch, 1991) whereas others have tended to focus more on the system of activity itself (Engeström, 1993).

I wish to discuss the general concept of mediation within the Vygotskian thesis. Figure 1 represents the possibilities for subject–object relations. They are either unmediated, direct and in some sense natural or they are mediated through culturally available artefacts. In much of the literature the term 'tool' is used in place of artefact. I intend to discuss both the concept of tool as it appeared in the original writing and artefact as something that is imbued with meaning and value through its existence within a field of human activity.

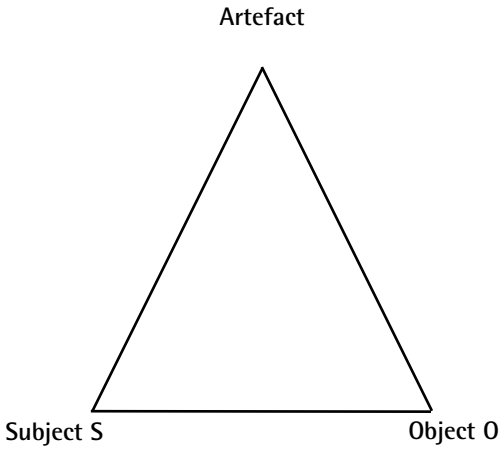

Figure 1 The basic triangular representation of mediation

Psychological tools

Vygotsky described psychological tools as devices for mastering mental processes. They were seen as artificial and of social rather than organic or individual origin. He gave the following examples of psychological tools: 'language; various systems for counting; mnemonic techniques; algebraic symbol systems; works of art; writing; schemes, diagrams, maps and mechanical drawings; all sorts of conventional signs' (Vygotsky, 1960/1981, pp.136–137).

In that the concept denies the possibility of total determinism through external forces it is associated with an intellectual baggage which is potentially highly charged, especially in the political context in which these ideas were originally promulgated. In the extract below it is clear that Vygotsky was arguing that humans master themselves through external symbolic, cultural systems rather than being subjugated by and in them:

> *Because this auxiliary stimulus possesses the specific function of reverse action, it transfers the psychological operation to higher and qualitatively new forms and permits the humans, by the aid of extrinsic stimuli, to control their behaviour from the outside.* (Vygotsky, 1978, p.40)

This emphasis on self-construction through and with those tools that are available brings two crucial issues to the foreground. First, it speaks of the individual as an active agent in development. Secondly, it affirms the importance of contextual effects in that development takes place through the use of those tools that are available at a particular time in a particular place. Vygotsky distinguished between psychological and other tools and suggested that psychological tools can be used to direct the mind and behaviour. In contrast, technical tools are used to bring about changes in other objects. Rather than changing objects in the environment, psychological tools are devices for influencing the mind and behaviour of oneself or another. Vygotsky saw tools and symbols as two aspects of the same phenomenon, a tool being technical and altering 'the process of a natural adaptation by determining the form of labour operations', a sign being psychological and altering 'the entire flow and structure of mental functions' (Vygotsky, 1981, p.137).

In the discussion of memory and thinking that constitutes Chapter 3 of one of the more widely available collections of his writing *Mind in society*, Vygotsky stipulates that radical transformations take place in the relationships between psychological functions as a result of such mediated psychological activity. He suggests that 'for the young child, to think means to recall; but for the adolescent, to recall means to think' (Vygotsky, 1978, p. 51). Human memory is seen as a function that is actively supported and transformed through the use of signs:

> *Just as a mould gives shape to a substance, words can shape an activity into a structure. However, that structure may be changed or reshaped when children learn to use language in ways that allow them to go beyond previous experiences when planning future action ... once children learn how to use the planning function of their language effectively, their psychological field changes radically. A view of the future is now an integral part of their approaches to their surroundings ...* (Vygotsky, 1978, p.28)

Thus from Vygotsky's perspective (Vygotsky, 1981, pp.139–140) the use of psychological tools:

- introduces several new functions connected with the use of the given tool and with its control;
- abolishes and makes unnecessary several natural processes whose work is accomplished by the tool; and alters the course and individual features (the intensity, duration, sequence, etc.) of all the mental processes that enter into the composition of the instrumental act, replacing some functions with others (i.e. it re-creates and reorganises the whole structure of behaviour just as a technical tool re-creates the whole structure of labour operations).

Psychological tools, just like material tools, are the products of human cultural historical activity.

The notion of artefact raises a central concern in the philosophy underpinning many sociocultural psychologies – the relation between the ideal and the material. Bakhurst (e.g. 1995) has done much to clarify the contribution of the Russian philosopher Ilyenkov to our understanding of the framework within which so much of the Russian perspective on mediation may be read. The idea of meaning embodied or sedimented in objects as they are put into use in social worlds is central to the conceptual apparatus of theories of culturally mediated, historically developing, practical activity.

This model of the process is part of the conceptual apparatus which is associated with Ilyenkov's philosophy of 'ideality'. This provides an account of the way in which humans inscribe significance and value into the very physical objects of their environment (Bakhurst, 1995, p.173).

The concept of mediation has developed far beyond the original notion of psychological tools. Contributions from disciplines as seemingly diverse as philosophy, cognitive psychology and neurophysiology have given rise to the possibility of reconsidering the original Vygotskian position. This concept on which so much of the thesis depends has gained explicit and implicit support from a wide range of contributions. A model of dynamic interplay between discourses and other artefacts, mental representations and patterns of neurological activity in the formation of human thought has started to evolve. Discussions of the constraints and control over those discourses and other artefacts which are available socially in particular cultural contexts and which have specific historical origins and commitments give rise to sociological considerations of production and distribution. Biological constraints and limitations are also to be understood in a robust model of the way in which social, cultural and historical factors exercise a formative effect on human development. Crucially the emphasis on the human use of tools, signs/artefacts for self-creation removes the Vygotskian model from the domain of crude social determinism. The attempt to develop an account of the way in which active learning has a formative effect has clear implications for pedagogy.

Vygotsky's (1978) 'general genetic law of cultural development' asserts the primacy of the social in development in the context of his model of development as a mediated process:

> *every function in the child's cultural development appears twice: first, on the social level, and later, on the individual level; first between people (interpsychological), and then inside the child (intrapsychological). This applies equally to voluntary attention, to logical memory, and to the formation of concepts. All the higher functions originate as actual relations between human individuals* ... (Vygotsky, 1978, p.57)

The general genetic law of cultural development introduces the notion of some form of relationship between something which is defined as 'social' and something which is defined as 'individual'. My use of the term 'mediation' suggests that this is not necessarily a direct relationship from the social to the individual. However, there is an important conceptual move to be made between the

dualism I infer above and the dialectical relationship which Cole implies below:

> *The dual process of shaping and being shaped through culture implies that humans inhabit 'intentional' (constituted) worlds within which the traditional dichotomies of subject and object, person and environment, and so on cannot be analytically separated and temporally ordered into independent and dependent variables.* (Cole, 1996, p.103)

Sameroff (1980) provided an important contribution to the debates on psychology and systems theory with the introduction of the concept of 'dialectics' within which development was seen as driven by internal contradictions. Earlier, Riegel (1976) and Wozniak (1975) had criticised traditional psychology with its emphasis on balance and equilibrium. It was Riegel who produced a manifesto for dialectical psychology which emphasised contradictions and their synchronisations in short- and long-term development both in the individual and in society (Riegel, 1976, p.689). Surprisingly, this work is rarely cited in discussions of Vygotsky's work. The details of their approach differ while the key emphasis on dialectical processes remains very similar. As Van der Veer and Valsiner (1991) remind us, Vygotsky most definitely adopted a dialectical world view. This was the case for his theories as well as his approach to method and criticism:

> *A present day psychologist is most likely to adopt a non-dialectical 'either-or' perspective when determining the 'class membership' of one or other approach in psychology. Hence the frequent non dialectical contrasts between 'Piagetian' and 'Vygotskian' approaches, or the wide spread separation of psychologists into 'social' versus 'cognitive' categories which seem to occupy our minds in their meta-psychological activities … in direct contrast, for Vygotsky any two opposing directions of thought serve as opposites united with one another in the continuous whole – the discourse on ideas. This discourse is expected to lead us to a more adequate understanding of the human psyche, that is, to transcend the present state of theoretical knowledge, rather than force the existing variety of ideas into a strict classification of tendencies in the socially constructed scientific discipline of psychology.* (Van der Veer & Valsiner, 1991, pp.392–393)

Much of the Western writing which claims a Vygotskian root discusses his contribution in terms of accounts of internalisation. Much effort has been expended attempting to clarify the movement from the social to the individual and yet relatively little attention has been paid to the reverse direction. Bruner's (1997) reminder about Vygotsky's liberationist version of Marxism serves to reinforce the view that his was a psychology which posited the active role of persons in their own cognitive and emotional creation. Whether the emphasis was directly on creativity itself or through the use of expressions such as 'mastering themselves from the outside', in his early work Vygotsky discussed externalisation at some length.

Engeström has developed a model of transformation which he calls the expansive cycle in which internalisation and externalisation develop complementary roles. Engeström and Miettinen (1999) provide a discussion of the internalisation/externalisation process at every level of activity. They relate internalisation to the reproduction of culture and externalisation to the creation of artefacts that may be used to transform culture. The rediscovered emphasis on externalisation is important because it brings a perspective to concept formation that affirms the notion of active agency in learning and development: 'Like Ilyenkov after him, Vygotsky recognises that as much as culture creates individuals, culture itself remains a human creation' (Bakhurst & Sypnowich, 1995, p.11).

Ways of thinking and feeling may be influenced and shaped by the availability of cultural artefacts which may themselves be the products of mediated activity.

As the now accepted correct translation

of Vygotsky's work *Thinking and speech* implies, he was concerned with how the social activity of speaking was connected with the active processes of thinking. The years 1927–1934 were the period when Vygotsky was particularly interested in concept formation. For Vygotsky scientific concepts are characterised by a high degree of generality and their relationship to objects is mediated through other concepts. By the use of the term 'scientific concept', Vygotsky referred to concepts introduced by a teacher in school; spontaneous concepts were those that were acquired by the child outside contexts in which explicit instruction was taking place. Scientific concepts were described as those which form a coherent, logical hierarchical system. According to Vygotsky (1987) children can make deliberate use of scientific concepts, they are consciously aware of them and they can reflect upon them.

The editors of the most recent translation of *Thinking and speech* argue that when Vygotsky (1987) uses the terms 'spontaneous thinking' or 'spontaneous concepts' he is referring to the context of formation which is that of immediate, social, practical activity as against a context of instruction in a formal system of knowledge. Scientific concepts are through their very systematic nature open to the voluntary control of the child:

> *the dependence of scientific concepts on spontaneous concepts and their influence on them stems from the unique relationship that exists between the scientific concept and its object … this relationship is characterised by the fact that it is mediated through other concepts. Consequently, in its relationship to the object, the scientific concept includes a relationship to another concept, that is it includes the most basic element of a concept system …* (Vygotsky, 1987, p.192)

Vygotsky argued that it was in communication that social understanding was made available for individual understanding. Within schooling word meanings themselves form the object of study. As Minick (1987) has argued, the differences between communication with words from communication about words mark the significant difference between communication within schooling and communication in everyday life. This difference is what Kozulin (1998) refers to as repositioning. Communication about words within schooling leads to the development of scientific concepts by the individual. In this way communication performs a mediational function between the society of schooling and the individual. The need for instruction remains paramount within the original thesis. This is associated with the institution of the school and the teacher:

> *the fundamental difference between the problem which involves everyday concepts and that which involves scientific concepts is that the child solves the latter with the teacher's help … in a problem involving everyday concepts he must do with volition something that he does with ease spontaneously …* (Vygotsky, 1987, p.216)

The theoretical derivation of 'scientific and everyday' in the original writing was somewhat provisional. For example, the association of the scientific with school does not help to distinguish those aspects of schooling that merely act to add to everyday understanding without fostering the development of scientific concepts. The association also suggests that the development of scientific concepts must take place in school and not outside it.

It may be as a consequence of the dualist perspective, which remains so powerful, that the emphasis on the interdependence between the development of scientific and everyday concepts is also not always appreciated. Vygotsky argued that the systematic, organised and hierarchical thinking that he associated with scientific concepts becomes gradually embedded in everyday referents and thus achieves a richer meaning in the contextual richness of everyday thought. Vygotsky thus presented an interconnected model of the relationship between scientific and everyday or spontaneous concepts. Similarly he argued that everyday thought is given structure and order in the context of systematic scientific thought. Vygotsky was

keen to point out the relative strengths of both as they both contributed to each other.

Vygotsky argued that scientific concepts are not assimilated in ready made or prepackaged form. He insisted that the two forms of concept are brought into forms of relationship within which they both develop. An important corollary of this model of conceptual development is the denial of the possibility of the direct pedagogic transmission of concepts:

> *pedagogical experience demonstrates that direct instruction in concepts is impossible. It is pedagogically fruitless. The teacher who attempts to uses this approach achieves nothing but a mindless learning of words, an empty verbalism that stimulates or imitates the presence of concepts in the child. Under these conditions, the child learns not the concept but the word, and this word is taken over by the child through memory rather than thought. Such knowledge turns out to be inadequate in any meaningful application. This mode of instruction is the basic defect of the purely scholastic verbal modes of teaching which have been universally condemned. It substitutes the learning of dead and empty verbal schemes for the mastery of living knowledge ...* (Vygotsky, 1987, p.170)

If it is to be effective in the formation of scientific concepts instruction must, according to Davydov (1988), be designed to foster conscious awareness of conceptual form and structure and thereby allow for individual access and control over acquired scientific concepts. It must also foster the interaction and development of everyday concepts with scientific concepts:

> *learning a foreign language raises the level of development of the child's native speech. His conscious awareness of linguistic forms, and the level of his abstraction of linguistic phenomena, increases. He develops a more conscious, voluntary capacity to use words as tools of thought and as a means of expressing ideas … by learning algebra, the child comes to understand arithmetic operations as particular instantiations of algebraic operations. This gives the child a freer, more abstract and generalised view of his operations with concrete quantities. Just as algebra frees the child's thought from the grasp of concrete numerical relations and raises it to the level of more abstract thought, learning a foreign language frees the child's verbal thought from the grasp of concrete linguistic forms of phenomena ...* (Vygotsky, 1987, p.180)

Wells (1999) distinguished between two definitions of zone of proximal development (ZPD) within Vygotsky's original writing. One version in Chapter 6 of *Mind in society* places emphasis on the dynamic assessment of children's intellectual abilities rather than more static measures such as IQ scores. Here Vygotsky defines the ZPD as:

> *actual developmental level as determined by independent problem solving and the higher level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers ...* (Vygotsky, 1978, p.86)

He elaborates on this definition in order to emphasise the difference between aided and unsupported performance:

> *Suppose I investigate two children upon entrance into school, both of whom are twelve years old chronologically and eight years old in terms of mental development. Can I say that they are the same age mentally? Of course. What does this mean? It means that they can independently deal with tasks up to the degree of difficulty that has been standardized for the eight-year-old level. If I stop at this point, people would imagine that the subsequent course of development and of school learning of these children will be the same, because it depends on their intellect … Now imagine that I do not terminate my study at this point, but only begin it … Suppose I show … [these children] have various ways of dealing with a task … that the children solve the problem with my assistance. Under these circumstances it turns out that the first child can deal with problems up to a twelve-year-old's level. The second up to a nine-year-old's.*

> *Now are these children mentally the same? When it was first shown that the capability of children with equal levels of mental development to learn under a teacher's guidance varied to a high degree, it became apparent that those children were not mentally the same and that the subsequent course of their learning would obviously be different. This difference between twelve and eight, or between nine and eight, is what we call the zone of proximal development.* (Vygotsky, 1978, pp.85–86)

Vygotsky's interest was in assessing the ways in which learners make progress. The focus on process as well as product in assessment has become embedded in the range of techniques now called 'dynamic assessment' (e.g. Lidz & Elliot, 2000). The general practice of dynamic assessment is either explicitly or tacitly inspired by the work of Vygotsky. This contrasts sharply with practices which theorise a lag of learning behind development, as in the case of Piaget, or which theorise learning as development, as in the case of Skinner. There are stark differences in the ways in which this idea which has, at least, some root in Vygotskian theory becomes embedded in other psychological traditions. Wells (1999) pointed out that the second version of ZPD is to be found in Vygotsky's last major work, *Thinking and speech* (1934/1987), and is embedded in Chapter 6, in which he discussed 'the development of scientific concepts in childhood'. Instruction is foregrounded here rather than assessment:

> *We have seen that instruction and development do not coincide. They are two different processes with very complex interrelationships. Instruction is only useful when it moves ahead of development. When it does, it impels or awakens a whole series of functions that are in a stage of maturation lying in the zone of proximal development. This is the major role of instruction in development. This is what distinguishes the instruction of the child from the training of animals. This is also what distinguishes instruction of the child which is directed toward his full development from instruction in specialised, technical skills such as typing or riding a bicycle. The formal aspect of each school subject is that in which the influence of instruction on development is realised. Instruction would be completely unnecessary if it merely utilised what had already matured in the developmental process, if it were not itself a source of development.* (Vygotsky, 1987, p.212)

Arguably, Vygotsky has not shifted his position on the nature of the ZPD in the time that lapsed between the writing of these two texts. Perhaps the differences of emphasis may be attributable to the changes in the social/political/professional circumstances in which he was working. In the earlier writing he was more concerned with assessment and, indeed, it was more acceptable to write about assessment. As his career developed the political pressure against assessment grew and his own interests, as Minick (1987) has shown, shifted away from relations between psychological functions and towards relations between psychological functioning and social circumstances.

In summary, Vygotsky discussed the ZPD in terms of assessment and instruction. Within both frames of reference he discussed the relationship between an individual learner and a supportive other or others even if that other was not physically present in the context in which learning was taking place.

Lave and Wenger (1991) argue that the operational definition of ZPD has itself undergone many differing interpretations. Many different researchers have interpreted and developed the notion of the ZPD (for example, Tharp & Gallimore, 1988; Wells, 1999), with the result that various models have emerged which apply, extend and reconstruct Vygotsky's original conception. These differences may be seen to reveal the more general theoretical drift towards a broader, more cultural and historical view of the 'social' which is theorised as being progressively more intimately a part of the 'individual'. Thus Lave and Wenger (1991) distinguish between a 'scaffolding', a 'cul-

tural' and a 'collectivist' or 'societal' version of the original formulation of the ZPD. The 'scaffolding' interpretation is one in which a distinction is made between support for the initial performance of tasks and subsequent performance without assistance: 'the distance between problem-solving abilities exhibited by a learner working alone and that learner's problem-solving abilities when assisted by or collaborating with more-experienced people'.

The term scaffolding could be taken to infer a 'one-way' process within which the 'scaffolder' constructs the scaffold alone and presents it for use to the novice. Newman *et al.* (1989) argued that the ZPD is created through negotiation between the more advanced partner and the learner, rather than through the donation of a scaffold as some kind of prefabricated climbing frame. There is a similar emphasis on negotiation in Tharp and Gallimore (1988), who discussed 'teaching as assisted performance' in those stages of the ZPD where assistance is required. The key question here seems to be with respect to where the 'hints', 'supports' or 'scaffold' come from. Are they produced by 'the more capable partner' or are they negotiated? Vygotsky is unclear on this matter.

The 'cultural' interpretation of the ZPD is based on Vygotsky's distinction between scientific and everyday concepts. It is argued that a mature concept is achieved when the scientific and everyday versions have merged. However, as Lave and Wenger (1991) note, no account is taken of 'the place of learning in the broader context of the structure in the social world':

> *the distance between the cultural knowledge provided by the socio-historical context – usually made accessible through instruction – and the everyday experience of individuals. Hedegaard calls this the distance between understood knowledge, as provided by instruction, and active knowledge, as owned by individuals.* (Lave & Wenger, 1991, p.76)

Hedegaard (1998) discusses what she calls the 'double move approach' in the process of concept formation within the ZPD. She suggests that

> *the teacher guides the learning activity both from the perspective of general concepts and from the perspective of engaging students in 'situated' problems that are meaningful in relation to their developmental stage and life situations ...* (Hedegaard, 1998, p.120)

In the 'collectivist', or 'societal' perspective, Engeström defined ZPD as the 'distance between the everyday actions of individuals and the historically new form of the societal activity that can be collectively generated' (Engeström, 1987, p.174). Under such societal interpretations of the concept of the ZPD researchers tend to concentrate on processes of social transformation. This involves the 'study of learning beyond the context of pedagogical structuring, including the structure of the social world in the analysis, and taking into account in a central way the conflictual nature of social practice' (Lave & Wenger, 1991, pp.48–49).

These types of definition carry with them different implications for schooling and instruction. If the 'social' in teaching and learning is constrained to a view of particular teaching technologies and procedures then the analysis of schooling is both truncated and partial. If the 'social' in schooling is considered in socio-institutional terms then the gaze of the analysis of the outcomes is altered and/or extended. This question of the scope of the definition is fundamental to one of my concerns about the ways in which pedagogy is theorised, described and investigated. Following Vygotsky's own insistence on the use of genetic (historical/developmental) analysis it is possible to discern a trajectory in his own writing towards a more socially connected account:

> *Vygotsky seemed to be coming to recognise this issue near the end of his life. It is reflected in the difference between chapters five and six of* Thinking and Speech *(1987). Both chapters deal with the ontogenetic transition from 'complexes' to 'genuine', or 'scientific' concepts. However, the two chapters differ markedly in what they*

> *see as relevant developmental forces. In Chapter five (based on research with Shif and written during the early 1930s), concept development is treated primarily in terms of intramental processes, that is, children's conceptual development as they move from 'unorganised heaps' to 'complexes' to 'concepts'. In chapter six (written in 1934), there is an essential shift in the way Vygotsky approaches these issues. He clearly continued to be interested in intramental functioning, but he shifted to approaching concept development from the perspective of how it emerges in institutionally situated activity. Specifically, he was concerned with how the forms of discourse encountered in the social institution of formal schooling provide a framework for the development of conceptual thinking. He did it by the teacher-child intermental functioning found in this setting.* (Wertsch *et al.*, 1993, p.344)

It remains the case that most of Vygotsky's writing tends to focus on the more immediate interactional/interpersonal antecedents of independent or seemingly independent functioning. The first important implication of this for pedagogy is that teaching and assessment should be focused on the potential of the learner, rather than on a demonstrated level of achievement or understanding. The second is that teaching, or instruction, should create the possibilities for development, through the kind of active participation that characterises collaboration, that it should be socially negotiated and that it should entail transfer of control to the learner. Theories concerning the regulation of such practices within specific schools remained beyond the scope of Vygotsky's writing. The institutional regulation of the social practices of schooling is beyond the gaze of much of the empirical work that claims to be drawing on his work.

Vygotsky insisted that there is no necessary recourse to physical presence in accounts of support within the ZPD. With the following quotation he announced the possibility of virtual collaboration without the physical presence of the adult/teacher:

> *when the school child solves a problem at home on the basis of a model that he has been shown in class, he continues to act in collaboration, though at the moment the teacher is not standing near him. From a psychological perspective, the solution of the second problem is similar to this solution of a problem at home. It is a solution accomplished with the teacher's help. This help – this aspect of collaboration – is invisibly present. It is contained in what looks from the outside like the child's independent solution of the problem ...* (Vygotsky, 1987, p.216)

Vygotsky often seems to be concerned with a ZPD as a space where the learner is brought into the 'knowing' of the other. The emphasis on multiple voices engaged in the construction of a form of meaning which is not necessarily located within the individual characterises many current interpretations of Bakhtin's influence on a Vygotskian account.

Valsiner cautioned against too much theoretical speculation of this nature and pondered on the social implications of ordinary people announcing that they were either 'seamlessly tied' to their living room or that their minds were filled with the 'voices of others' (Valsiner, 1997, p. 237). On the other hand, Gergen (1985) developed a radical constructionist account of the learning processes. He was critical of both Vygotsky and Bruner, suggesting 'they remain deeply ambivalent concerning the significance of the social as opposed to the individual'. These two positions serve to illustrate the ongoing tensions in the interpretation of the ZPD concept.

Valsiner provides another important cautionary note that must enter into this debate. He reminds us that much of the empirical work that has been undertaken runs the risk of confusing microgentic and ontogenetic processes:

> *There exists an unwarranted (and implicit) assumption in received empirical practices in developmental psychology to consider the*

> *microgenetic and ontogenetic levels of development similar in their organisation.* (Valsiner, 1997, p.241)

If this slippage is permitted then the concept of appropriation can be used to render any form of social activity as formative in ontogenetic terms. Clearly this is not justified.

In summary, the discussion of ZPD has raised a number of questions for the theory and practice of educational psychology today. For example, to what extent is the 'social' other in the ZPD merely an individual with whom the learner interacts? This seems to reflect the tradition of experimental psychology rather than the tenets of an account of the social formation of mind. The reduction of the complexity of classroom life to a quasi-experimental dyad carries significant restrictions in terms of the generalisability and validity of findings. Crucially, such studies do not allow for a critical examination of the effect of different forms of participant structure in learning situations. When considering different models of ZPD it thus seems reasonable to ask to what extent we should consider social groups, institutions, communities and other cultural historical dimensions within the ZPD. It also seems important to ask whether the changes that take place as a consequence of activity in a ZPD are best considered as acts of internalisation or as incorporation of aspects of the social that may or may not remain present. Lastly and somewhat portentously, to what extent is the developing conscious mind an individual mind?

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