

WORKING IN THE ZONE: A RESPONSE TO MERRILYN GOOS

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Valsiner's extension of Vygotsky's zone of proximal development is presented as an opening to sociocultural influences on learning and other human activity. His theory is taken up and extended by Marilyn Goos in her extensive, substantial and considered research on students' learning of mathematics, on student teachers' learning and beyond, to teacher educators' learning. I will make some comments on the work, on the ZPD and on social theories in particular, with the intention of opening a productive dialogue to further all our work in this field.

INTRODUCTION

I am honoured and delighted to be the respondent to Marilyn's thoughtful and deep paper. She reviews her previous work, describes her on-going current challenges, and looks forward to future work, whilst drawing on theory and learning from practice in a way that is exemplary amongst researchers in our field. I note in particular one of the directions of her current and future work. The transition from teaching in a school or college of one kind or another to becoming a teacher educator has, until the important work of the authors referenced by Marilyn, and her own development of that field, always been seen as unproblematic; if you can teach then you can teach teachers. Identifying the need to provide a preparation for new teacher educators and marking the opportunities for continuing learning, in a suitable theoretical context, can only be of benefit throughout the profession.

The comments I will make in this response are in the nature of an engagement in discussion and an opportunity to develop ideas, and will raise questions rather than offer alternative answers. In my response I will have some things to say about: the place of the zone of proximal development (ZPD) amongst Valsiner's other zones, the zone of free movement (ZFM) and the zone of promoted action (ZPA); the perspective on practice and participation provided by Wenger and drawn upon by Marilyn; the problematising of the nature of knowledge when we are examining pedagogic content knowledge in mathematics; and finally the role of sociology in the sociocultural turn.

The zone of proximal development

Vygotsky's metaphor for the learning process, the zone of proximal development, is usefully elaborated by Valsiner, adding, as Marilyn has explained, elements that create the space for social and cultural affordances and constraints. She goes on to summarise how these two additional zones appear in the literature and then extends zone theory in her study of teachers-as-learners.

Following Davydov (1990), the ZPD is created, or not, in a learning activity; it is not a pre-existing space, or realm, or set of possibilities, that the child or adult brings with her or him to a new situation. Merrill acknowledges this in describing how Valsiner saw the ZPD, “as a set of possibilities for development that are in the process of becoming realised as individuals negotiate their relationship with the learning environment and the people in it”. I think more needs to be said about that interaction if it is potentially to stimulate a ZPD in the way that we understand that a teacher or a more informed peer can do. What features of the learning environment or professional context can have that effect and how might they stimulate the emergence of a ZPD for one teacher whilst perhaps not another? Valsiner’s formulation of the ZPD, taken up by Merrill, seems to be about the individual almost pulling her/himself into her/his tomorrow, as Vygotsky poetically described the ZPD. I am sure this can happen, just as a text can act as the more informed peer or the teacher, but again we need to understand how. As Meira and Lerman (2010) suggest, in teacher-pupil interactions or in pupil-pupil interactions (see Lerman, 2001) a ZPD might emerge or not. One might characterise the emergence as dependent on each actor catching the attention of the other. What sense can we make of the catching of attention in “individuals negotiating their relationship with the learning environment and the people in it”? In a similar vein, I am unsure where the ZPD is in Adam’s experience. He faces a conflict between his instructional preferences and those of the other teachers in his school. Merrill writes, by way of analysis: “A zone theory analysis would argue that Adam was an active agent in his own development... he interpreted his technology-rich ZFM as affording his preferred teaching approach... (he) decided to pay attention only to those aspects of the mathematics department’s ZPA that were consistent with teaching approaches...” Clearly the zone analysis offers useful insights but the relationship between the ZPD and the other two zones may have become fragmented. Although Vygotsky introduced the ZPD quite late in his short life as an expression of his dissatisfaction with IQ tests, it soon became a metaphor and a mechanism for learning in general. The features of activities and situations, with the enriched explanatory power of Valsiner’s two extra zones, that might lead to ZPDs for the actors, need identifying.

Communities of Practice

In Kaner and Lerman (2008) we defined a community of practice, based on the ideas in Lave and Wenger (1991), as “a group of people connected by circumstance or purpose, but on a trajectory to share meanings and values and to collectively create new forms of life” (p. 311). Furthermore, we added “we would want to distance ourselves from the notion that communities of practice totally saturate our lives” (*op cit*). In that chapter we argued for the more nuanced notion of Lave and Wenger, in which trajectories and movement is emphasised, whereas Wenger’s (1998) perspective sees participation defined in terms of enclosure by boundaries. Boundary encounters and boundary practices are the elements of identity and participation that Merrill refers to in her examination of the learning of mathematics teacher educators. The many practices and identities that are at play here are overlapping ones. Most mathematics teacher

educators have been schoolteachers, they are still teachers, whether of mathematics or of pedagogy or of both, and may be educators or mentors of novice mathematics teacher educators. They are also those learners that Merrillyn is currently concerned with, the teacher-educator-as-learner. I want to suggest that rather than boundaries, trajectories and forms of life might provide a richer analytical tool. We argued that studies inspired by Lave and Wenger (1991) are ethnographic in character, and start “with the social practice and seek discursively to elucidate the threads – trajectories – of learning found within” (Kanes & Lerman, p. 324).

The nature of the ‘K’ in PCK

In the field of mathematics education we grapple with two different kinds of knowledge. On the one hand there is the certainty of mathematical knowledge in the sense of a discourse exhibiting a strong grammar: a structure has the features of a Boolean algebra, for example, or it doesn’t. On the other hand, we have the uncertainty of the language of the social sciences, in our case of education, discourses exhibiting a weak grammar (see Lerman, 2010): learning, understanding, and knowing, for example, are contested notions. Indeed it may be the case that the frustration felt by many in our field concerning the proliferation of theories is caused in part by the desire that educational discourses were more similar to mathematical ones.

I support Merrillyn’s preference for sociocultural theories over the ubiquitous but socially rather weak notion of reflective practice as offering access to the complexity of the work we do. In proposing a third layer, that of teacher-educator-as-learner, Merrillyn suggests drawing on Valsiner’s two zones, as she has done so fruitfully in other areas of her research, because they introduce the possibility of taking sociocultural issues into a learning theory. Merrillyn then sets out a programme for study of how mathematics teacher educators learn. Given that the knowledge is of the weak grammar type, drawing on sociological and sociocultural orientations is unavoidable, in my view. The phenomenon of multiple theories giving rise to different interpretations of learning and teaching (Lerman, 2010); the strong association of student achievement in mathematics with social class or socio-economic background (Zevenbergen 2001); making sense of the competing influences of the pre-service teacher education context and the school context of teaching practice or first teaching positions (Ensor, 2001); all these and other issues are comprehensible and analysable within sociological and sociocultural orientations.

Sociology

Following on from this last point, however, I am unsure whether the zones of free movement and promoted action are sociological enough for our purposes. If we consider, as an example, Cooper and Dunne’s (2000) study of student performance on mathematical tasks set in everyday contexts, where one can suggest that the same zones of free movement and promoted action are offered to all the students, we need an explanation for the differential performance of students from working class and middle class backgrounds. Cooper and Dunne use a combination of theories from Bourdieu

and Bernstein to interpret the data, showing how the everyday nature of the tasks misleads the students from working class backgrounds in terms of what is expected of their answer. When the demands of the questions were explained to those working class students they were perfectly able to do the mathematics. One can say that these social class tendencies can be included in the definitions of the ZFM and the ZPA but what is missing is an account, whether structuralist or poststructuralist, of those trends in terms that might enable appropriate actions to be taken by teachers and researchers.

Final remarks

It is precisely because of the impressive way that Merrillyn works with theory, and reflects back on theory from the perspective of her data that I have found it possible to raise these questions. I look forward to further discussion and debate around the important ideas she has raised in her plenary talk.

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