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# Making Sense of Theoretical Frameworks and Methodological Approaches: Exploring Conceptual Change and Interest in Learning from a Sociocultural Perspective

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## **Abstract**

*Educational psychology has a tradition of considering learning and motivation in terms of the individual and individual functioning. Short-term intervention studies have been common and quantitative measurement of the causes and effects of variables has been the aim of much research. When a sociocultural approach forms the basis of research into psychological constructs, a reappraisal of the research aims and the ways in which data are gathered and analysed is necessary. If the underlying assumption is that learning and motivation are socially and culturally situated, the design of research studies needs to encompass participation in authentic and purposeful activities. In order to develop a rich sociocultural understanding of these constructs, qualitative research designs become increasingly important.*

*In this article, we consider two current research projects, one focusing upon conceptual change amongst students in a first year university class, and the other a classroom-based qualitative study exploring primary (elementary) students' interest in learning. In each project, data have been collected over time in relation to both social interaction and individual functioning in specific sociocultural contexts. Our frameworks for data collection and approaches to data analysis are discussed in this article, together with some of the issues which we have identified as problematic. In*

*particular we are conscious of the difficulties associated with articulating and describing the nature of social and cultural contexts, especially those with which we are familiar, and of distinguishing their most salient features. We are also critically aware that because our research is situated within very familiar environments, we need to identify and explore our implicit assumptions about those environments and the ways in which our roles as teachers and researchers both coincide and occasionally conflict.*

## Introduction

Picture a scene, in a Sydney University coffee shop, where the conversation between three educational researchers is progressing along the following lines:

**Erica:** I find Barbara Rogoff's idea of different planes of analysis really useful, because it acknowledges that the individual is always a part of a broader sociocultural context.

**Kimberley:** And in terms of interest, I still think that at some point you can distinguish between what you are interested in as an individual, an interest that you identify with your sense of self, and the social context that you are currently in - or community that you are a part of. Yet at the same time, the sociocultural context is shaping your present and future development, as you also contribute to the specific community of practice.

**Richard:** So what does this mean for you both, in terms of the way in which you're designing your own research projects?

**Kimberley:** Well it means that a lot of the methods that have been used before are not really appropriate.

**Richard:** Maybe what we really need to do first is to work out where the old methodology falls down, then we can try and find more suitable ways which don't contradict our underlying assumptions.

The ideas that form the basis of this article arose during discussions about our research projects in relation to major themes in sociocultural theories. Our aim in this dialogic article is to share this thinking by firstly considering relationships between contemporary educational psychology and sociocultural theories. We then use our current research projects on conceptual change and interest in learning to highlight some of the theoretical and methodological issues that emerge from adoption of a

sociocultural perspective. In this process we discuss some of the broader issues that we continue to face, relating to articulation of context and the nature of classroom-based fieldwork. Through this discussion, we seek to initiate debate more widely.

### **The changing face of educational psychology**

As recent reviews of the field indicate, (Blumenfeld & Anderson 1996, Walker & Debus 2002) educational psychology is a dynamic and productive area of research, in which important epistemological, conceptual and methodological advances have occurred over the last twenty years. While it is possible to identify an integrated perspective in contemporary educational psychology (Blumenfeld & Anderson 1996), in which learners are considered active constructors of their own knowledge, motivations and self-perceptions, there is much diversity in the field, both conceptually and methodologically. In the integrated perspective, despite a recognition of social influences on learning, the conceptual and methodological emphasis of researchers has focused on the individual learner and experimental research designs predominate. Diversity in the field, however, has meant that research in educational psychology is now commonly conducted in authentic classroom environments with school-relevant content, and that diverse research methodologies, often involving mixed methods, are employed (Walker & Debus 2002).

Conceptual and methodological change in the field of educational psychology has to some extent been influenced by the emergence, and acceptance, of sociocultural theories which consider learning and development to be fundamentally social and which have challenged the emphasis on the individual learner. Common to all sociocultural approaches is the recognition that the individual cannot be studied in isolation from the social, and that 'individual, interpersonal and cultural processes are not independent entities' (Rogoff 1998, p. 687), since all human activities take place within a cultural and historical context. Sociocultural research therefore focuses not only on individuals, but also on the interactions between them, and on the broader settings in which these interactions occur. This emphasis has led to a greater concern with the role of social context in educational psychology (Anderman & Anderman 2000), and more specifically to a greater consideration of context in classroom research (Turner & Meyer 2000).

Although there are a number of sociocultural theories (e.g. Lave & Wenger 1991, Rogoff 1998, Valsiner 1997a, Wells 1999), all are concerned with the social nature of learning and development and focus on the ways in which cultural practices are learned in specific cultural and historical contexts. Sociocultural theorists consider that learning and development occur as learners, or novices, are enculturated into the practices of the various communities or sub-cultures which exist in a society. This process of enculturation occurs as learners participate in these practices in

collaboration with more capable others, or with experts. In this process, intersubjectivity, or shared understanding, is established between participants as joint purpose and goals are negotiated, thus opening up possibilities for both facilitating and constraining learning and development. Furthermore, as learners are enculturated into various communities of practice they construct new identities, while older identities may undergo change or transformation (Wells 1999).

The notion of the zone of proximal development plays a key role in sociocultural theories (Chaiklin 2003) as it helps to explain such important relationships as that of the social world to the world of the individual, and the relationship between learning and development. It is through the creation of zones of proximal development that the social becomes manifest at the level of the individual; it is also through zones of proximal development that learning impacts upon and contributes to development. As a consequence of its role in explaining such critical relationships this notion, and the related concept of cognitive scaffolding, has assumed a high level of prominence within educational psychology and has provided the theoretical basis (Walker & Debus 2002) for much research into learning and cognition.

Despite the growing influence of sociocultural approaches, however, important differences still exist between contemporary educational psychology and sociocultural theories. Consequently, when constructs from educational psychology are investigated from a sociocultural perspective the focus of research and the questions that are investigated necessarily change (Walker, Pressick-Kilborn, Arnold & Sainsbury 2004). The following section focuses upon two constructs that are currently being reconsidered from a sociocultural perspective: conceptual change and interest in learning. Although of research significance in themselves, these constructs serve in this article primarily as cases within which broader theoretical and methodological issues are discussed.

### **The cases of two research projects: Some issues confronted when focusing upon conceptual change and interest in learning**

Although the focus differs quite substantially between the two research studies, three common dimensions have been identified which highlight differences between contemporary educational psychology and sociocultural perspectives. The first dimension explores the relative significance attached to the individual participants under study and the situations in which they are investigated, the second focuses on the nature of the situations or contexts themselves and the meanings attributed to them by the participants, while the third draws attention to the relative emphasis on

process and outcome measures. In the following section, the two projects are briefly described, and critical issues are explored through the lens of these three dimensions.

## **Conceptual change**

### **Background to the case**

This study investigated the processes and outcomes of learning about the physical and chemical behaviour of drug molecules within a cohort of first year Pharmacy students. It was stimulated by the observation over a number of years that students consistently experienced difficulties in understanding and applying concepts which were supposedly familiar to them. Learning was studied within the context of formal classes in which small peer groups worked collaboratively on tasks requiring discussion of conceptual topics, problem-solving and numerical manipulations. The cohort was surveyed for demographic and attitudinal data, while a sample of approximately 10 per cent undertook the more intensive phase of the study, which involved recording of workshop participation and three interviews. The aims of this investigation were to contribute to the development of a sociocultural theory of conceptual change learning, to describe the processes through which such learning takes place in a specific context, and to suggest approaches for the subsequent improvement of curriculum design and delivery.

### **Contemporary model of conceptual change**

The original and most widely accepted model of conceptual change was proposed by Posner, Strike, Hewson and Gertzog (1982). The fundamental assumption behind this model is that the learner's current concepts and knowledge are critical in the acquisition of new understandings; that is, conceptual change occurs in the context of concepts already possessed by the learner. In some cases, these concepts may be adequate to deal with new information that is presented, in which case the learning occurs by assimilation of the new material into an existing structure. In other cases, the new information is in cognitive conflict with existing concepts, and so a replacement or reorganisation of the existing basic conceptual structure is necessary. Most of the work on conceptual change has focused on this latter form.

### **Criticisms of the contemporary model**

Although widely accepted, this model of conceptual change has been subject to criticism and considerable modification. Among the major developments are consideration of the affective dimension (Pintrich, Marx & Boyle 1993), alternative classifications of knowledge domains (Chi, Slotta & de Leeuw 1994), differentiation between types of change (Demastes, Good & Peebles 1996), and approaches which explicitly recognise the perspective of the learner (Dekkers & Thijs 1998). Although many of these modifications have moved the notion of conceptual change somewhat towards the sociocultural perspective, there is still considerable scope for a more

extensive reconceptualisation of the model, which remains as yet tenuously compatible with the underlying assumptions of sociocultural theory.

The majority of conceptual change research is founded on the explicit or implicit assumption that the scientific explanation of any phenomenon is superior to other explanations (Cobern 1996), and that these alternative explanations result from misconceptions. Student misconceptions are generally observed to be tenacious, difficult to replace, and persistent despite the student's ability to pass formal examinations (Garnett, Garnett & Hackling 1995, Gil-Perez & Carrascosa 1990, Jacobs 1989). Sociocultural theory offers a number of insights into these observations.

### **Individual and situation**

Traditional approaches to conceptual change focus almost exclusively on the individual, with little consideration of the social and cultural situation in which the individual is operating, and it is rarely acknowledged that a concept may be functionally effective in particular contexts without being scientifically accurate. For example, the concept that 'a vacuum sucks dirt out of the carpet' is appropriate as an explanation of domestic duties, but is not acceptable in the physics laboratory. Sociocultural theory recognises that individuals may hold multiple conceptual understandings of a particular phenomenon, and the dominance of any one is highly context-sensitive (Driver, Asoko, Leach, Mortimer & Scott 1994). From both a theoretical and methodological perspective, therefore, a model of conceptual change must include development of the ability to select the most appropriate explanation within each context (Linder 1993). As a consequence, research questions must move from an emphasis on increasing the relative frequency of 'the correct answer' to consideration of the individual's perception of the utility of potential explanations, the salience of a particular explanation in a given situation, and the individual's perception of the situation itself.

### **Authentic contexts – personal meanings**

Traditional research into conceptual change has tended to focus on 'school' tasks, however it has been suggested that these often have little personal meaning for learners (Cobern 1996). Sociocultural theory is in accord with this argument, as are preliminary results obtained in this study (Sainsbury & Walker 2000). What is interpreted as persistence of misconceptions despite instruction may potentially be reinterpreted through a sociocultural lens as a mismatch between context and concept (Sainsbury & Walker 2002). When learning is situated within authentic problem-solving contexts, and students are motivated to engage with the activity because it is perceived to be personally meaningful, relevant and significant, they are more likely to discern relationships between 'science' and the everyday 'real' world. This in turn facilitates development of skills in recognising and discriminating between context-specific

explanations. Research methodology must therefore be able to evaluate the extent to which participants are engaged in their tasks, and the significance attributed to them by different individuals. Purely quantitative methodologies, which focus on the provision of acceptable scientific explanations, are not easily able to probe these dimensions.

### **Process and outcome**

Much of the observed resistance to conceptual change can be attributed to the way in which change is identified and measured. A pretest-intervention-posttest approach is commonly used to provide 'evidence' that a misconception has been successfully replaced by a scientifically correct explanation, although many researchers have noted that misconceptions remain despite satisfactory test performance (Garnett et al 1995, Jacobs 1989). A sociocultural approach is incompatible with this approach to measurement, primarily because it ignores the significance of both context and personal meaning. Participants are assumed to respond in a standard manner irrespective of personal history and beliefs, and the artificial nature of the testing situation is frequently not conducive to deep probing of students' understanding, particularly when the test largely involves calculations and/or multiple-choice questions. A more fruitful approach is to consider the process of change by exploring the interactions between participants in authentic learning situations, and to focus on qualitative outcomes such as an enhanced ability to use and apply conceptual understanding in appropriate ways. Research methodology must therefore be able to capture the richness of the process of change, and to identify conditions which facilitate and constrain the development of this ability.

### **A possible alternative methodology – personal meaning and situated dialogue**

The personal meaning attributed to a particular situation or explanation by the individual can only be inferred if it is communicated in some way. From a sociocultural perspective, communication of meaning is mediated by the cultural and social tools available to participants within a community, of which the most important is language. This communication is not accomplished unproblematically, since as Mortimer (1995) points out, the language of both scientific and everyday contexts is often similar, thus necessitating the use of the language of everyday life even in a scientific context. Jacobs (1989) observed that first year university students attributed non-scientific meanings to common technical terms used in physics teaching, and she attributed this to the more flexible and approximate meanings of these terms in lay usage. Language thus mediates the way individuals move between and within both scientific and everyday domains, and it is therefore not surprising that language can be the source of conceptual confusion. Dekkers and Thijs (1998) further suggest that when learners use a term which is associated with a specific concept within the scientific community, they may actually be referring to a different concept or



phenomenon altogether. The term has personal meaning which is clear to the individual learner, but communication of that meaning fails because the term is associated with a different meaning for other individuals, particularly the gatekeepers of collective knowledge within the community. Since efficient communication of the meaning of terms is always situated within ongoing exchanges (Wells 1998), contextualised dialogue can provide insights into participants' perceptions of context and meaning. Conceptual change can then be reconceived as development of the ability to engage in meaningful situated communication (Säljö 1999), and analysis of the interactions between participants in authentic problem-solving activities appears to be a promising approach for investigating the process of change.

In the current study, investigation of interactions involves analysis of the videotapes of workshop activities, and includes both spoken and non-verbal communication. Additional information is collected through individual interviews in which an exploration of the personal meaning attributed to both concepts and contexts is undertaken. Written assessment tasks and attitude surveys provide additional data to facilitate methodological triangulation and strengthening of the conclusions.

### **Interest in learning**

#### **Background to the case**

This project was conducted over nine months as a qualitative, multimethod study. It investigated ways in which social and physical settings both constrained and afforded possibilities for the development of interest. The research context was a grade five classroom in an independent girls' school, where nine and ten year old students and their teacher engaged in learning about science and technology as a community of learners (Brown 1997). In the initial three month pilot phase, the researcher worked closely with the classroom teacher to develop and trial strategies for creating a learning community. Strategies included opportunities for negotiation and choice of tasks, collaborative small group work, class discussions, research driven by students' own questions, e-mail contact with experts, and tasks of designing, making and appraising. As this pilot study was conducted at the end of an academic year, the researcher continued to work with the same teacher and her new students for six months in the following year. In this main phase, students engaged in two learning units, the first focused on electricity and renewable energy resources, and the second on egg-laying animals. This research study is an integral aspect of the initial development of a sociocultural theory of interest currently being framed by Pressick-Kilborn and Walker (2002).



### **Contemporary conceptualisations of interest**

Contemporary motivational researchers have distinguished two main conceptions of interest: situational and individual interest (Hoffman, Krapp, Renninger & Baumert 1998, Schiefele 1991). Situational interest is defined as ‘an emotional state brought about by situational stimuli’ (Schiefele 1991, p. 302) and is the basis of approaches that aim to identify features of a specific context, activity or task that arouse and capture interest. It tends to be more short-lived and superficial than individual interest (Alexander & Jetton 1996), which is defined as ‘a relatively stable evaluative orientation towards certain domains’ (Schiefele 1998, p. 93) or towards particular classes of objects, events or ideas (Krapp, Renninger & Hoffman 1998). Individual interests have personal significance and are usually associated with high levels of knowledge and value, positive emotions and increased reference value (Krapp, Hidi & Renninger 1992, Renninger 2000). In this framework, individual interest develops and remains a stable and enduring factor in one’s learning over an extended period of time. This conceptualisation of interest as comprising situational and individual components is the basis for the majority of recent empirical studies of interest. However, because of the tendency in most empirical work to focus on either individual *or* situational interest, it is evident that the relationship *between* the two constructs has not been thoroughly explored (Hidi & Berndorff 1998, Krapp 2002).

### **Individual and situation**

As a consequence of focusing on either situational or individual interest, previous research questions have not considered the ‘situated individual’. Sociocultural theory emphasises the need to consider the embedded nature of learning, in terms of the ways in which learners are both embedded in and constituted by cultural and historical processes (Renshaw 1999). Transactions between the individual and the environment enable the learner to develop and participate meaningfully in social activities. This necessarily shifts the focus of research questions towards consideration of the ways in which interest develops, and thus the processes of interaction between the individual and situational factors that enable learners to engage in culturally valued activities. Theoretically, on-going engagement in such activities of cultural value develops the identity of the learner (Wenger 1998). In order to explore the ways in which interest in specific objects and activities is a part of that identity, empirical research that extends beyond previous conceptualisations of situational and individual interest needs to be designed and conducted.

Methodologies used in studies that have clearly delineated situational and individual interest are not easily transferred to research conducted from a sociocultural perspective. Importantly, quantitative experiments and correlational studies have enabled researchers to establish links between interest and other aspects of learning, such as prior knowledge and depth of recall (e.g. Schiefele & Krapp 1996, Tobias

1994). Aspects of the classroom situation that enhance interest also have been identified (Bergin 1999). However, when sociocultural theory emphasises the transactions between the individual and the environment, quantitative approaches appear limited in their ability to capture the complexity and depth of interest creation and development.

### **Authentic contexts – personal meanings**

Previous studies of interest frequently have been conducted in both physical and social contexts designed especially for the purposes of research. An example is the study of Isaac, Sansone and Smith (1999), in which a combination of self-report questionnaires and analysis of video-taped interactions was used to examine the impact of social context on students' interest. The experimental nature of the study and the nature of the sample – first year psychology students who participated for course credit – limit the authenticity of the research, in that the tasks and interaction were not 'real life' activities for the participants. More specifically, the artificial and limited nature of the social context, and interaction through provision of trained 'confederates' to complete the problem-solving task, are problematic if personal meanings are to be explored. The study of interest as created through social activity should be in an authentic or 'real life' context, in which the relationships are not controlled solely by the researcher, and where the personal meanings are created by the participants in the context of on-going activities that have purpose in their broader life experiences. From a sociocultural perspective, interest is created in the context of the people with whom the learning experience is shared, the processes by which learning occurs and the perceived value and meaning of context, colleagues and processes. The situatedness of learning and motivation needs to be reflected in the design of future studies of interest, especially those focusing upon social activity in context. Sociocultural theories consider development in terms of the ways in which individuals engage in cultural activities and the authenticity of such activities is important if meanings and values are to be explored.

### **Process and outcome**

Social processes – including activities and use of cultural tools – are the focus of research from a sociocultural perspective (Renshaw 1999). This contrasts with more traditional psychological studies of interest, which have sought to measure interest in relation to other learning outcomes. A shift in focus from outcomes to processes also necessitates a change in research strategies. Qualitative approaches that employ longitudinal design and ethnographic strategies seek to more richly and insightfully describe processes and interaction (Hammersley & Atkinson 1995) and to enable researchers to consider 'how individuals can move through social space and how they live the constraints and positions in which they are located' (Skeggs 1999, p. 38). Such approaches are more suited to studies of social processes as researchers are able to

focus on phenomena over time and explore the origins, development and transformations of activities.

A sociocultural perspective more strongly emphasises developmental processes than traditional psychological perspectives (Renshaw 1999). Theorists such as Valsiner (1987, 1997a) and Rogoff (1998) describe processes by which development originates in social interactions which are internalised or appropriated by the individual. Methodologically, this implies that a socioculturally-based study of interest must be designed to consider the ways in which students are learning over time in relation to interaction in cultural contexts. This is different from many previous studies of interest in which data have been collected once or twice during the course of research solely through self-report measures, in a setting detached from the everyday activities of the research participants.

### **A possible alternative methodology – dynamic interaction and personal experiences**

Interest as a psychological construct needs to be explored in terms of the process of development and the ways in which the social and physical contexts for learning promote and constrain interest development. This increases the complexity beyond previous studies and thus different methodologies must be included in future research design. Unlike most previous studies, the present research project involved collaboration between the researcher and class teacher in creating learning units. Comprehensive researcher field notes were recorded and class activities video recorded and/or audio-taped to enable more detailed, ongoing analysis of classroom interaction. Reflections written by the students and class teacher about aspects of learning and teaching, as well as ongoing interviews with key informants, have provided further information about individuals' reactions and responses to class activities. A feature of the study design is methodological triangulation, which has been achieved through combination of an extended evaluation of participation in authentic activities (lasting six months) with individual follow-up interviews six and twelve months later. An enriched understanding of interest development is developing through this approach.

The data collected in this qualitative study are different in kind to most previous studies, and approaches to analysis thus also need to be carefully considered. The analytical framework that has emerged encompasses social, affective and dialogic processes in coding and categorisation of the data. In ongoing and emerging analysis, Valsiner's (1987, 1997a) extended theories of the zone of proximal development and canalisation are contributing to the interpretive lens through which the data are analysed, because of the way in which they embrace both the interpersonal and intrapersonal processes of development within the sociocultural environment of the learner.

### **Situating our research within current theoretical discourse**

Depending on their particular interest and aims, many sociocultural researchers have tended to focus on either social practices *or* individual development, although acknowledging them as interdependent. In both current studies, we are critically concerned with individual learning and development, within closely defined contexts which form part of the complexity of each individual's life experiences and construction of identity. As a consequence, two significant issues have emerged. Firstly, the way in which the individual is distinguished from the social world must be critically examined, and a number of leading sociocultural theoreticians are currently engaged in discussion concerning this relationship. Secondly, we must reflexively examine our own participation in each study, since we operate both as observers and actors: we must not only consider the narrative as it unfolds, but also the ways in which we, as individuals, both contribute to and interpret that narrative.

### **Issues we face and the road to resolution**

#### **Specifying and articulating context**

Although the increasing awareness of sociocultural theory has focused theoretical and methodological interest on context (e.g. Jarvela & Volet 2001, Turner & Meyer 2000), considerable debate has continued amongst researchers regarding its nature, function and status. On one hand, context is viewed as a source of factors which exert varying influence on the individual – the 'person-in-context' notion (Meyer & Turner 2002) – while on the other hand it is perceived as interdependent with the individual. Within the latter perspective, the precise nature of the relationship between individual and context is still the subject of much deliberation. Two significant dimensions of the debate revolve around the presence or absence of boundaries, and the subtleties which distinguish social influence approaches from those which are more established sociocultural approaches. These two issues are addressed in the following sections together with our contributions to the debate.

#### **Boundaries or not?**

The debate regarding boundaries is situated within the more established sociocultural approach, and is based on subtle differences in perspective resulting from divergence in the research aims of the main protagonists within the same family of theories. This debate has largely centred on the relative merits of the notions of *appropriation* and *internalisation/externalisation* in describing and modeling the interaction between social participation in ongoing contextualised situations, and individual actions, motives and developmental trajectories. On one side of the debate, Barbara Rogoff and her colleagues (Matusov 1998, Matusov & Rogoff 1995, Rogoff 1998) have argued in favour of appropriation, a term used to capture the unity of person and community. The notion of appropriation is used to transcend the delineation of boundaries between contexts and individual, which is consistent with Rogoff's and Matusov's

interest in the ways that social practices are maintained and evolve. On the other side of the debate is Jaan Valsiner (1997a, 1997b, 1998, 2001), whose primary focus is on individual development from the perspective of cultural psychology. Valsiner is the main proponent of the notion of internalisation/externalisation, a system used to describe the bi-directional, dynamic relationship between person and society. Unlike the proponents of appropriation, Valsiner maintains a sense of boundary between individual and social functioning through the use of internalisation/externalisation.

Proponents on both sides of the debate regard participation in communities of practice as central to understanding learning and development. According to Matusov (1998), the concept of participation essentially focuses on collaborative, joint activity through emphasising mutuality in communities of learners, rather than control by either educational institutions or isolated learners (Matusov & Rogoff 1995). As learners' development is inseparable from the guidance of companions and other aspects of whole events, the concept of participation is used to focus simultaneously on individual, interpersonal and cultural processes (Rogoff, Mistry, Goncu & Mosier 1993). Thus, the need to distinguish a boundary between individual and situation is apparently overcome and the notion of appropriation is supported. Matusov (1998) asserts that, in contrast, the use of the concept of internalisation implies the possibility of distinguishing what is individual or solo activity from that which is contextual and shared, therefore weakening the notion of 'mutual constitution' of the individual and context.

Carelli (1998) responds that Matusov's (1998) conceptualisation of internalisation as a unilateral transfer from outside-in is too simplistic, and that internalisation is rather 'the construction of an internal, individual plane of functioning that is intimately connected to the external, social functioning' (p. 357). Valsiner (1997b) contends that suggesting a fusion of person and social context removes the role of 'active, personal subjectivity' (p. 252) and denies the psychological autonomy of individuals that is interdependent with situated activity contexts. He acknowledges that internalisation and appropriation are parallel concepts, rather than opposites, and that what distinguishes one from the other is the implication of directionality. The internalisation/externalisation process conceptually includes both movement from the extrapersonal to the intrapersonal world and the reorganisation of the individual's relationship with the world (Valsiner 1997b), and the structure of total activity is described as 'inclusive separation of the participants and the field of participation' (Valsiner 1998, p. 353). As such, a sense of boundary between individual and situation is regarded as empirically useful and theoretically necessary for any account of human development (Valsiner 1997b). This boundary is represented as a zone in which internalisation/externalisation processes are 'intertwined' in present time and in which active, constructive personal meaning systems enable interaction between the social and personal domains.

The preceding discussion highlights the first issue or dilemma we face. We favour Valsiner's approach of inclusive separation because of its empirical usefulness and theoretical advantages in explaining development, and we agree that Matusov's criticisms of the internalisation/externalisation process are not convincing. However, we also believe that there is considerable merit in a framework articulated by Barbara Rogoff (1998) which utilises differential foregrounding of three planes of focus in describing the co-constitution of individuals and contexts. We have therefore attempted to resolve some of the perceived incompatibilities between their viewpoints, and our synthesis of their ideas is outlined in the following section. We believe that there are points at which both viewpoints are compatible, while other aspects remain irreconcilable for the present. Although it could be argued that we have adopted a pragmatic approach which is antithetical to theoretical rigour, we assert that our synthesis is realistic, legitimate and justifiable.

In common with Valsiner we believe that some form of boundary must exist between individual and context, since each individual participates uniquely in each situation, and the nature of the context is determined by the participation of specific individuals. The goals, processes and outcomes of collaborative activity are thus critically dependent on the identities of the participants, and change with different players. Further, inclusive separation is a powerful means to explain how individuals both contribute to, and learn from, collaborative activity which is mutually constituted by all pertinent parts of the field of participation. Matusov (1998) is unable to describe how the results of collaborative activity can be appropriated by the individual for later use in other situations, nor provide an adequate description of learning and development by individual participants in joint activity.

Although agreeing with Matusov in rejecting the internalisation metaphor, Rogoff (1998) has described a useful framework for considering individuals and contexts as co-constitutive and interdependent, and we argue that some conception of boundary is inherent in this model. Developed in the context of her exploration of participation in sociocultural practices, the model proposes differential foregrounding of aspects of a situation, in order to analyse them in detail without losing sight of the background. Three planes of focus are suggested – the personal, interpersonal and community/institutional, and it is in the articulation of these planes that we consider boundaries are implied. The personal plane focuses on how individuals change through their participation in an activity, and how such participation prepares them for subsequent engagement in associated activities. The interpersonal plane focuses on the ways in which activities are communicated and coordinated between individuals in order to facilitate or constrain particular types of participation, and the community plane focuses on institutional practices and cultural values which have developed over time. These planes are always present but it is useful to keep one at a time in the foreground,



with the others considered as background. Rogoff likens these planes to the interdependence of organs in a body. Individual organs can be studied by focusing on each one separately, but a full understanding of organ function cannot be inferred without reference to the whole body (Rogoff 1992). Highlighting or foregrounding one plane serves the purpose of focusing temporary attention on the contributions of that plane, but meaning is lost if the foregrounded plane is separated from its background. We argue that inclusive separation is congruent with Rogoff's planes of focus model, as there is clearly a distinction between the planes, which are nonetheless mutually constitutive. The ability to foreground and background different planes supports the notion that there is some form of boundary between them. This boundary is not clearly defined – it is 'fuzzy' in much the same way as Valsiner describes the boundary zone (Valsiner 1997b). Even the illustration chosen by Rogoff underlines the presence of distinctions within a co-constituted whole: each organ has a distinct role in the body, and its absence has a potentially profound impact on the overall functioning of the whole. Indeed, it may even be possible to explain the debate, at least to some extent, using Rogoff's planes. Rogoff and her colleagues are primarily concerned with social practices – their continuation and evolution – while Valsiner is more focused on describing individual development, albeit within a social view of learning and development.

In our analyses, the primary planes of focus are the personal and interpersonal. The interpersonal plane is the most accessible and tangible, and it is the plane in which personal meaning is communicated through verbal and non-verbal modes, however we are profoundly conscious of the co-existence of the backgrounded personal and institutional/community planes. In using this model, one dilemma we face is the extent to which we also focus on the backgrounded planes – how far to 'zoom in' on the individual and 'zoom out' to focus on the wider aspects of context. Each individual is located on a unique developmental trajectory, and it is the bringing together of multiple trajectories which constitutes the context. Thus context cannot be described without some focus on the individuals, but an excessive focus on this plane can obscure the processes occurring on the other two planes. Similarly, consideration of the social, cultural and historical situation is critical, but not at the expense of the particular nature of the learning environment which is created by the interactions of unique individuals. Thus while we are primarily concerned with the interpersonal plane, we must find a balance in the extent to which we focus on all three.

### **Revealing subtleties of social influence and sociocultural approaches**

Within the ranks of researchers who have embraced sociocultural theory, subtle distinctions nevertheless remain. We have argued that it is vital from a sociocultural perspective to consider the interdependence of individual and context, rather than portraying one as an influence on the other. This means extending beyond the recent



focus on contexts within the motivational literature, which has tended to adopt more of a social influence approach (Rogoff 1998) than a sociocultural one. For example, in considering the ways in which sociocultural and situated cognition theories have impacted upon motivational research, Jarvela (2001) asserts that ‘it has been recognised that motivation of individual learners is also influenced by social values and by the context in which the learning takes place’, with individual motivation ‘reflective of the social and cultural environment’ (p. 4). Jarvela clearly delineates between the individual, values and context, while also implying a unidirectional influence of social and cultural values and context upon the individual. In using words such as *reflective* and *influenced*, she implies that individual motivation originates and exists independently of the context. Volet (2001) claims that context can no longer be considered as a ‘vague background variable’ (p. 319), making her view apparently more consistent with sociocultural approaches, however, she focuses on the ways in which ‘individuals mutually influence each other’ and suggests that ‘the construction of motivational meanings reflects the individuals’ motivational beliefs, prior experience and subjective appraisals of the affordances of the current situation’ (p. 319). Thus individuals are regarded as *influencing* one another, rather than co-constructing understandings and motivation in dynamic transactions, and the construction of personal motivational meanings *reflects* the situation, rather than originating in it and being mutually dependent with it.

A social influence rather than an obviously sociocultural approach is also evident in recent conceptual change literature. In an appraisal of future research directions, Vosniadou (1999) comments that ‘a theory of conceptual change needs to provide a description of the internal representations and processes that go on during cognitive activity, but should also try to relate these internal representations to external, situational variables that influence them’ (p. 11). This choice of words seems to imply a unidirectional and somewhat mechanistic relationship, rather than a dynamic interplay between the personal and interpersonal (Rogoff 1998). In a similar vein, Halldén (1999) favours the definition that context is a frame ‘that surrounds the event being examined and provides resources for its appropriate interpretation’ (p. 63). In his account of the relationship between motivation and conceptual change, Pintrich (1999) refers to ‘classroom contextual factors’ and comments that ‘the development and activation of different goal orientations is assumed to be situated in the classroom context and influenced by features of the context’ (p. 35). For all three authors, context or situation appears as an *external* aspect, with *variables*, *features* or *resources* which *influence* events occurring within a *frame*.

By continuing to emphasise the ways in which context is detached from participant, and individuals are *influenced by* and *reflect* learning contexts, these *social influence* viewpoints contrast with the sociocultural perspectives of Valsiner (1998), Wells (1999) and Matusov and Rogoff (1995) in which individuals mutually constitute

contexts, rather than being influenced by or reflecting them. In considering conceptual change and interest from a sociocultural perspective, we need to be able to maintain a focus on interdependent aspects of the context by considering the *situated individual*, inclusively separated within the sociocultural milieu.

It is apparent to us that context cannot be regarded as static, but rather as dynamic and evolving, as people interact to create shared and personal meanings. Erickson and Shultz (1981) suggest that:

Contexts can be thought of as not simply *given* in the physical setting – kitchen, living room, sidewalk in front of drug store – nor in combinations of persons (two brothers, husband and wife, firemen). Rather, contexts are constituted by what people are doing and where and when they are doing it. As McDermott (1976) puts it succinctly, people in interaction become environments for each other. Ultimately, social contexts consist of mutually shared and ratified definitions of situations *and* in the social actions persons take on the basis of these definitions (p. 148).

The processes by which participants in social contexts arrive at ‘mutually shared and ratified definitions of situations’, and the social actions taken as a result, are clearly highly complex. The diverse perceptions and assumptions that participants bring with them to new situations thus need to be explored as important issues in our respective research projects.

### **Diverse perceptions, assumptions and ethical dilemmas**

In our roles as teachers, our classrooms are familiar territory. Many assumptions, behaviours and practices are taken for granted and rarely questioned, either by us or by our students. When, however, the classroom becomes the context for a research project, our roles become more complex and less well-defined, as *the teacher* doubles as *the researcher*. In considering the place of context in our research, we are conscious that our perceptions of context are determinants of our goals and actions, and that the same is true for our students. The complication is that *our* interpretations of *their* goals and actions are based on *our* perceptions of context. While there are benefits to having an intimate knowledge of context from personal experience, the challenge exists in seeing the familiar through new eyes (Coffey 1999). This challenge is shared by the students as they negotiate the multiple roles that the teacher/researcher will play. The potential hazard associated with a mismatch of interpretations is that inappropriate conclusions can be drawn from particular incidents, and unacknowledged assumptions about the nature of the activities being undertaken may colour the ways in which we construe both processes and outcomes. Studies of learning and motivation from a sociocultural perspective are increasingly facing such challenges as research is conducted in real-life classroom contexts.

In our roles as teacher-researchers, we also have become aware of potential dilemmas resulting from the contrasting and occasionally conflicting goals of the two roles, and of the fact that maintaining integrity in both is a balancing act. In the university study, *the teacher* came into potential conflict with *the researcher* when interviews were conducted close to examination times. Since students were preparing for a critical assessment, *the teacher* felt an obligation to challenge confused conceptual understanding, with the result that interviews could potentially have become 'coaching' sessions. For the *researcher*, however, this intervention could result in contamination of the data, since student responses would now be influenced by input from the *teacher*, and the data potentially less 'authentic'. Within the primary school study, the researcher was not the current class teacher, but had taught many of the students in previous years and appeared to be *perceived as a teacher*. At one point, a student revealed to the *researcher* that she intended to defy her teacher by not completing a class task. The student's expectation was that the *researcher* would act as a *teacher* and direct her to complete the task, or alternatively, inform the class teacher of her defiance. However, the *researcher* was attempting to create a more equal and informal relationship with the students than they may have previously experienced with teachers, to enable an honest sharing of perceptions and ideas during one-to-one interviews. At the same time, her previous status as a *teacher* at the school could not be denied, either by the researcher or the students, and during most observation lessons, the researcher would be approached by students for assistance.

We do not believe that the potential dilemmas were realised in either study to an extent that compromised our ability to engage in the dual roles of teachers and researchers, nor have we become aware of any critical underlying assumptions which we have unjustifiably discounted or ignored. Indeed, one of the advantages of collaboration between the authors has been the opportunity for evaluation of each study by an informed outsider and, along with Roth (2001) and others, we would encourage researchers with comparable dilemmas to consider a similar approach.

## Conclusion

In this article we have examined two constructs from contemporary educational psychology, conceptual change and interest in learning, from the perspective of sociocultural theories. Our analysis indicates that important changes in theoretical conceptualisation and methodological approach are necessary when these constructs are considered from this perspective. Furthermore, significant issues concerning the individual and social context are raised for us in developing our research, and have required us to carefully weigh competing sociocultural analyses on the topic. We have critiqued contemporary accounts of the relationship between the individual and the

social in the pertinent literatures and have attempted to resolve aspects of the recent sociocultural debate on the issue between Valsiner (1997a, 1997b) and Rogoff and Matusov (Matusov & Rogoff 1995, Matusov 1998). Finally, we have examined issues and dilemmas arising from our roles as teacher-researchers in our projects and consider that as sociocultural and educational psychology researchers increasingly conduct their research in actual classroom settings they will need to consider ways of dealing with these potential conflicts.

## References

- Alexander, P. A. and T. L. Jetton (1996) The role of importance and interest in the processing of text, *Educational Psychology Review*, vol. 8, pp. 89-121.
- Anderman, L. H. and E. M. Anderman (2000) Considering contexts in educational psychology: Introduction to the special issue, *Educational Psychologist*, vol. 35, pp. 67-68.
- Bergin, D. A. (1999) Influences on classroom interest, *Educational Psychologist*, vol. 34, pp. 87-98.
- Blumenfeld, P. C. and L. Anderson (1996) Editor's comments, *Educational Psychologist*, vol. 31, pp. 1-4.
- Brown, A. L. (1997) Transforming schools into communities of thinking and learning about serious matters, *American Psychologist*, vol. 52, pp. 399-413.
- Carelli, M. G. (1998) Internalization, participation and ethnocentrism, *Human Development*, vol. 41, pp. 355-359.
- Chaiklin, S. (2003) The zone of proximal development in Vygotsky's analysis of learning and instruction, in A. Kozulin, B. Gindis, V. S. Ageyev and S. M. Miller, eds., *Vygotsky's Educational Theory in Cultural Context*, Cambridge University Press, Cambridge.
- Chi, M. T. H., J. D. Slotta and N. de Leeuw (1994) From things to processes: A theory of conceptual change for learning science concepts, *Learning and Instruction*, vol. 4, pp. 27-43.
- Cobern, W. W. (1996) Worldview theory and conceptual change in science education, *Science Education*, vol. 80, pp. 579-610.
- Coffey, A. (1999) *The ethnographic self: Fieldwork and the representation of identity*, Sage, London.
- Dekkers, P. J. J. M. and G. D. Thijs (1998) Making productive use of students' initial conceptions in developing the concept of force, *Science Education*, vol. 82, pp. 31-51.
- Demastes, S. S., R. G. Good and P. Peebles (1996) Patterns of conceptual change in evolution, *Journal of Research in Science Teaching*, vol. 33, pp. 407-431.
- Driver, R., H. Asoko, J. Leach, E. Mortimer and P. Scott (1994) Constructing scientific knowledge in the classroom, *Educational Researcher*, vol. 23, pp. 5-12.

- Erickson, F. and J. Shultz (1981) When is a context?, in J.L. Green and C. Wallat, eds., *Ethnography and Language in Educational Settings*, Ablex Publishing, Norwood, NJ.
- Garnett, P. J., P.J. Garnett and M. W. Hackling (1995) Students' alternative conceptions in chemistry: A review of research and implications for teaching and learning, *Studies in Science Education*, vol. 25, pp. 69-95.
- Gil-Perez, D. and J. Carrascosa (1990) What to do about science "misconceptions", *Science Education*, vol. 74, pp. 531-540.
- Hallden, O. (1999) Conceptual change and contextualization, in W. Schnotz, S. Vosniadou and M. Carretero, eds., *New Perspectives on Conceptual Change*, Elsevier Science, Oxford.
- Hammersley, M. and P. Atkinson (1995) *Ethnography: Principles in Practice* (2nd ed.), Routledge, London.
- Hidi, S. and D. Berndorff (1998) Situational interest and learning, in L. Hoffman, A. Krapp, K. A. Renninger and J. Baumert, eds., *Interest and Learning: Proceedings of the Seeon Conference on Interest and Gender*, IPN, Kiel, Germany.
- Hoffman, L., A. Krapp, K. A. Renninger, and J. Baumert, eds. (1998) *Interest and Learning: Proceedings of the Seeon Conference on Interest and Gender*, IPN, Kiel, Germany.
- Isaac, J. D., C. Sansone J. L. and Smith (1999) Other people as a source of interest in an activity, *Journal of Experimental Social Psychology*, vol. 35, pp. 239-265.
- Jacobs, G. (1989) Word usage misconceptions among first-year university physics students, *International Journal of Science Education*, vol. 11, pp. 395-399.
- Jarvela, S. (2001) Shifting research on motivation and cognition to an integrated approach on learning and motivation in context, in S. Jarvela and S. Volet, eds., *Motivation in Learning Contexts: Theoretical Advances and Methodological Implications*, Pergamon and EARLI, Oxford.
- Krapp, A. (2002) Structural and dynamic aspects of interest development: Theoretical considerations from an ontogenetic perspective, *Learning and Instruction*, vol. 12, pp. 383-409.
- Krapp, A., S. Hidi and K. A. Renninger (1992) Interest, learning and development, in K. A. Renninger, S. Hidi and A. Krapp, eds., *The Role of Interest in Learning and Development*, Lawrence Erlbaum Associates, Hillsdale, N.J.
- Krapp, A., K. A. Renninger, and L. Hoffman (1998) Some thoughts about the development of a unifying framework for the study of individual interest, in L. Hoffman, A. Krapp, K. A. Renninger and J. Baumert, eds., *Interest and Learning: Proceedings of the Seeon Conference on Interest and Gender*, IPN, Kiel, Germany.
- Lave, J. and E. Wenger (1991) *Situated learning: Legitimate peripheral participation*, Cambridge University Press, Cambridge.
- Linder, C.J. (1993) A challenge to conceptual change, *Science Education*, vol. 77, 293-300.

- Matusov, E. (1998) When solo activity is not privileged: Participation and internalization models of development, *Human Development*, vol. 41, pp. 326-349.
- Matusov, E. and B. Rogoff (1995) Evidence of development from people's participation in communities of learners, in J. Falk and L. Dierking, eds., *Public Institutions for Personal Learning: Establishing a Research Agenda*, American Association of Museums, Washington.
- Meyer, D. K. and J. C. Turner (2002) Discovering emotion in classroom motivation research, *Educational Psychologist*, vol. 37, pp. 107-114.
- Mortimer, E. F. (1995) Conceptual change or conceptual profile change? *Science and Education*, vol. 4, pp. 267-285
- Pintrich, P. R. (1999) Motivational beliefs as resources for and constraints on conceptual change, in W. Schnotz, S. Vosniadou and M. Carretero, eds., *New Perspectives on Conceptual Change*, Elsevier Science, Oxford.
- Pintrich, P. R., R. W. Marx and R. A. Boyle (1993) Beyond cold conceptual change: The role of motivational beliefs and classroom contextual factors in the process of conceptual change, *Review of Educational Research*, vol. 63, pp. 167-199.
- Posner, G. J., K. A. Strike, P. W. Hewson and W. A. Gertzog (1982) Accommodation of a scientific conception: Towards a theory of conceptual change, *Science Education*, vol. 66, pp. 211-227.
- Pressick-Kilborn, K. and R. Walker (2002) The social construction of interest in a learning community, in D. McNerney and S. Van Etten, eds., *Research on sociocultural influences on motivation and learning*, Information Age Publishing, Greenwich, CT.
- Renninger, K. A. (2000) Individual interest and its implications for understanding intrinsic motivation, in C. Sansone and J. M. Harackiewicz, eds. *Intrinsic and Extrinsic Motivation: The Search for Optimal Motivation and Performance*, Academic Press, San Diego.
- Renshaw, P. (1999) Schools, communities and pedagogies: Diverse possibilities. Symposium paper presented at the Annual conference of the Australian Association for Research in Education, Melbourne, Australia.
- Rogoff, B. (1992) Three ways to relate person and culture: Thoughts sparked by Valsiner's review of *Apprenticeship in Thinking*, *Human Development*, vol. 35, pp. 316-320.
- Rogoff, B. (1998) Cognition as a collaborative process, in W. Damon, ed.-in-chief, D. Kuhn and R. Siegler, eds., *Handbook of Child Psychology (Vol. 2)* (5th ed.), Wiley, New York.
- Rogoff, B., J. Mistry, A. Goncu and C. Mosier (1993) Guided participation in cultural activity by toddlers and caregivers, *Monographs of the Society for Research in Child Development*, vol. 58 (8), serial no. 236.
- Roth, W. (2001) Situating cognition, *The Journal of the Learning Sciences*, vol. 10, pp. 27-61.



- Sainsbury, E. and R. Walker (2000) Upper secondary school students' concepts of acids and bases. Paper presented at the Annual Meeting of the Australian Association for Research in Education, The University of Sydney, Australia.
- Sainsbury, E. and R. Walker (2002) Meaning-making in context: Discourse and conceptual change from a sociocultural perspective. Paper presented at the Fifth Congress of the International Society for Cultural Research and Activity Theory, Vrije Universiteit Amsterdam, The Netherlands.
- Säljö, R. (1999) Concepts, cognition and discourse: From mental structures to discursive tools, in W. Schnotz, S. Vosniadou and M. Carretero, eds., *New Perspectives on Conceptual Change*, Elsevier Science, Oxford.
- Schiefele, U. (1991) Interest, learning and motivation, *Educational Psychologist*, vol. 26, pp. 299-323.
- Schiefele, U. (1998) Individual interest and learning - what we know and what we don't know, in L. Hoffman, A. Krapp, K.A. Renninger and J. Baumert, eds., *Interest and Learning: Proceedings of the Seeon Conference on Interest and Gender*, IPN, Kiel, Germany.
- Schiefele, U. and A. Krapp (1996) Topic interest and free recall of expository text, *Learning and Individual Differences*, vol. 8, pp. 141-160.
- Skeggs, B. (1999) Seeing differently: Ethnography and explanatory power, *Australian Educational Researcher*, vol. 26, pp. 33-53.
- Tobias, S. (1994) Interest, prior knowledge and learning, *Review of Educational Research*, vol. 64, pp. 37-54.
- Turner, J. C. & Meyer, D. K. (2000) Studying and understanding the instructional contexts of classrooms: Using our past to forge our future, *Educational Psychologist*, vol. 35, pp. 69-85.
- Valsiner, J. (1987) *Culture and the development of children's action*, John Wiley & Sons, Chichester.
- Valsiner, J. (1997a) *Culture and the Development of Children's Action: A Theory of Human Development* (2nd ed.), John Wiley & Sons, New York.
- Valsiner, J. (1997b) Magical phrases, human development, and psychological ontology, in B. Cox and C. Lightfoot, eds., *Sociogenetic Perspectives on Internalization*, Erlbaum, Mahwah, N.J.
- Valsiner, J. (1998) Dualisms displaced: From crusades to analytic distinctions, *Human Development*, vol. 41, pp. 350-354.
- Valsiner, J. (2001) *Comparative Study of Human Cultural Development*, Fundacion Infancia y Aprendizaje, Madrid.
- Volet, S. (2001) Emerging trends in recent research on motivation in learning contexts, in S. Jarvela and S. Volet, eds., *Motivation in Learning Contexts: Theoretical Advances and Methodological Implications*, Pergamon and EARLI, Oxford.



- Vosniadou, S. (1999) Conceptual change research: State of the art and future directions, in W. Schnotz, S. Vosniadou and M. Carretero, eds., *New Perspectives on Conceptual Change*, Elsevier Science, Oxford.
- Walker, R. and R. L. Debus (2002) Educational psychology: Advances in learning, cognition and motivation, *Change: Transformations in Education*, vol. 5, pp. 1-25.
- Walker, R., K. Pressick-Kilborn, L. Arnold and E. Sainsbury (2004) Investigating motivation in context: Developing sociocultural perspectives, *European Psychologist*, vol. 9, no. 4, pp. 245–256.
- Wells, G. (1998) Dialogue and the development of the agentive individual: An educational perspective. Paper presented at the Fourth Congress of the International Society for Cultural Research and Activity Theory, Aarhus University, Denmark.
- Wells, G. (1999) *Dialogic inquiry: Towards a sociocultural practice and theory of education*, Cambridge University Press, New York.
- Wenger, E. (1998) *Communities of Practice: Learning, Meaning and Identity*, Cambridge University Press, Cambridge.

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