The Psychology of Mathematics Education

A Psychoanalytic Displacement

Tony Brown (Ed.)

The Psychology of Mathematics Education

NEW DIRECTIONS IN MATHEMATICS AND SCIENCE EDUCATION
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Scope

Mathematics and science education are in a state of change. Received models of teaching, curriculum, and researching in the two fields are adopting and developing new ways of thinking about how people of all ages know, learn, and develop. The recent literature in both fields includes contributions focusing on issues and using theoretical frames that were unthinkable a decade ago. For example, we see an increase in the use of conceptual and methodological tools from anthropology and semiotics to understand how different forms of knowledge are interconnected, how students learn, how textbooks are written, etcetera. Science and mathematics educators also have turned to issues such as identity and emotion as salient to the way in which people of all ages display and develop knowledge and skills. And they use dialectical or phenomenological approaches to answer ever arising questions about learning and development in science and mathematics.

The purpose of this series is to encourage the publication of books that are close to the cutting edge of both fields. The series aims at becoming a leader in providing refreshing and bold new work—rather than out-of-date reproductions of past states of the art—shaping both fields more than reproducing them, thereby closing the traditional gap that exists between journal articles and books in terms of their salience about what is new. The series is intended not only to foster books concerned with knowing, learning, and teaching in school but also with doing and learning mathematics and science across the whole lifespan (e.g., science in kindergarten; mathematics at work); and it is to be a vehicle for publishing books that fall between the two domains—such as when scientists learn about graphs and graphing as part of their work.

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Printed on acid-free paper

Dedicated to Dick Tahta, with love.

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TONY BROWN (MANCHESTER)

INTRODUCTION

Mathematics education emerged as a research field perhaps some forty years ago, centred on a marriage of mathematics with psychology. Figures such as Skemp (1971) in the UK, for example, constructed a discipline built around a conception of individual cognitions confronting mathematical phenomena. This form of psychology drawing on Piaget's work had congruency with the work of a group of émigré European psychologists relocating in the USA shortly after the Second World War. Ego psychology, as the movement had been called, had grand ambitions in terms of making lives better. These ambitions were noted and embraced by the US government who took up the ideas within their mode of governance as, meanwhile, private enterprise drew on psychoanalysis in the field of public relations, in which Freud's son in law Edward Bernays was a prominent figure. The individualistic conception of psychology based on notions of the normal human being became enshrined in public life, and maintains a lucrative lifestyle in mainstream American ideology.

The marriage became stronger with the *International Group on the Psychology of Mathematics Education* (PME) forming in the seventies to become a leading international annual meeting for mathematics educators. However, throughout the nineties various other associations emerged such as with constructivist, sociological, anthropological and cognitive science perspectives. Whilst a symbolic attachment privileging psychology had been maintained in PME, divorce proceedings reached a climax at the 2005 meeting in Melbourne of that group. An overwhelming vote proposed by one of the authors in this book removed from the group's constitution the need to consult psychologists in preference to other thinkers. A group of older members had sought to retain earlier traditions but whilst the name of the organisation was preserved in the name of continuity, the stirrings of new blood had ensured that more polygamous arrangements with intellectual disciplines were to be envisaged and acted upon. The recalcitrant child had retained its name despite not living up to its parents' hopes and aspirations, upon which they had conceived that name.

At a rather smaller meeting at the same conference two authors each with a chapter in this book presented a joint paper on the psychoanalyst Jacques Lacan (e.g. Lacan, 2006). It concerned the emotional fall out resulting from a mathematical learning experience. It spoke about psychology, but a psychology understood more through relations between people. It was a form of resistance to the conceptions of psychology that had prevailed within mathematics education research. The conception of the human was also rather different to that envisaged

in the politically centred orientation of the *Mathematics Education and Society* conference, which had met up the coast the week before, a group whose co-founder is an author in this book. The paper proposed a plan to rethink psychology through a psychoanalytic frame. The emphasis on psychoanalysis as an extension of psychology was in fact a return to Sigmund Freud's wider theories prior to ego psychology's reductionism in the name of tempered societal reform. And the paper's emphasis on Lacan marked a new choice with regard to the alternative trajectories implied by Freud's aspirations. For Lacan had set himself in opposition to the ego psychology school from the outset. The paper itself was generally well received. There was, however, some disquiet in relation to its depiction of the notion of the *unconscious* central to the work of both Freud and Lacan. The unconscious was an ever-present phenomenon in such work but, according to Freud, this was like an iceberg making only a small part of itself visible. Two responses from the audience questioned the ontological status of the unconscious. Firstly, there was direct enquiry as to whether we could assume the existence of the unconscious. Secondly, the authors were quizzed as to whether the notion would stand up to empirical enquiry. How might one respond to such questions? If the unconscious does indeed exist, how does it? But it became clear that this line of enquiry presupposed a mode of existence that was also contingent on certain assumptions. Empiricism, as commonly understood within research enquiry, defines a particular way of looking associated with specific processes of validation. In an assessment of the task of psychoanalysis the Marxist philosopher Althusser (1971) suggested that for a science to be a legitimate science, it needs to have an object. For Freudian and Lacanian psychoanalysis the object is the unconscious, where for Lacan the unconscious is to the human subject what the mind is to brain. Yet this throws in to the ring some difficulties as regards whether we believe in the unconscious or not. To believe the work of these two thinkers, that assumption is necessary. But even within those modes of enquiry we might similarly ask questions as to psychology's status as a science given that that too rests on the assumption of an object, namely the mind. The mind is a notion assumed by the apparatus of psychology and held in place by that very apparatus. Yet, the notion of the mind is a cultural construction derived from the 'brute facts about how the stuff between our ears is related to what we think and feel' (Brian Greer, in conversation) and so historically situated (Foucault, 1989; Hacking, 2002). Mind is less prominent as a notion in some cultures and not a tangible entity in any clear way. It can be approached from many directions. And this resistance to immediate encapsulation puts it in a similar boat to the unconscious as regards its ontological status. The two aspirant sciences then, cognitive psychology and psychoanalysis, each require ontological assumptions relating to their objects. That is, there is a need to *believe* in them one way or another.

In short, the logic of the psyche does not need to be understood in cognitive terms. This positively conceived world would be *imaginary* in Lacan's terms, a construct within a specific reality frame. Psychology has been subject to much recent criticism emanating from within its own ranks as a result of its perceived restrictions that understand humans against specific conceptions of what it is to be human (e.g. Parker, 2007). By surveying some contemporary work in social theory

and philosophy we would encounter what might at first seem a surprising re-conception of psychology impacting on how we understand social relations. Such work (e.g. Badiou, 2002; Žižek, 2006, 2008a, 2008b) draws on contemporary psychoanalysis in providing an account of how humans aggregate within their social functioning. Humans are seen as relational beings that cannot be seen as being otherwise. Moving from a focus on psychology to one on subjectivity, where the psychological is redistributed, goes with an assumption that individuals are defined differentially by their relations to other people, rather than as entities in themselves.

At root psychoanalytical thinking is predicated on a reality centred on two people talking in a doctor-client relation for the benefit of the client. This benefit however can be understood in various ways. Freud's work passed through many phases and his influence is diverse, spanning conflicting interpretations. Whilst originally motivated by activating neurological shifts in his patients his legacy might be better understood in retrospect in terms of enabling patients to reassess their pasts with view to opening up and making visible alternative paths for the future. For Freud, a central concept was that of *ego*. Nevertheless, Freud's work developed over some fifty years and the way in which Freud deployed such key terms evolved through successive meanings. The notion of ego has been the basis of some especially contentious debate. Without doubt Freud was ambivalent on this issue and some of his later work left it unresolved. In his earlier work (e.g. Freud, 1923) Freud understood the ego as a biological entity and his paper established a cartographic representation of the human mind comprising *ego*, *id* and *super ego*. In this conception of the ego, psychoanalytical treatment was understood in terms of developing the ego to increasingly occupy the territory governed by the id. This was announced by the slogan: *Where the id was the ego shall be*. It was this version of the ego that was embraced by the ego psychology school and has gained an image of seeing psychoanalytic therapy in terms of calming the ego to be more conformist. In this school the ego was understood as a biological entity to be strengthened in line with a supposed model of good citizenship. Freud often saw psychoanalytic consultancies as being about achieving a cure, by helping the subject to overcome distortions in her understanding of life. The psychologist purported to know what to do to achieve this result. At various other points, including some of Freud's very latest work, the ego was understood very differently. It was understood as a relational entity produced through the subject's identification with other people and the world around. It was this version of the ego that has been developed by Lacan.

Lacan was without doubt the most famous of those who followed in Freud's path and promoted the shift from bio-scientific to narrative emphases in interpreting Freud's work. The task for Lacan was not to remove supposed distortions in speech in the style of the Freuds and later Habermas but rather to learn from speech to see what it revealed. Specifically, such speech was scanned for symptoms of what Lacan called 'the truth of desire'. Lacan (1990) famously declared that 'I always speak the truth' meaning that whatever I say works towards revealing or presenting myself, including aspects of self of which I may not be aware. For Lacan the ego is both formative and informative but not something that

you would want to strengthen. This was a point of contention between Lacan and the American ego psychology school that saw psychoanalysis in terms of strengthening the ego to placate disruptive tendencies, that is, tendencies that disrupt smooth running according to the governing ideology. The insistence on any image brings with it a violence to ensure conformity. For Lacan the ego is an inauthentic agency derived from a delusional stance in which the human subject has an image of his or her self. Here the psychoanalyst does not purport to know the best outcome. As such the ego (or in Lacan's terms 'Imaginary identification') is something to be challenged. Lacanian therapy is targeted instead at locating the truth of the patient's desire. That is, treatment is seen in terms of understanding how the unconscious functions in conditioning the patient's expressed demands. Lacan suggests that when the analysand says 'I', the analyst should be mistrustful. That is, the image of self that is portrayed needs to be inspected to discover how it is a distortion of the desires being activated.

The psychological basis of so much mathematics education research in the tradition of the *Psychology of Mathematics Education* organisation is centred on individual teachers interacting with individual classes or individual pupils. Lacan's alternative is not sociological in that we work from a holistic conception of society that shapes individuals within it. Lacan's relational ego (sometimes called the narcissistic ego) is a result of fantasy. This understanding of fantasy however does not have negative connotations. Rather, our understanding of reality is seen as being structured through such fantasies. Fantasies might be seen as the filters through which we inspect reality; a reality that in a sense cannot be perceived directly, and in some other senses is not there at all except through its manifestation in the fantasies of individuals. In this cartography we would not have a standalone biological human confronting an independent object. For analytical purposes the space would be carved up differently. There would be no overarching perspective from an independent arbiter. The analysis would be centred on the human subject's supposed relation to the object and the world he or she crafts around it. Rather than a self-contained ego 'that is a biological result of the interaction of psychical and social relations' that can be objectively described, the ego envisaged 'depends on the subject's relations with others' and 'is governed by fantasy, and modes of identification, and introjection'. (Grosz, 1990, p. 31) Just as Badiou (2002) has argued that ethics and the rights accorded to Man are very much a function of how we understand 'Man' and, more particularly, whom we include in 'Man', Lacan resists the countenance of specific images to which we should aspire.

THE RESEARCH TASK

This book explores mathematics education from the point of view of how the learner, teacher and researcher are understood. It seeks to better understand how the boundaries of this domain are shifting. Yet, the formation of this domain, of course, depends on how authors in that domain understand their field and their audience. Their writing is shaped as a result of their own jockeying for acceptance within that domain. That is, those who feel a need to be part of that domain, shape

the domain, partly in their own image. Their writings might be seen as requests to be included. Laclau (2005, p. 53) insists that group formations derive from libidinal motivations; they result from excitements for individuals to do with feelings of being a part of or apart from current trends, fashions, innovations, transgressions or taboos. Individuals find themselves identifying or not with a range of alternative modes of life, according to the particular social needs that they feel, the form of alignment or non-alignment they wish to pursue, or the particular ambitions that they set themselves. In a field like mathematics education research there are tightly stratified arrangements for contributions to be received and disseminated. Research orthodoxy in mathematics education is discussed in Valero & Zevenbergen (2004). Through peer review processes, a few major journals exert significant influence on the themes to be explored within the domain, what counts as important, what is seen as interesting and what needs to be cited for effective positioning to have been achieved. Meanwhile, local professional circumstances, funding provision and personal preferences all have an impact on the types of research carried out. And it is against these parameters that individual authors offer their contributions and become who they are with respect to the domain. Yet research preferences create the analytical frames we use, which in turn create the objects we research; objects that evolve whether we acknowledge this evolution or not. And as such classroom activities observed within research enterprises and notions like 'learners', 'teachers' and 'mathematics' cannot escape such filtering especially those selected for specific analytical purposes. The activities cannot be seen independently of the analytical lens brought to them by the researchers. And such lenses are predicated on the matrix of ideologies underpinning our actions, governed by trends of which they are not always aware.

In the book that follows all of the authors are teachers of mathematics as are all of the teachers they describe. Yet there has been no editorial insistence that the specifically mathematical elements of their stories be presented. The attempt is to portray the life around mathematics teaching, in many cases well beyond the content of that teaching. This policy is deliberate in that the book sees itself as resisting models of teaching mathematics that presuppose the centrality of certain facets, whether those facets be the centrality of interactions or specific understandings of mathematical knowledge. As one of the chapters declares, with mathematics we occupy a realm that severely restricts the language that we are able to use, yet that very restriction produces specific forms of life that provide the central theme of this book.

Psychoanalysis is not entirely new to the field of education. Britzman (1998, 2003) has used the work of Anna Freud and Melanie Klein to investigate problematical and ambivalent aspects of teaching. Meanwhile, Pitt and Britzman (2003, p. 756) have argued that a growing body of psychoanalytic educational research, through its emphasis on concepts such as the unconscious, phantasy, affect and sexuality, has worked 'to unseat the authorial capabilities of expression to account exhaustively for qualities of experience, to view history as a causal process, and to separate reality from phantasy'. Henriques, Hollway, Urwin, Venn & Walkerdine (1984), Felman (1987) and others have taken the work of Lacan to explore issues of pedagogy and learning. The authors in a book edited by Todd

(1997) have discussed the place of desire and fantasy in teaching and learning. Other authors broaching this territory include: Appel (1996), Jagodzinski (1996, 2001), Pitt (1998), England & Brown (2001), Atkinson (2002, 2004), Brown & England (2004; 2005), Bradford & Brown (2005) and Brown, Atkinson & England (2006), Brown, 2008a. In mathematics education a special issue of *For the Learning of Mathematics* did much to initiate interest in this area, featuring work by authors in this book (e.g. Breen, 1993; Brown, Hardy & Wilson, 1993; Tahta, 1993a/b). In my own work on two UK government funded studies I used a psychoanalytical filter to consider how primary teachers learn to include mathematics and its teaching within their professional work (Brown & McNamara, 2005). More recently I have published two papers in *Educational Studies in Mathematics* (ESM), one explicitly considering Lacan in relation to mathematics education (Brown 2008b) and another considering how some papers in mathematics education research produce conceptions of psychology (Brown, 2008c).

Significantly, however, within mathematics education research more generally, it is Piaget and Vygotsky that continue to have considerable influence on how we understand the psychology of learning. There has been much discussion about whether we should privilege the individual cognitive psychology of Piaget or more socially oriented models such as Vygotsky's. That is, do we conceptualise the task of mathematics teaching to activate and transform the minds of children, which are assumed to be responsive to such external agitation, or do we suppose that individuals can only be understood as integral and amenable to more collective conceptions of who humans are and how they develop? I have argued more fully in one of the ESM papers how the psychoanalytic theory of Lacan provides a radical contemporary alternative to these two thinkers in the context of mathematics education (Brown, 2008b). That paper also provides an introduction to Lacan's thinking that may assist readers of this book, where other authors draw on Lacan's work. (See also Brown, 2008a, which provides a Lacanian account of teacher reflective research, whilst Homer, 2005 provides a more general introduction to Lacan. Meanwhile, Baldino & Cabral (2005) provides a rare example of a Lacanian analysis of mathematical learning). To briefly summarise some relevant aspects of the ESM paper: Lacan objected to Piaget's separation of the individual and the social and his assertion of an individual child passing through successive stages, which, he suggests, neglects the cultural dependency of the child's constructions. For Lacan, any attempt to synthesise a supposed individual's activity in a multitude of discursive networks seemed flawed. Piaget's emphasis on ego-centred analysis of learning underplayed the child's responsiveness to external demands. Lacan believed that the child is always responding to what the child perceives to be a demand to fit in. Walkerdine (1988) argued that the concrete mathematical objects of Piaget's analysis were necessarily implicated in the child's conception of social relations. Whilst Piaget (e.g. 1965) centred his approach on a conception of individual cognition, Walkerdine contrarily posited both 'student' and 'mathematics' as being constructed in discourse. That is 'students', 'mathematics' and 'teachers' are understood through specific constructions of the world. They are not things in themselves. I have discussed this point in detail in

relation to mathematics education reports (Brown, 2008c). Vygotsky (1986, pp. 12-57), meanwhile, shared some of Lacan's objections to Piaget, such as, how minds are social from the outset, on how children are differentiated from adults. Yet Vygotsky's (e.g. 1978, p. 36) encapsulation of the child posits an intentional being with essentialist characteristics. His work has had a longer-term influence on some major thinkers promoting a more culturally oriented conception of psychology, where mind is co-constructed and distributed, an agenda compatible with Lacan's. Such thought has extended its hand to the cultural psychology/ activity theory of Cole (e.g. Roth & Lee, 2004) and into situated cognition (e.g. Lave & Wenger, 1991; Cobb & Bowers, 1999; Graven, 2004). Cole (1996. p. 108), a student of Vygotsky's colleague Luria, argues that the structure and development of human psychological processes emerge through culturally mediated, historically developing, practical activity. The objects created in this structure reflect and define the human's sense of self and her relation to the world. As an example from a mathematics classroom, Radford (2006, p. 7) argues how a wooden ruler, a number line and mathematical signs on a piece of paper can all be seen as artefacts, which '*mediate and materialise* thinking'. Blanton, Westbrook & Carter, 2005 and Goos, 2005 also analyse mathematics classrooms through such apparatus. Lacan and Vygotsky would agree on much of this but differ in their understanding of how humans relate to this symbolic mediation. Lacan claims that humans feed off the linguistic apparatus that surrounds them but at the same time they are alienated from this apparatus, it never quite fits their sense of reality, and sits ill with their sense of self. Such apparatus regulates humans and produces emotional responses (*jouissance*) around this regulation. Whilst Vygotsky's (1986, pp. 174-208) psychological notion of *Zone of Proximal Development* attends to the localised case of children trying to learn from adults, Lacan's assertion of humans being alienated from language is built into their very constitution as subjects. Emerson (1983, p. 256) suggests that for Vygotsky, 'the child's realization of his separateness from society is not a crisis; after all, his environment provides both the form and content of his personality. From the start, dialogue reinforces the child's grasp on reality, as evidenced by the predominantly social and extraverted nature of his earliest egocentric speech. For Lacan, on the contrary, dialogue seems to function as *the* alienating experience'. Lacan's model of child development pivots on the notional point at which the child identifies with an image outside of herself (such as a mirror image) and says 'That's me'. And the opposition this creates between the 'me' and the 'I' results in a 'permanent hunger' (ibid) to close this gap. As Emerson continues (ibid): 'The child is released from this alienating image only through discovering himself as subject, which occurs with language', a language steeped in cultural traditions. That is, the only way out of the restrictive caricature of self is to accept the turbulence of participation in discursive activity. Meanwhile Bibby (in this volume) argues that the 'seductive imagery conjured by Vygotsky's metaphor of the 'zone of proximal development' leaves hanging the nature of the zone and obscures the space it occupies, it allows us to ignore the difficulties and resistances which the learner will encounter and develop'. In summary: Piaget supposes progression through a sequence of predetermined stages, neglecting the social dimension; Neo-Vygotskian theory psychological

supposes unproblematised engagement with the tools of society. My ESM papers also sought to engage with a group of mathematics education authors (e.g. Ongstad, 2006, Morgan, 2006; Radford, 2006) contemplating subjectivity and signification from a semiotic perspective in an ESM Special Issue (Saenz Ludlow & Presmeg, 2006).

The traditional realm of mathematics education researchers has been anchored theoretically by such educational psychology and also the philosophy of mathematics (e.g. Ernest, 1991), with work targeted on improving teaching techniques at a local interactive level rather than seeing the task so much in terms of socio-economic factors or policy setting. As such the field is not especially experienced in responding to alternative social paradigms. A survey by Lerman, Xu and Tsatsaroni (2002) of articles in ESM since 1990, featuring other theoretical fields, depicts a situation in which few alternative theories have sustained interest. The chief exception would be constructivism in its many guises but in forms primarily exclusive to mathematics education (e.g. von Glasersfeld, 1991, 1995; Ernest, 1998). There have also been some studies building on the sociology of Bourdieu and Bernstein, including some specifically examining school mathematics texts as cultural products (e.g. Dowling, 1998; Cooper & Dunne, 1999; Morgan, 2002). Such moves have characterised the major challenges to cognitive perspectives. There has, meanwhile, been a light sprinkling of reference to other contemporary theory such as post-structuralism and hermeneutics (e.g. Walkerdine, 1988; Brown, 2001; Walshaw, 2004) and feminism (e.g. Burton, 1995). Yet the influence of such alternative models is less evident than in the broader field of education. Bartolino Bussi & Bazzini (2003) provide a rare recent discussion of how mathematics education research might reach out to other social scientific fields. More recently Radford (in press) has sought to build a substantial conception of culture around school mathematical activity.

In mathematics education research we are dealing with both individuals and social groups and consequently we require a variety of apparatus that enable us to span variously conceived domains. The choice of apparatus depends on the task being addressed, whether that is about trying to support individual teachers or pupils, or perhaps alternatively trying to design and implement a policy. Mathematics education researchers can define their audience in a variety of ways, and so understand the dissemination of their work according to this definition of audience. For example, the policy level task of improving particular mathematical capabilities for specific populations of students requires way of thinking to an individual teacher assessing her own personal capabilities for work with particular individual children.

Self and subjectivity are often seen in much the same way but a key shift in contemporary social theory has been towards seeing the individual caught up in more or less committed participation in a multitude of discursive activity. That is, individuals partake in social languages that more or less fit what they are trying to say but the individual is obliged to use these languages if they are to be included in social exchanges. Self has often been understood as a biological entity held together by a cognitive unity. Lemke (1995, p. 82), however, argues that 'Even within the natural sciences there is no guarantee that physical, chemical and

biological definitions of an organism coincide for all purposes'. Subjectivity is constituted discursively, defined by participations in a multitude of discursive practices. As such subjects identify with something outside of their selves. They identify with and partake in social discourses and through these identifications craft their subjectivity. Subjectivity as understood within mathematics education research discourses is often defined narrowly. For example, the individual pupil is reduced in formulations predicated on getting the mathematical learning structure straight. Yet the positioning of subjects more generally can assume somewhat restrictive possibilities within such work, perhaps characterised by suppositions that all subjects would witness equivalent events in given circumstances. This applies to all people implicated in research processes, whether they are the teachers and children being researched or the researchers themselves, as well as the audience predicated within the research design. There typically appears to be little scope for contestation of places assigned to such participants within mathematics education research discourses, reduced as they are to 'types', responsive in predictable ways according to prevailing discursive frames (Brown, 2008c). The tendency to create 'types' within mathematics education research appears to be in the name of promoting some sort of instrumental rationality whereby assessments of mathematics education phenomena are associated with the identification of a control technology to bring about tangible change. In this respect mathematics education research seems to be in the business of influencing populations rather than being about promoting differences in groups of children, and focussing on the institutionally defined beings rather than on individuals. As Varenne & McDermott (1998, p. 11) suggest: 'The fibers do not make the rope. A mass of fibers is not a rope. An aggregate of persons in a crowd do not make a cultural institution. But once fibers are made into a rope, or a crowd into an institution, something new has happened for all those who encounter it and cannot ignore it or escape from it'. Yet this shaping of research around societal-defined types seems to contrast with so many individual mathematics education research reports that are predicated on small-scale research understood from the perspective of an individual teacher, teacher educator or researcher, changing their immediate practice. Such perspectives are then communicated as if to individual teachers, teacher educators or researchers rather than policy makers or curriculum writers who are more able to influence a broader domain of activity. Authors in this book argue that the relational dimension of psychology is crucially important to mathematics education research in that we need to attend to the alternative and diverse needs of learners, their teachers and the communities with which they associate, and the alternative forms of research that support them. Mathematics is a function of the community that embraces it and evolves in relation to the needs expressed and tasks performed. For this reason it is necessary to resist moves in which mathematical achievement in schools is read against a register of *commodified* procedures, in a 'one size fits all' model, spanning diverse nations and communities. Such moves seem symptomatic of the twentieth century that has left a legacy of techno-scientific control governed by the ideology of 'real' social forces (Lather, 2003). The field of mathematics education spans science and social science and there is much contestation about the boundaries of each of those domains. Yet consensus is

neither possible nor desirable. Whereas mathematics often continues to be conceptualized as a discipline resistant to social discourses, education resists conceptual immersion in the broader social sciences. As we begin to experience a new century during which such rationalistic aspirations have been re-routed in so many areas of social theory mathematics education research needs to move away from earlier instrumentalist tendencies concerned with understanding and 'improving' mathematical performance against unproblematised social registers.

BOOK OUTLINE

Sigmund Freud maintained that education is one of the three 'impossible professions', in which one can be sure beforehand of achieving unsatisfying results, the other two being government and psychoanalysis. In Freud's writing education is synonymous with 'upbringing'; a broad enterprise that necessarily includes but goes beyond schooling. Part One commences with a chapter by one of the two Tony Browns represented in this book. Tony Brown (Bristol) argues that in England it would be distorting the meaning of education to suggest that it is currently being pursued in schools and universities. In response to the question 'What do you think about education in Britain?' Gandhi is reputed to have replied, 'It would be a good idea.' A psychoanalytic theory of education and learning offers more than a language of relational and group learning, important though this is. Since resistance is at the heart of psychoanalytic theory, its use in the education context allows for critiques of the whole education business, from government policy through to institutional organisation, provision and the dynamics of teaching spaces. A psychoanalytical theory of education and learning must include teachers as well as students, privileging neither group in its study of the education process. The selective and unhelpful focus on cognitive aspects of the students' learning is avoided and the limits of constructivist theories of individual psychological development transcended. All those engaged in the education enterprise stand in relation to others and all are the subjects of psychoanalytic enquiry.

Part Two, which comprises two chapters, addresses the relationality and anxiety of learning mathematics. Chapter Two is written by Tamara Bibby. She extends theoretical apparatus introduced in the first chapter to include Vygotsky, Bion and Foukes, and Benjamin and relates this to a project concerned with children's learner-identities in mathematics in the later primary years. The chapter commences with a critique of Vygotsky's influence on mathematics education. Bibby argues that Vygotsky's account paints the developing child as overly amenable to the social structures she encounters. The chapter later focuses on some research following a class of children through the later primary years. This research examined the concerns and voices of the children themselves. It revealed how the separation of mathematics education research from other concerns can be problematic, prompting a decision to resituate analysis of mathematical learning back into broader school and classroom processes and experiences. Levels of emotion, for example, widely reported amongst mathematics learners of all ages were clearly evident in the later primary years. Yet such fear and anxiety often supposed to be exclusive to mathematics were found to be more widely felt and

were seemingly related to the children's more general desire to be seen and heard. Observations and interviews, and research by the children themselves, led the team to conclude that children and teachers make very different assumptions about the purpose of learning. It appeared that teachers and children were often talking at cross purposes and focussing on different aspects of the learning environment that often led to misunderstandings of which the teachers seemed unaware. This left some children feeling angry, hurt and bewildered.

The next chapter by Tânia Cabral and Roberto Baldino is centred on students learning mathematics at a university. Yet it seeks to dig beneath the surface of the visible activity in which students work on algebra task while the teacher circulates to offer assistance to groups where needed. Here the teachers offer their perspectives on the rather surprising sorts of difficulties students encounter with elementary mathematics. They speculate on how mathematical difficulties and the anguish that can go with these difficulties presents itself in the students' overt classroom behaviour. They seek to explore these through the lens of psychoanalytic theory. In particular they invoke the work of Lacan who sees our self-conceptions as being linked to our sense of how we appear to the eyes of others. They describe their way of dealing with emerging anguish through actual examples of classroom situations. Paradoxically, instead of trying to relieve the student's anxiety, they seek to guide the student through to the very mathematics situations that generated anguish. They argue that what produces anguish is not failure itself, but the perspective of failure, that is, the possibility of consummating failure in the eyes of the others.

Part Three addresses some of the processes of becoming a teacher of mathematics. Tony Brown (Bristol) returns with Chapter Four, which surveys the lives surrounding several students deciding to become a teacher, extending frames for mathematics to include the kitchen sink, as emblematic of the domestic lives compromised as a result of joining the social enterprise of teaching mathematics. The chapter explores the psychodynamic forces that shape identity and which can lead to identificatory confusion. It challenges the current performativity culture with its emphasis on skills and training arguing that students and staff need to engage imaginatively with the transformative nature of becoming a teacher.

Margaret Walshaw's chapter is about learning to teach. Central to the discussion is the development of teacher identity during teaching practice experience within secondary school mathematics classrooms. She adds to recent discussions on identity by offering a theoretical grounding and empirical evidence base of how teaching identity develops. The approach to identity offered in this chapter engages the identity of one pre-service teacher in a way that attempts to address the shortcomings of familiar approaches that have tended to equate identity with the teacher's role and function. Using data drawn from an interview with one pre-service teacher she draws on the psychoanalytic development of subjectivity, and the way in which language is implicated in this, as a conceptual apparatus for understanding how pre-service teachers working in schools are constituted, and how they constitute themselves, as teachers. Using conceptual tools borrowed from both Foucault and Lacan she endeavours to capture the fluidity and complexity of identity construction. Foucault's ideas are used to theorise how identity is produced and regulated in discourses involving relations of power. Lacan, on the other hand,

provides the grounding for understanding how power insinuates itself to make a pre-service teacher *want* to be a specific kind of teacher. Both approaches are helpful to the analysis, but, as a complement, the two together give us the tools and the language to get to the core of what learning to teach is all about. The approach alerts us to some of the tensions involved in creating a teaching identity. It allows us to grapple with the complex interplay between settings in which the pre-service teacher finds herself, and the constructions of the self that are at work in becoming a mathematics teacher.

Chapter Six, written by Elizabeth de Freitas, further theorises the process of becoming a teacher. It examines when, how and why mathematics teachers shift between the procedural and the personal narrative registers. It suggests that the shift between procedural and personal narrative register is almost always awkward because of the radically different subject positions constituted through the two discourses. Indeed, the two discourses are so radically displaced from each other, it is difficult to imagine the bridging or blending that might create a cohesive discourse that includes them both. This apparent incomprehensibility provides the focus of this chapter. The aim is to show how the personal narratives are actually used to enforce the legitimacy of procedural discourse. This chapter examines the relationship between these two registers, focusing on the way that teachers blend or join the registers. The chapter adds Judith Butler to Walshaw's heady mix of Foucault and Lacan, in theorising teacher identity. Butler offers a theory of partial agency by pointing to the ways in which resistance and transformation are possible through the construction of 'critical capacities' that allow identities to re-define their position within particular discursive practices. She is careful to insist that these moments of resistance or agency are not simply a matter of freely determined choice, but rather 'performative' in the sense of being discursive enactments of contingent cultural norms. Each enactment involves some form of modification of the cultural norm, but is simultaneously constrained by the rules of the discourse.

Part Four hones in more closely on the mediating filter of the researcher and provides two contrasting perspectives: of the teacher-trainer-researcher examining her practice, and of school children being encouraged to explore a research voice. Chapter Seven is written by Kathleen Nolan and considers her role as a researcher focussing on work with her own students who are training to be secondary school teachers. She argues that schools like to produce teachers in their own image, or so it appears in some recent instances of pre-service teacher education in secondary mathematics. Such instances, this chapter contends, perpetuate and further exasperate the existing chasm between theory and practice in the education of mathematics teachers and provide a haven for 'teaching as we were taught'. What hope is there then for non-traditional teaching practices knocking at the door of this haven, especially when this haven is so reminiscent of the teachers' own largely successful experiences as learners in mathematics classrooms? By resisting the status quo held in place by the mantra of 'if it ain't broke, don't fix it', might it be possible for these becoming teachers to transcend the *habitual* to think the *possible* in mathematics classrooms. This chapter is written from the perspective of a mathematics teacher educator and researcher, as she grapples with her desire to dismantle the haven of secondary mathematics teaching and learning through non-

traditional pedagogies and assessments. This reflexive piece highlights the researcher's efforts to support pre-service teachers' professional growth while, at the same time, propose counter-narratives to dominant school traditions and images of mathematics knowledge. In desiring to go beyond just *imagining* and talking about more reflective, inclusive, creative, and critical mathematical practices, the researcher, along with her research agenda, are met with resistance and potential ethical dilemmas.

Tony Cotton argues in Chapter Eight that research in mathematics education needs to be conducted for the benefit of teachers and the children they work with (cf. Valero & Zevenbergen, 2004). Yet so often the voices of these key beneficiaries are marginalised within research to play the roles of clipped commentators allowed in only so long as they offer sound bites that sit neatly in the researcher's preferred story. He develops issues raised earlier by Bibby as to how children excluded from the education mainstream feel about their plight and how they respond to having being labelled as 'outside'. Cotton focuses on the images the children have of themselves as mathematicians, as learners and how this results in dissonance with regard to how the children understand and seek to meet or resist the expectations placed on them. The children seemed to have an emerging sense of identifying success in mathematics as external to their self-image. Cotton argues: If we are to find ways of making research more democratic we need to find ways of stepping out of this mould. Research is framed in its own culture of regulative practices. Claims that it might proffer to a wider truth can be problematic. Indeed such claims to truth may in themselves become oppressive leaving the researchers to sulk about their own complicity. The purpose of research might be viewed alternatively, however, as being about opening spaces that allow us all to think about how our worlds may be changed. This chapter examines ways in which researchers can work with pupils and teachers to develop an authentic 'voice' that speaks to researchers, academics, administrators, and those who have responsibility in policy formation. By privileging experience over theory as a basis for understanding, space is made for marginalised or 'silenced' groups to be heard. Using texts from of video and audio recordings from work with pupils and teachers in schools in crisis, a methodology is be developed which both reflects 'what it is like' in these schools from pupil and teachers perspectives and offers some insights into broader educational issues. In particular he shows the varying ways in which school children see themselves identifying with mathematics and perhaps seeing it as part of their identity.

Part Five comprises a suite of articles inspired by Dick Tahta's pioneering work in the area of psychoanalysis and mathematics education. Dick had agreed to write a chapter for this book but sadly passed away after submitting his abstract but before he had begun to write the piece itself. A life long mathematics educator, Dick had many accolades, such as being the favourite teacher of physicist Stephen Hawking and, I am sure, of many others. He can probably also be attributed with having first combined psychoanalytic thinking with the practices of teaching mathematics, editing a special issue on the theme for the journal *For the Learning of Mathematics* in 1993. Chris Breen, Dave Wilson and I, who feature in this book, had material included in that special issue. Meanwhile, adding further to the

similarities in our signified identities both Tony Browns had Dick as a supervisor.

This part of the book can at least include some material from Dick that he had agreed to include before his passing. This comprises his contribution to a written dialogue he had with Dave Wilson, a former colleague of mine in Manchester, which first appeared in 1995 in *Chreods,* a journal that I edited. The part begins with a chapter by Dave Wilson entitled 'The transference relation in teaching'. Dave described the piece at the time: 'During much of last year I attempted to reflect upon my teaching in a particular way. At the end of each day, or week, I sat quietly and allowed an incident from my teaching to enter my mind. Whatever that was, I tried to recapture the detail of that incident and to set it down in writing as objectively as I could. I then worked upon that fragment. My conjecture was that whatever entered my mind swiftly and easily would have some significance. The fact that they were significant I took for granted. Why otherwise, would I have remembered them? My task was to clarify and to articulate their significance and to draw from this some implications for my practice as a teacher. I tried to examine myself within these situations, to look at my feelings and actions. I tried to read and to reread my stories offering a variety of interpretations of the significance of them for me. As I proceeded in this way I produced generalities based upon the particularities of my (reflected upon) experience. When my reflection evoked a fragment from my reading I attempted to discuss those readings and to reflect upon their relevance for myself. I found that modern psychoanalysis was a particularly rich source of readings. It has been suggested that Jacques Lacan shifted from discussing psychoanalytic practice to using psychoanalysis to analyse discourse itself during the twenty-five year course of his seminars. At some stage as the year proceeded I began to consciously use this possibility to in my reflection'.

Dick Tahta's response comprises Chapter Ten where he suggests that there are lots of useful observations in the educational literature about learners learning but not so many about teachers teaching. This must be partly because it is so difficult to give an honest account of what it is actually like to teach –most attempts to do this slide into idealised intention or pious hope. In reflecting on some incidents in his own classroom, Dave Wilson exposed himself. He showed courage in revealing his feelings and the sensitivity with which he discussed the various interpretations open to him. The very delicacy of his self-awareness, Tahta claims, left the other participants and their effects on the situation somewhat ignored. This short piece re-opens the reflective possibility with a few remarks on Tahta's thoughts about the lesson. He suggests that if psychodynamic notions are to be invoked in classroom accounts then standard reflective procedures common to most therapists and counsellors might also have to be considered. People who wish to address the emotions which are stirred in classrooms need to have the courage to expose their own feelings, but they will also need to be able to sift through various interpretations of them and produce specific reasons why they come to the conclusions they do. The chapter includes a dialogue between Dave Wilson and Dick Tahta written between the productions of their two articles.

The book concludes with a chapter by Chris Breen. The chapter, which provides a present day response to the Wilson/ Tahta exchange, explores the contribution that an awareness of psychoanalytic and psychotherapeutic techniques and insights

might add to the teaching of mathematics made with reference to Tahta's lasting influence.

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PART ONE

WHAT COUNTS AS A PSYCHOANALYTIC THEORY OF EDUCATION?

TONY BROWN (BRISTOL)

1. WHAT COUNTS AS A PSYCHOANALYTIC THEORY OF EDUCATION?

INTRODUCTION

Education is a troubling experience. Contemporary debate about education often seeks to avoid drawing attention to the disturbance that education creates in learners and teachers. Instead, education does its best to ignore and explain away the trouble it causes us. There is strong resistance in many quarters to Freud's observation that education has consequences for psychical health and development, so why should the writers of this book choose to pursue a path that will be resisted? One reason is that ideologies can be blind to particular circumstances. Psychoanalytical perspectives are particularly sensitive to denial, procrastination and other forms of avoidance. We are concerned about the current state of health of education generally and the teaching and learning of mathematics in particular. Using a psychoanalytic lens offers a fresh perspective and an alternative discourse, which can help to illuminate blind spots in contemporary thinking.

In this chapter we start by asking what a psychoanalytically informed debate about education would sound like. We work on several different explorations of the discourse that is needed if we are to explore pedagogy from a psychoanalytical perspective. We explore the notion of a psychical life. This shift of attention takes us away from more familiar discourses that dissociate the individual and the group from discussions of curriculum design, syllabus content and assessment. Instead we explore what it means to place the relational experience of education – the self in relation to other – at the centre of our discourse.

Current debate on education tends to marginalise psychosocial processes and their impact on our development. A psychoanalytic theory of education brings relational dynamics within the debate about pedagogy and acknowledges our ambivalence to learning as a central facet of our educational endeavour. Why do some students and teachers promote mathematics as the only really important thing to do? Why do some resist all opportunities to explore it, whilst others 'fault themselves for their inability to navigate the educational system'? (Spindler & Spindler, 2000, p. 368)

A theory of education that draws on psychoanalysis needs to embrace both the results of historical explorations by Freud and his contemporaries and theoretical insights developed by more recent writers.

TONY BROWN (BRISTOL)

EDUCATION AS A DISTURBANCE

'Something about education makes us nervous' (Britzman, 2003, p. 1) and education, both in terms of schooling and in the wider sense that Freud used it – education as upbringing – is inherently disturbing. Freud's view that education is about upbringing chimes with a contemporary anxiety that education in schools since the introduction of a national curriculum has become a mechanistic training process aimed at producing the next generation of workers – trained and skilled but not necessarily educated.

Appel (1999) revisits Freud's contentious observation that 'one's education inevitably produces discontents that can themselves later be changed in some way'. (p. xvi) Freud's observation was that:

> It almost looks as if analysis were the third of those 'impossible' professions in which one can be sure beforehand of achieving unsatisfying results. The other two, which have been known much longer, are education and government. (Freud, 1933, p. 248)

Education – the impossible profession – seen from this perspective is, according to Britzman a constant flow between present and past, which includes presence and absence and uncanny self-reference which Sigmund Freud (1914) describes as deferred – education is achieved only after the intended educational experience is reinterpreted, worked through and internalised. Education is recognised and modified by the processes of remembering, repeating and working through.

Our education continuously unfolds and is reworked in our present life – a turbulence of unanticipated conjunctions of affect, re-workings of old learning, and unexpected responses to our present life experiences. Every education is therefore borne out of a confluence of experiences never intended as education and those that emerge from intended study, though often with unintended consequences.

Working within a psychoanalytic paradigm means working within this flux of past and present, where current sensitivities to self and others emerge in ways that provoke the reworking of previous experience into what Freud calls after-education. In Freud's (1914) view the role of the psychoanalyst is to offer an after-education that reworks the damage that education inflicts. Freud's view goes beyond the argument that 'damage' can be caused by the introduction of simple mathematical ideas – Fischbein's (1987) 'pedagogical dilemma' – where teachers may use simple mathematical ideas that subsequently need to be modified or given up if further elaboration is to be possible. Freud's after-education is achieved in a space-time quite different from contemporary discussions about schooling. The challenge faced by a psychoanalytically informed pedagogy is to bring relational dynamics to the forefront of subject study, to make the necessary transformation from analyst to teacher and from therapy to education. In this way the focus of pedagogical study is the development of the self in relation: to other, to the discipline and to the relational associations to which mathematical symbols and processes can be applied.

EDUCATION AND AFTER-EDUCATION

According to Freud education is derived from a reconnecting process that reworks previous experiences of formal schooling and more general upbringing in ways that make learning from earlier disturbance. Working through the disturbance of earlier education leads us to a later 'coming to know' – a more profound connection between self-other and our place in the (educational) world. Thus it follows that every education is necessarily a difficult education, one that produces consequentially an after-education or *Nacherziehung*.

Melanie Klein took up Freud's theoretical ideas and applied them in therapeutic interventions, particularly in her work with children. Following Klein's theoretical work, our engagement with education cannot be separated from our phantasies - our unconscious desires and fears. Klein's world is one of love, passion, hatred and anger, feelings whose strength threatens to overwhelm us. Our affective responses emerge out of the need to preserve the core self as it is buffeted by the ebb and flow of our passions.

Education and schooling in particular take place within group settings. We feel the consequences of the relational dynamics of groups in powerful ways and we seek to protect ourselves from the potentially threatening forces created in groups by employing a number of different psychological defences. Klein's contribution was to identify and describe these forces and the defences we employ to preserve ourselves and influence others.

A seemingly more benign perspective developed by Winnicott, a child psychoanalyst and contemporary of Klein, theorised the dyadic relationship of mother and infant in ways that can be applied to the nurturing relationship of teachers in their caring role for students. A psychoanalytic paradigm posits that we construct relations with teachers and significant others based on – but not necessarily duplicating, our earliest experiences of being parented. Lakoff (2002) draws attention to the role of metaphors of the nurturing and the authoritarian parent in discussions of political ideologies. A psychoanalytical paradigm anticipates strong resonance between the way we relate to others – especially those in authority and power (teachers, police, politicians) and our earliest experiences of being parented.

Psychoanalytic theory is the only theoretical perspective that engages directly with the affective-cognitive dynamic of learning, recognising that it is shaped by our passions and the ways in which we defend against the disturbances we experience in our relations with other individuals and groups. It is the only theoretical perspective that sees disturbance is an inevitable part of learning and classroom interaction. Far from pretending that learning can be or should be smooth and untroubled, psychoanalytic theory addresses the turbulent process of learning which is immediately recognisable to students and teachers alike, but which is often denied in public discussions about the process and experience of being educated.

In the UK education is frequently described in terms that transform it into normative statements of teacher effectiveness and student disability.

> When a child who may find it difficult to do certain things at certain times enters those settings where [learning disability] is going to show up, it is not so much that the child changes as it is that those around the child change the way they respond, and thereby (temporarily) construct the child as a particular ['learning disabled'] kind of person. (McDermott & Varenne, 1998, p.13)

The problem of education then becomes the regulation of the problem people; the ineffective teacher, the dyslexic student, the failing school, the pregnant teenager, the single parent: if only everyone were normal, the dominant ideologies imply, then education could return to being that benign, tranquil, untroubled process that is often associated with metaphors of seeds and flowers and growth. We fully recognise the *desire* for our education to be like that, but we seek here to challenge the daydream and this denial of reality. We also suggest that from a psychoanalytic perspective our responses to students – those with 'learning disabilities' included – are seen as shaped by defences that we create to avoid the truth about the danger, risk, loneliness, exposure and the exploration that education demands. Resistance to employing a psychoanalytical perspective is stimulated at least in part by a desire to avoid engaging with what this exploration will bring to our attention.

A BRIEF HISTORY OF PSYCHOPEDAGOGY

The history of psychoanalytic pedagogy is worth exploring, if only to learn why it is inevitably problematic. In 1929-30 at the same time as Anna Freud (1930) was delivering her lectures for teachers and parents on ways in which psychoanalysis could offer educational insights, another short-lived education project attempted to achieve the same goals. The project is worthy of review. Now, as in the 1930s there is a growing interest in psychoanalytic pedagogy. Also (in what is an uncanny echo) there is a growing dread of the unknown other. In 1930s Austria the fear was projected onto gypsies, Jews and other non-Aryans. Today we are being encouraged to fear the unidentifiable fanatical Muslim: a politics of fear that seeks to exercise control over us and our thinking.

The *Movement for Psychoanalytic Pedagogy* is a little-known aspect of both educational history and Viennese psychoanalysis. It existed briefly during the interwar years and its history is recounted in Ascher[1] (2005) who traces her father's involvement in the movement as a teacher who sought further training as a psychoanalytic pedagogue in Austria. She begins with his application to the *Vienna Psychoanalytic Society* for training in 1926 and explores the ambitions of the movement, which supported both the development of educational ideas and the drive towards democratic socialism in Austria. Members of the movement sought to share psychoanalytic understanding of the processes and consequences of education within the group and to bring their ideas to a wider audience.

It foundered not only because of the political events in Germany, the invasion of Austria and the forced closure of all psychoanalytic establishments, but also because there was a failure to articulate the special characteristics of the schools

involved in the project. Partly reflecting the prevailing cultural and social forces of the period, those involved focused on ways of avoiding excessive control of children, rather than developing a theoretical framework for education. The opportunity for developing a psychoanalytic pedagogy passed.

Anna Freud was more interested in applying psychoanalytic theory to education and schools than was her father. She engaged with several education projects and gave a series of lectures for teachers and parents that suggested ways in which education and psychoanalysis could benefit from collaboration. Following her father's theme that education is essentially problematic Anna Freud wrote, 'As a method of therapy, the analysis of children endeavours to repair the injuries which have been inflicted upon the child during the process of education'. (1930, p. 129)

What she offered in her lectures were her findings of how psychoanalysis could inform education by shedding light on:

– The possible consequences of excessive control and of too little direction on children and their development
– The complex relationships between adults and children, through an understanding of the unconscious and libido
– Analysis as a therapeutic process, which could address the needs that emerge in an after-education following the child's earlier educational experience

So, a psychoanalytical theory of education challenges conventional wisdom that education is essentially a force for liberation, self-development and a smooth path to an adult role in society. It offers a bleaker view that educators and others may wish to resist and defend against. In Anna Freud's view education is the source of injury. In Sigmund Freud's it is an impossible profession. If education is inherently problematic then it becomes education to study itself as a problem, rather than remain uninformed.

EDUCATION AS RELATIONAL DYNAMICS

To learn who I am becoming is the personal project of all teachers and students. This project has become sidelined in today's education where the focus is more utilitarian – more often focused on the development of skills for employment acquired through the study of a subject-dominated curriculum. A psycho-analytically informed pedagogy needs to take up the project of who I am and how I relate to others as a central rather than peripheral theme. This includes recognition of the role our desires and destructive phantasies play in our engagement with education.

What we eventually come to learn from our personal educational project - if we learn anything - is that our desires and destructive phantasies belong to us and have to be borne by us along with the externalised destructiveness that is projected onto us by others.

Understanding the dynamics of our own internal aggression and recognising their origin within us, is the cornerstone of our education. The denial of our darker side and pursuit of our desire to be other than we are inhibits the process and progress of our education. 'When we need to find the things we disapprove of

outside of ourselves [it is] at a price'. (Winnicott, 1986, p. 82) We pay the price at least twice. Once, when as babies the hated and loved mother who alternately cares for and abandons us is finally recognised as one and the same, we learn to use the feelings of guilt about having harboured destructive feelings for our immediate carers by creating a conscience. We pay the price again as adolescents when the same lesson needs to be re-learned, this time when our desire is to abandon the parent. We dress, behave and talk in ways that we believe support our claim to be increasingly independent but which in fact bind us, often to transient affiliations whose main purpose is to protect us from a fear of abandonment as we negotiate the parental separation. Winnicott's view is that we have to own our passionate loves and hatreds rather than blame others for creating them within us. Only by tolerating the discomfort of knowing that our phantasies are ours, can we begin to live with the inner being that is truly us. Winnicott's observation is that when we defend ourselves by expelling destructive thoughts and only recognise them in others, we gain some temporary relief but become madder as a consequence. Unable to tolerate the rich complexity of our inner self, we fragment it, splitting off and expelling the intolerable bits, often associating them with other people. The resulting fragmented and depleted self consequentially moves away from what Klein referred to as the *depressive position* and towards what she called the *paranoid-schizoid position*: a journey that, according to Klein, is as inevitable as it is essential. The return to the depressive position wherein we are able to recognise self and others as complex, part good part bad, is essential if we are to see our self as 'good enough' for life's project. Our particular location along the continuum between the paranoid-schizoid and depressive positions depends on our ability to recognise, accept, reclaim and internalise the previously intolerable parts of our self that we expelled into others. The process of after-education becomes the process of reclaiming the denied and projected destructive elements of our self and then learning to live with our own bad objects. Reabsorbing these destructive elements and tolerating them without recourse to projection is a significant part of stable adulthood. According to Winnicott and Klein, the self is strengthened as a consequence of the reclaiming process; we become less fractured, more rounded and complex, less stereotypical and uni-dimensional.

A psychoanalytic pedagogy will recognise the tendency of individuals to take up Klein's paranoid-schizoid position with its reactive defence to threats and the consequent portrayal of self and others as useless or perfect, weirdoes or cool, outsiders or groupies, leaders or followers, puppets or puppeteers, evil or godlike. A psychoanalytically informed pedagogy can suggest ways in which students and teachers alike can work towards a more rounded view of self and other that tolerates imperfection by managing destructive desires. Thus such a pedagogy promotes agendas and times for both students and teachers to recognise and create opportunities for working on the after effects of education in order to make an after-education that is beneficial to personal growth and development.

LEARNING TO LIVE WITH THE PAST IN THE PRESENT

> For us like any other fugitive,
> Like the numberless flowers that cannot number
> And all the beasts that need not remember,
> It is to-day in which we live.
> W. H. Auden *Another Time*

When we work as students and teachers in formal education settings the narratives of our unconscious world reach back into our individual histories of learning, bringing our history into the present moment, often in dramatic and unexpected ways: algebra becomes incomprehensible in the presence of a teacher we come to hate, who reminds us vaguely of someone else; we find ourselves perpetually anxious that we will never satisfy the needs of a particular student who in fact makes no demands on us, but whom we fear could do so at any moment. Anxieties disturb us; we dream of being made to enter a classroom naked or of being required to write about a topic the details of which are kept secret from us.

The full educational experience includes the affective charge of current pleasures and anxieties, our relationship to the contents of study, our immediate experience of the relational dynamics within the group, and our attempts to defend ourselves from inner anxieties and to take inside ourselves the good parts that we recognise in others. We are constantly challenged by our need to succeed or fail, and our fears and hopes of being recognised or ignored.

What we can make of education at any time is not necessarily what is intended by us or by others *to be* an education – but that which leaves an impression, or has previously left an impression that now strikes us as important. Our after-education begins and continues when the possibility exists for us to work through previous educational experiences and settle them within a new us.

The complexity of the educational experience together with this potential for re-membering and re-working earlier experiences renders impossible the smooth transformation of the subject curriculum into learning. A temporally constructed, theoretically or didactically coherent curriculum will not necessarily transform into coherent learning. This is not to suggest we should give up the notion of syllabus, but it does mean that teaching a subject discipline does not equate to education. This is in direct contradiction to many contemporary curriculum models where effective memorisation of curriculum content is equated with effectiveness of teaching, which in turn conflates learning and education.

Wherever there is education there is always disturbance – experienced by teachers and students. Resistance and desire are at the heart of the education project. It includes rejection brought about by fears of being overwhelmed or changed by the subject material, the teaching process or the teacher. It also includes the desire to be invaded, rescued or taken over, for example by a libidinal 'crush' on a teacher or student,[2] or the feeling of omnipotence that mastery of mathematics can offer.

RESISTANCE AND COMPLIANCE IN EDUCATION

Education is a complex theatre of conflicting hopes, demands and expectations. Teachers have been trained to deflect students' desires and to resist students' demands. Spindler & Spindler (2000) draw attention to schooling as training in delayed gratification. Where students have learned to tolerate the associated frustrations, they may do well in school.

Some teachers need to collude with their students in order to maintain harmony in the classroom. Young teachers may wish that students perceive them as 'part of the group' rather than as part of the establishment. Teachers may resist or comply with collegial pressures and government requirements. In their turn, students and teachers inevitably disturb the teaching, the learning, each other and themselves. The source of this disturbance is generally dismissed as part of the trauma of adolescence. Teachers are careful to displace their libidinal feelings relating to their teaching, their subject and their students on to others – difficult colleagues, adolescence or 'problem learners'. All this has the effect of normalising learning as an inherently unproblematic process with those who present difficulties becoming pathologised. Resistance is displaced, removed from education and into a pathology of individual behaviour which re-presents behaviour as separate from learning.

This chapter asks what we might have to learn if resistance is acknowledged as central to education rather than being defended against. What space does a psychoanalytic theory of education need to occupy if it is to offer insights into teaching and learning? It must provide some understanding of the intrapersonal and interpersonal relational dynamics of learners and teachers. It needs to elaborate on the intellectual, physical and psychological spaces offered and needed for learning. Freud's (1930) recommendation in *Civilisation and its discontents* is for teachers to prepare students for the difficulties and struggles in life and to avoid idealisations. According to Freud in *Three essays on the theory of sexuality* (1905), the psychic imperative of adolescence is 'detachment from parental authority'. Not separation from the immediate parent or carer so much as a separation from the internalised parent that has become built up as a result of the experience of childhood. This requires challenging the values and beliefs that were imposed or received and then internalised as ideals.

Teachers and others often complain of secondary education that the curious child of five may show little of that same curiosity at fourteen. A psychoanalytic pedagogy would not be surprised at this apparent lack of motivation. Education itself of course occupies a parental role as part of the idealised parent of earlier learning and has to be challenged at least in part by adolescents. Where education's parental demand for uniformity, for obedience and coherence to the rules resonates with the biological parents' or carers' demands, the adolescent may well respond with strategies of anxious defence: avoidance, inhibition and resistance to education's coerciveness. Separation from the parent of education may well appear in adolescence as a denial of curiosity.

For psychoanalysis, phantasy[3] is central to an after-education. For formal education as envisaged by the prevalent pedagogies of today, engagement with phantasy is to be resisted. To attend to the strangeness of classroom encounters rather than resist their implications demands an educational paradigm that tolerates greater complexity than is currently acceptable; one which does not automatically invoke defences nor seek to satisfy the desire for control and authority of the other. This raises enormous challenges for teachers and pedagogues, but also offers a way of re-engaging with the problems that education currently faces.

Psychoanalysis offers to education 'an informing lens and a source of 'pedagogical rhetoric'. (Felman, 1994, p. 404) Psychoanalytic pedagogy requires the teacher to be a student of the student's self-knowledge. Additionally teachers have to become students of their own ways of 'coming to know' themselves and others.

The often-heard defence, *I teach my subject* ceases to be compatible with the education project. Becoming a teacher of students is to see one's chosen discipline or curriculum subject as a context for teaching students about what the discipline evokes in self and others. It is to engage - through the discipline – in teaching students what they already know of themselves but which may be disconnected, unavailable and inaccessible. It also means recognising how that whole scene plays for *us* as individuals who choose to teach, and how reconnection with the inaccessible and disconnected parts of the self can be made possible by and through skilful means.

For Freud (1911, p. 224) education is 'an incitement of the pleasure principle and … its replacement by the reality principle'. Education 'makes use of an offer of love as reward from educators'. In today's world where anxiety over relationships between school students and teachers is the stuff of TV soaps and crime dramas, the space between teacher and student is highly regulated and charged. All too frequently it is over-simplified, trivialised and sexualised in public renditions such as TV soaps and tabloid headlines. Education as an offer of love does not translate easily in today's anxious society, where physical contact between teachers and even young children disturbs us because we no longer know who we can trust (cf. Piper & Stronach, 2008). We may be more comfortable translating education as love in Kosovo, Afghanistan, Gaza or Darfur where we can project it safely into others and avoid the anxieties it provokes in our own teaching and learning.

Additionally, the observation that education inevitably creates feelings of helplessness and dependency, which both students and teachers must experience and work through, is problematic for our contemporary culture which celebrates individuality and personal strength above all else: vulnerability is framed in terms of deficiency rather than development. 'Working with vulnerable others' has been elevated to a specialist professional role, where vulnerability is equated not with growth but with a failure to thrive.

A psychoanalytic paradigm introduces an uncomfortable tension: teachers are caught between a requirement to provide unconditional respect and love for their students as people, whilst being challenged by the sceptical student to demonstrate

this commitment at every turn. The adolescent's experience that the violent realities of life are a contradiction to what society claims education offers, means that the teacher's offer of love has to be rejected, but must never be withdrawn. And of course the adolescent is right - education's potential is not only for love, but also for authority, power and coercion. The offer of love is often contingent on many other factors. Thus a psychoanalytically informed education makes huge demands on insightfulness for both student and teacher.

Education and phantasy are inseparable yet contemporary pedagogies work to banish phantasy, forced as education is into claiming a spurious distinction between a so-called 'reality' of schooling and the unconscious desires of the individual. A psychoanalytically informed mathematics education is an education of self-other relations and an exploration of authority and power but from a central position within and through the subject discipline. It involves the acknowledgement of loneliness and learning to be alone with others, of recognising difference and maintaining respect for the otherness of the other, even as our phantasies and the coercive social and political forces in and around us make it easier to deny complexity and through anxiety of what education might become, to wish for the replacing of authority with control.

EXAMPLES FROM THE FIELD OF MATHEMATICS

Mathematics has a unique role to play as a vehicle for exploration of many of the theses touched on in this chapter. It allows examination of specific instances of general laws and various ways making representations. It is not surprising then that several writers, (Weyl-Kailey, 1985; Pimm, 1994; Blanchard-Laville, 2000) illustrate the powerful use made by primary and secondary school students to represent troublesome aspects of their lives, for example through the unconscious use of set theory or algebra to represent aspects of their anxieties and mental trauma. [4]

In a chapter entitled *Les Porteurs de Fantasmes,* Weyl- Kailey (1985)[5] first draws attention to the child's view of the apparent absurdity of mathematics and then to the difficulties faced by specific children and adolescents. In her work with students referred to the Claude-Bernard clinic[6] Lusiane Weyl-Kailey became interested in why some students are particularly dysfunctional in mathematics. From her therapeutic work she is able to show how affectivity infiltrates the cognitive processes that relate to mathematical thinking.[7] She reminds us of the fact that the concept of number is acquired in early childhood at the time when the infant is becoming aware of its relations with significant others, and she shows that certain numbers, especially 2 and 3 can be carriers of infantile phantasies. The number 2 can represent the relation with the other: the child with the mother, the father or another principal carer. Two is also the parental couple or the rivalry with a sibling. The number 3 can represent the triangulation of mother, father and child and also the loss of that triangulation through death or divorce or the arrival of a sibling[8]. Subtraction is often synonymous with removal:

a father who has left, a sister who has died, it represents absence. It is the loss of a dear one who has gone without hope of return. It is the fear of possible absence and the fear of castration. (Weyl-Kailey, 1985, pp. 38-39).

The unconscious finds in mathematics a convenient symbolic repertoire. In a similar way to dream work, the unconscious makes connections between different forms of representation. Students and teachers of mathematics may experience this at a conscious level by associating human and mathematical relationships and processes. The result - at a conscious level - for the student and the teacher can be vehement rejection or an obsessive love (directed towards the mathematics, the teacher or the students) leading to difficulties in the classroom.

For one eleven-year-old, transfer to secondary education marked the end of her considerable ability in mathematics. She became hopeless at mathematics, with anxiety verging on phobia. As the daughter of two diplomats, one from Italy the other from Scandinavia, she attended school successfully in several countries before settling in France aged ten. The introduction to set theory in early secondary school appears to have become associated with a major crisis of identity. In her mind, the intersection of two sets was reinterpreted in denial of the mathematical rules and came to represent her own identificatory anxiety: she regarded herself as neither Scandinavian nor Italian – a nobody. It took a year of careful mathematical work with Weyl-Kailey using set theory to re-present her identity in many different positive ways before the girl came to accept and internalise the mathematical meaning of the intersection as having the attributes of both sets. The powerful affective charge, which accompanied her crisis of identity, prevented the acceptance of the mathematical rules for set theory and weakened her ability to use logico-mathematical cognitive processes to interrogate and internalise the mathematical rules. The affective charge is often strong enough to render the mathematics inexplicable.

Because the forms of mathematical symbolism and representation offer scope for the unconscious to use mathematics to represent unconscious conflicts, affective associations frequently accompany students' cognitive processes. In his book *Camille a la haine et… Léo adore les maths: l'imaginaire dans l'enseignement,* Jacques Nimier (2006) reports on the results of over 1500 questionnaire replies from school students in France, Canada, UK, USA, Morocco and Greece. Mathematics is seen and used by the respondents in various ways: as a constraint, as a system that represents and helps maintain order, something that represents a frontier, a strange boundary and a mystery, success and status, access to the real world and a source of positive energy, something that carries risks and dangers. It is used by some students to acquire and promote high status, and by others to represent phobic reactions, aggression and anxiety.

In Nimier's study students describe how they protect themselves from the sense of danger that mathematics poses. For one student mathematics produces great anxiety: it has become the gathering of fruit, but with the certain knowledge that a storm is fast approaching. The impending storm creates pressure to gather as much fruit as possible in the short time available before the storm arrives and curtails the harvesting. For another student, algebra classes are desperately tedious. The

teacher's voice reminds her of a far off sleep-inducing murmur. She connects the teacher's aggravating voice to the squabbling in her parents' bedroom next to her own. Algebra has become infected with the anxiety of her home life; the cognitive processes required for working on algebraic problems have become tightly intertwined with the affective charge of anxiety: algebra is first associated unconsciously with anxiety but then becomes the problem.

Although this chapter has drawn on data relating to students, teachers are subject to the same psychodynamic processes and stories of their symbolic and metaphoric use of mathematics to represent unconscious desires are equally numerous and valid.

CONCLUSION

This chapter has attempted to set the scene for taking up a complex pedagogical stance: one that for many readers will require an excursion into new territory. It is not the territory of the analyst or therapist, but one that teachers and learners can explore and come to own as a professional stance. Through a process of questioning what education and psychoanalysis can offer each other, we have moved towards a view of how educationists might construct a more useful account of the education project and the development of mathematics pedagogy. This is then taken up in the chapters that follow.

NOTES

[1] The Vienna Psychoanalytic Society opened its Teaching Institute in 1925, the purpose of which was to train prospective lay analysts. In the 1930s there was a desire to understand learning from a psychoanalytic perspective. Although some of the ideas developed during the interwar years continued, as émigrés worked in clinics, child welfare organizations, and schools, in the face of survival and assimilation in postwar US, an identifiable theory and practice of psychoanalytic pedagogy were largely lost. (Ascher, 2005, p. 277)

[2] Depicted in *Notes on a Scandal*, based on Zoe Heller's (2003) novel.

[3] Phantasies are the primary content of unconscious mental processes. In simple terms they are unconscious desires and anxieties.

[4] For the past two decades French writers have been more fully engaged than their British counterparts in this area of pedagogy, but see David Pimm's (1994) *Another Psychology of Mathematics Education.* For examples of three French writers on the pedagogy of mathematical, see: *Victories sur les Maths*, by Lusiane Weyl-Kailey (1985), *Malaise dans la formation des Enseignants*, by Claudine Blanchard-Laville (2000) and the various paper and online publications of Jacques Nimier. <http://perso.orange.fr/jacques.nimier/> accessed 3 June 2007

[5] Zero and Infinity. It is nothing more than a number for many children. It can be an expression of a lack, of nothing, of absence, the distressing vacuum, distressing to the point that adding 2 to 0 becomes impossible; $0+2=0$ – one can find this apparent possibility in algebra. The child may comprehend that $5 - 7 = -2$ but $0 - 2 = 0$? Worse, 3×0 cannot be equal to 0 "Since one has three, how can this three disappear?"... Worse still: 0 divided by 4: how can zero be partitioned when it doesn't represent anything? Last, the abyss, 4 divided by zero. When one divides by a number that approaches zero the quotient grows to approach infinity. Division by zero is impossible; a mystery. (1985, p. 37)

⁶ A clinic médico-psycho-pédagogique, opened in Paris in 1946 to support students with learning difficulties. It includes staff like Weyl-Kailey trained in mathematics and psychotherapy. The results of her work present mathematics in a new light, which offers a starting point for the development of a psychopedagogy of mathematics teaching and learning.

⁷ 'One is the loneliest number that you'll ever do. Two can be as bad as one, it's the loneliest number since the number one….' Aimee Mann, *Magnolia*, 1999.

⁸ David Pimm (1994) includes a moving account of a friend's young child who adapted the counting sequence to avoid uttering 3 following the death of her father in a traffic accident.

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PART TWO

RELATIONALITY AND ANXIETY FOR STUDENTS OF MATHEMATICS

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2. THE EXPERIENCE OF LEARNING IN CLASSROOMS: *MOVING BEYOND VYGOTSKY*

INTRODUCTION

Metaphors play an important part in shaping the ways in which we make sense of our lives. However, while they can provide us with powerful images that enable us to engage with abstract ideas, they simultaneously constrain and limit subsequent thinking generating sometimes unintended or undesirable implications. In this chapter I explore some consequences of the metaphors of learning and teaching associated with a Vygotskian perspective on education. In the first part of the chapter I will use the psychoanalytic theories of Foulkes and Bion to explore the importance and implications of the group nature of the educative enterprise. The theories of Bion and Benjamin will also be drawn upon to find different ways of thinking about the nature of a pedagogic relationship and what this might mean for the ways we conceptualise learning. In the second part of the chapter I will draw on data from a recent research project to provide some exemplification for these theories, putting experiences and events onto the bones of the theories to bring them to life in a classroom setting.

GROUPS AND INDIVIDUALS

Since the West's 'discovery' of Vygotsky his influence on teaching, teacher training and educational research has gradually increased. Of his many ideas, there are two that seem to have passed into common sense. One is that learning happens in an individual's 'Zone of Proximal Development': the idea that there exists a space between what I can currently manage alone and what I can do with the assistance of a more capable other and that as I learn so I move towards what the other can do, crossing my zone of potentiality. This idea provides an attractive metaphorical image of teaching as a somewhat gentle, benevolent, rational process of drawing the less-knowing learner towards the more-knowing teacher. As a metaphor this is redolent of the expectations of child-centred, progressive education and idealises both the learner and the teacher. Yet, as Britzman (1979, p. 13 cited in Britzman, 2003, p. 22) suggests, drawing on Bloom's introduction to *Emile*, there is a paradox at the heart of Rousseau's moral pedagogy: '*What is forgotten is that Rousseau's full formula* (for raising a child for eventual self-sufficiency) *is that while the child must always do what he wants to do, he should want to do only what the tutor wants him to do*'. Highlighting a tension about

whose desire is to take primacy in a pedagogic encounter raises a question about the nature of this 'zone'. The fantasy seems to be that it is a sun drenched meadow filled with flowers and the sounds of busy bees although for some it may feel more like a soaked and pitted no-man's land full of noxious fumes, unbearable noise, mud and disease.

The seductive imagery conjured by Vygotsky's metaphor of the 'zone of proximal development' leaves hanging the nature of the zone and obscures the space it occupies, it allows us to ignore the difficulties and resistances which the learner will encounter and develop. Indeed, it demonises them – any resistance must be wilful and destructive: why would anyone want to resist benevolence and kind intentions? In doing this, the metaphor encourages us to ignore any differences between the learner and the teacher and seems to suggest that the learner's differences will be unimportant and willingly subjugated to the teacher's benevolent intentions. Similarly, the metaphor locates the teacher in a place of idealised omnipotence; an impossible place from which to teach or relate, a place from which the teacher's own difficulties and resistances, perhaps difficulties with particular students, become intolerable and unspeakable.

Another aspect of this metaphor relates to the nature of the 'more experienced other'. Through my years of involvement in the initial and continuing education of teachers it has been evident that, whatever Vygotsky's original intentions, (and some people's use of his ideas to support the use of group work notwithstanding), this 'more experienced other' has generally been understood as older than the learner and preferably an adult or the teacher. Such an interpretation has numerous implications not least of which is that it places the 'teacher' at a pinnacle of knowing (Walkerdine, 1988) and, conversely, the learner in a state of perpetual deficit. As a consequence, teachers have nothing to learn, or cannot learn, from their pupils since in this interpretation a child cannot take the position of 'more capable other'. In relation to learning in higher education the uni-directional and age determined nature of the flow becomes a problematic idea. Even in schools, however, the suggestion that the teacher has nothing to learn from the pupils is deeply troubling. At the very least, and staying within modern paradigms of teaching and learning, the teacher needs to learn 'where the child is at' in their learning; the state of their (mis)understandings. From this perspective, the pupil is the 'more experienced other' and the teacher the learner. So the jobs of the 'teacher' and 'learner' are not identical but they do coexist in space and time and are (or could be) mutually constitutive. The (non)mutuality of the learning relationship is explored further below as are the consequences of choosing to *learn about* children's learning without accepting that this means *learning from* them.

Vygotsky's other important, and by now almost common-sense suggestion, is that thought is internalised action: that what happens on the internal plane, happens first in the world in speech and in actions. In essays from students on education courses (many of whom are teachers) there often occurs an elision, perhaps encouraged by lingering influences from developmental psychology, such that internalised thought/ individual working is seen as somehow more mature, more personally authentic than work undertaken collaboratively or with assistance. So

we learn quickly that it is 'more grown-up' to read 'silently' in your head than to utter the words aloud. It may also help to explain the enduring power of the individually taken examination paper over the group report.

Vygotskian ideas have impacted hugely on 'the turn to the social' within education and educational research. But, as we can see from the 'common sense' (mis)representation of his ideas in some students' work, there is a continuing tendency to privilege the individual or at least to down-play and simplify the social. The social, from this perspective, is construed as an aggregation of individuals each of whom is fundamentally more important than the group. This would seem to be a rather spare and stripped down definition of the social. Such a construction aptly demonstrates Bion's (1961) observation that we are group creatures at war with our group natures. Developments of Vygotskian theories, through activity theory, move uncomfortably between the individual and the social or cultural without resolving, or satisfactorily exploring, the tensions inherent in this tussle.

PSYCHOANALYTIC NOTIONS OF THE GROUP: MOVING BEYOND VYGOTSKY

My somewhat playful exploration of the Vygotskian metaphors that have gained currency in education in the UK highlight several tensions that I wish to use this chapter to explore. I do, however, want to take seriously and explore issues raised above that are, for me, found in silences that develop as perhaps unintended consequences of our use of the metaphors associated with the Zone of Proximal Development. I am particularly exercised by the nature of this 'zone of proximal development', it suggests a space existing within a relationship between the learner and the 'more experienced other' that it leaves undefined. Later I will draw on another set of metaphors and data from a research project and use the experiences of children learning in the primary classroom to explore the nature of this space and the pedagogic relationship.

So many analyses paint Vygotsky as a central figure in these modes of thought yet there were others, contemporary with Vygotsky, who developed similar ideas but in a different direction. I am thinking particularly of Bion, Foulkes and other group psychoanalytic theorists and practitioners. Foulkes particularly saw human beings as 'social through and through'. For him:

> Each individual – itself an artificial, though plausible abstraction – is centrally and basically determined, inevitably, by the world in which he lives, by the community, the group of which he forms a part. (Foulkes, 1948 cited in Powell, 1994, p. 12)

Foulkes' central concept of the matrix designates all humanity as connected through lines of influence formed within groups: the family, cultural configurations: schools, religious practices and so forth, work groups, friendship groups. He defines levels of matrix (foundational, personal, dynamic, etc.) but it is not my intention here to explore his theories. Rather I will take this idea of the individual as a nodal point in a series of interwoven matrices – fluid, shifting

networks of social connections – and consider this as a starting point. Such ideas are familiar from social theories but it is his move to embrace unconscious processes within the matrix that many find more problematic. As well as standing in strange relation to individual cognitive psychologies, these ideas also stand to the side of other, more individual psychoanalytic theories such as those of Freud, Lacan and Klein. In relation to mathematics education individual conceptions of the human subject can be found in the work of, for example, de Abreu, Bishop & Presmeg (2002), Ernest (2004), and Cobb & Hodge (2007).

Working with a 'figure-ground' concept, rather like the optical trick provided by the 'is it a vase or two people facing each other?' picture, group psychoanalytic theory considers the ego and unconscious to exist simultaneously at both individual and social levels. This is a difficult idea, it is not only that the group is a collection of individuals but that the group is a thing in itself, an idea we can find unsettling:

> Foulkes repeatedly stated that the 'social' is deeply inside each one of us, and what seems to be 'outside' or 'inside' is itself a construct by ourselves and by our cultures. Individual and social, intra- and inter-personal, are like the Moebius strip, eternally unfolding and infolding. … For him (Foulkes) society is not 'outside' the person: it is internal and penetrates to the innermost being of the individual. (Pines, 1994, pp. 48-9)

In describing Foulkes' 'group-as-a-whole', Pines (1994) keeps returning to Foulkes' own reiteration that '*what we call mind arises from each individual's need for communication and for reception*', a need to be seen and heard to which I will return later. He draws on Vygotsky's 'law of proximal development' to look at the way in which, what begins as an interplay of gestures, of call and response between care-giver and infant, leads the child to enter the language and cultural practices of the groups into which she has been born. Again, I will return to the idea of call and response in primary care-giver/child relationships later but note that this is a very different context within which to draw on this aspect of Vygotsky (and is perhaps closer to his original intentions).

Yet we are still left with the difficulty and discomfort of thinking at different levels at once: of accepting simultaneously one-person psychology (*what goes on inside a person*), two-person psychology (*within reciprocal relationships*) and three-person psychology (*the relational field of the basic family constellation – and with social roles and social relations derived from it*) (Schlapobersky, 1994). I cannot offer a solution to this difficulty but living and working with it seem important, especially in the context of education in formal institutional settings. The notion of a 'basic family constellation' may appear hetero-normative and sit uncomfortably for some readers. My understanding is that the family referred to (mother, father, child) is, from a psychoanalytic perspective, the Oedipal family. As such it might take some other form but the roles of primary carer, secondary law-giver/carer and child remain important. Benjamin (1986) and Mitchell (2003) have discussed some of the affects of this 'constellation' and its foundational role in psychoanalytic thinking.

The analysis offered in this chapter takes seriously the effects of group and individual unconscious processes and I begin by exploring what I mean by this. I will suggest that, as learning takes place in relationships, rather than in the minds of individuals, it is important to have some ways of thinking about these relationships. It is also important not to idealise relationships; while they can be warm, caring, generative, thoughtful and nurturing they can also be cold, distant, hateful, envious and destructive. In thinking about the relationships between peers and also between children and adults/ teachers it is important to consider both what is and what might be. To do this I will draw on data from a research project (described below) and the theories of a range of psychoanalytic theorists, particularly Bion and Benjamin. My interest is not in suggesting a 'fix', while I will suggest that there are ways in which pedagogic relationships might be changed I believe we already know much of this, my aim is to provide a conceptual framework and a set of metaphors, a vocabulary that may enable us to think differently about what we may already know.

GROUPS AND LEARNING: A PERSPECTIVE FROM BION

In considering educational contexts it seems particularly important to think about the nature of groups and about activities such as thinking and learning. To do this I turn to the founder of group psychoanalysis, Bion, whose work has precisely these foci. His theories, also founded on group actions and being, are not identical with Foulkes' but their differences are not significant to this chapter; indeed I will use them to complement each other. Bion made two important contributions to the way we conceptualise thought and thinking. The first concerns the nature of groups and group processes (Bion, 1961; Jaques, 1991; Nitsun, 1996). While these ideas are important and have much to offer teachers, it is his theories on the development of thought and thinking (Bion, 1970) and their nature as relationships that I wish to focus on here. Bion reverses the more usual notion that thinking generates thoughts:

> The problem is simplified if 'thoughts' are regarded as epistemologically prior to thinking and that thinking has to be developed as a method or apparatus for dealing with 'thoughts'. (cited in Britzman, 2003, p. 25)

Thinking, for Bion, is a way of dealing with the discomfort of thoughts. However, before we can process and modify thoughts through thinking we first have to decide to tolerate, rather than evade, the pain of those thoughts. Of course, any such 'decision' is not likely to be consciously taken. Being in a group causes further difficulties in the shape of our anxiety about other people's expectations and their reading of our own behaviour/ performance. This exacerbates the difficulties associated with thinking about our thoughts. In placing this ability to tolerate anxiety and frustration at the heart of our ability to learn and develop, Bion moves away from Freud. Bion's suggestion is that we need to be able to tolerate the discomfort of not understanding why that picture is of 3/5 rather than 2/5 (or anything else) and be willing to take the risks required for us to develop that

understanding. These risks all relate to our relationships: there are familiar risks associated with answering questions wrongly and of being seen not to know, but there are also the risks associated with knowing and of understanding – of being seen as one who knows and understands. Both knowing and not knowing, and being seen as such, have implications for our sense of self and of our relationships. Learning involves risks on many levels, not just the risk of public exposure to humiliation.

For Bion, knowledge, coming to know, is an emotional activity. Along with love and hate it forms the six basic emotional experiences: knowledge (K), love (L) and hate (H), and their negatives -K ('Minus K'), -L and –H . These 'minus' links are not an absence of the emotional activity, nor are they its opposite. Rather, they represent a block to it, a refusal to engage, or a repression. If a minus link is experienced as dominating a relationship then '*the process of understanding within the relationship is stopped and reversed; meaningful experience may be destroyed*' (Symmington & Symmington, 1996 p. 29). For our purposes it is the K and minus K links that will be the focus. The K link is the linkage formed between thought and person in the emotional act of coming to know:

> K stood in both for the problem of realizing 'knowledge' and for accepting new ideas and new people as valuable and worthy. 'Minus K' is a destructive attack upon links between ideas and people. (Britzman, 2003, p. 25)

As we will see later in relation to the data, experiencing a –K link with respect to those who teach us mathematics might mean loosing a sense of oneself as a knower of mathematics as well as the loss of mathematical knowledge worked on within that relationship.

It is important to distinguish the K link and the kind of learning/coming to know that develops in such a relationship from acquiring knowledge about a person or thing. In this sense it is different from curricular or school knowledge, which Bion likens to 'cannibal knowledge' (Symmington & Symmington, 1996, p. 28), knowledge that is gained without the cost of giving. As an example, this might relate back to the teacher making judgements about a child's level of understanding by '*learning about*' their knowledge through a test rather than by '*learning from*' the child her or his own understanding through discussion. Yet, it appears that developing knowledge about a thing can also only happen within a relationship based on a secure K link; that is to say, a relationship characterised by a secure K link is also the foundation for coming to know in other, more academically familiar ways (Bibby, forthcoming a). I want to make a connection between this idea of knowledge only being available inside relationships characterised by a positive K link and Benjamin's *intersubjective third* which I discuss below.

> The (K) link is a crucial activity in which emotional experience of learning takes place. Hatred of learning, … leads to an attack on the link, resulting in the process being stopped of even reversed. Thus, instead of meaning developing or thinking being promoted, there occurs a reversal of the process so that any meaningful units become stripped of meaning. … If a negative link is dominating, the process of understanding within the relationship is

stopped and reversed; meaningful experience may be destroyed. (Symmington & Symmington, 1996, p. 29)

Learning in a relationship characterised by a minus K link is much more destructive than a mere 'inability to think'; Buxton's (1981) maths-phobic panic resulting in paralysis or turmoil hides much more poisonous emotions and states of being. Both manifestations of panic are portrayed as uncomfortable stutters in the otherwise continuous flow of experience and learning, however the experience of a minus K link constitutes something closer to a diversion, break or blockage in the flow, nothing is the same again. The destroyed learning-relationship, the minus K link, results in the loss of knowing: loss of self to group and loss of knowledge to self. What this might look like and mean in the classroom is explored more fully below but, if a minus K link is suggestive of a destructive learning relationship, is there a way of thinking about this in more relational terms? Is there some handle on the theory that might be less abstract? How can we recognise the kinds of relationship that might result in a minus K link?

LEARNING RELATIONSHIPS: A PERSPECTIVE FROM BENJAMIN

Above I suggested that the notion of a 'zone of proximal development' assumes enough mutual goodwill for progress in learning to be made but leaves silent the nature of the pedagogic relationship. When researchers have looked for empirical evidence of teachers' uses of such a 'zone' they have struggled. Some evidence has been found in the dyadic early learning relationships of very small infants and their carers, but in the context of more complex groups (such as a classroom) and older children, despite teachers' stated intentions, evidence has been less forthcoming (see for example Askew, Bliss et al, 1994). This suggests a need to consider more carefully the nature of pedagogic relationships: both the generative and the destructive.

A Third, Intersubjective Space Between Us

Jessica Benjamin (2004) posits the possibility of developing relationships, which she characterises as forming a 'third space' of intersubjective recognition and experiencing. As she explains:

> To the degree that we ever manage to grasp two-way directionality (*that in a relationship, I impact on you as much as you impact on me*), we do so only from the place of the *third*, a vantage point outside the two. However, the intersubjective position that I refer to as *thirdness* consists of more than this vantage point of observation. (This can refer to) anything one holds in mind that creates another point of reference outside the dyad. My interest is not in which 'thing' we use, but in the process of creating thirdness – that is, in how we build relational systems and how we develop the intersubjective capacities for such co-creation. … Thus I consider it crucial not to reify the third, but to consider it primarily as a principle, function, or relationship,

rather than as a 'thing' in the way that theory or rules of technique are things. (p. 7)

For Benjamin, our ability to co-create and surrender to thirdness is rooted in our earliest experiences with our mother (or other primary carer). Firstly, there is the experience of having our hungry anguish held, tolerated and relieved. The mother is able to hang onto the fact that the baby's distress will pass and, while she is able to recognise and empathise with its pain and frustration, she is not overwhelmed by it, nor does she run from it. She is able to …

> hold the tension between the identificatory oneness and the observing function. This mental space of thirdness in the carer must, I believe, be in some way palpable to the child. As a function, in both its symbolic and soothing aspects, it can be recognised and identified with, then made use of by the child. (p. 14)

For the teacher and learner in the classroom to recreate this ability to surrender to a third space the teacher would need to be able to hold the learners' tensions and anxieties knowing that they will pass. This teacher would be able to let the difficulty exist and facilitate the struggle and would be able to let the learners know, at some level, that their struggles were okay, survivable and, with time and effort, surmountable.

A Position of Complementarity: You or Me, Doer or Done To

In tolerating the child's (or learner's) discomfort the mother/teacher processes its pain and frustration, thinks the thoughts, and returns them to the child/learner in a manageable form. However, if the mother/teacher is not able to hold the child in mind, if she over-identifies with the child she may either swamp them (by *giving from a position of complementarity*, an act of over-identification in which she and the child are assumed to be one), leaving them unable to learn to think their own thoughts, or abandon them, leaving them alone with the unmanageable feelings and similarly unable to process their thoughts/feelings.

> if she gives from a position of pure complementarity (the one who knows, heals, remains in charge), the patient will feel that because of what the analyst has given him the analyst owns him … Further, the patient has nothing to give back, no impact or insight that will change the analyst. The patient will feel he must suppress his differences, spare the analyst, participate in pseudo-mutuality or react with envious defiance of the analyst's power. (Benjamin, 2004, p. 14)

A position of complementary two-ness in which one is active and the other passive is characterised by a pattern of action-reaction and is one-directional, moving from to doer to the done to, from the one in control to the controlled, from the mother to the baby, from the teacher to the learner. *By contrast*, Benjamin points out, *a shared third is experienced as a cooperative endeavour.* (2004, p.18)

The other extreme, of abandonment, is also associated with not feeling seen or valued and can have problematic consequences.

> If the patient does not feel safely taken into the analyst's mind, the observing position of the third is experienced as a barrier to getting in, leading to compliance, hopeless dejection, or hurt anger. (Benjamin, 2004, p. 28)

Shifting the context from patient/analyst to learner/teacher we can recognise in the description of complementarity the teacher who would make things easier for the learner through an over identification with her struggling pupils; the 'I know, I found it hard, I couldn't do it either, push these counters together and recount them then you'll have the answer' or 'As a teacher I would never do to children what was done to me in school'. For the pupil caught in this gaze and over protective containment there is no room to move or to think. From this position maintaining the tension of holding the learner's discomfort while helping the child to process its experience is avoided, the tension is expelled in an act of identification. But while the teacher may feel relieved that the tension they experienced has been dispelled, the child is left with their difficult feelings of not understanding the work, and now also not understanding why the teacher has 'rescued' them. Holding tension is never comfortable, helping a learner to understand why they are struggling and watching the painful process of learners developing understanding is much more difficult than solving the problem for them – but this is about the release of tension for the teacher, not the learning of the learner.

A key aspect of this complementarity is the way in which the structure of the doer/'done to' becomes coercive and, Benjamin suggests, it is an important characteristic of the impasse that is created that the relationship is characterised by 'coercive dependence that draws each into the orbit of the other's escalating reactivity. Conflict cannot be processed, observed, held, mediated, or played with. Instead, it emerges at the procedural level as an unresolved opposition between us, even tit for tat' (2004, p. 10. See also Mendick, 2006, for the operation of other, and especially gendered dualities within mathematics).

It would be in maintaining a sense of sharing and collaborative endeavour and managing to hold onto these tensions for each other that a space of thirdness might be created. However, the development of systems of sharing and mutuality may be antithetical to the atmosphere in many of today's classrooms dominated as they are by test results and the need to be doing better every day (Ball, 2003). The co-creation of processes that will be struggled for over time might feel too difficult, too demanding of time. Perhaps the process is even dangerous if your thoughts and movements are monitored through everything from your planning documents to the children's test results. In a climate in which the demand for control that permeates down from government to the classroom is extreme and unrelenting, letting go might feel impossible.

Despite this I suggest that a place to experience and learn about each other is key to other forms of learning. It is through the learner's engagement with a teacher they know and trust and who knows and trusts them that both can come to know about each others' passions (loves and hatreds), and that through this interest

in the teacher and their passionate engagement with the things we must learn that we learn the subject too:

> Sally   The teachers make a big difference when its subjects so I hardly have Miss Daniels ever but I had her once in maths and she wasn't the best. But when it comes to subjects I um don't like but I have a teacher that I like then I would have a good standard. But if I had a teacher that I don't get along with, then I wouldn't get it

However, as we have already seen, holding the learner's anxieties and fear, tolerating their pain so that the K linkage or a place of intersubjective awareness (of thirdness) can form and be maintained is not easy and can quickly founder.

BEING IN THE CLASSROOM – WHAT IS

In the first part of this chapter I described three interrelated psychoanalytic theories. The first of these (Foulkes) focused on the importance of an acknowledgement of the group. While I have not pursued this aspect in detail, it is foundational to a move away from individualised notions of learning and teaching. More obviously I have drawn on the strongly related theories of Bion and Benjamin. I have suggested that there is a connection between Bion's notion of knowledge as an emotional activity and Benjamin's relational psychoanalytic theories. Further, I have begun to draw a connection between the existence of a minus K link and a doer/'done to' dynamic in which the overwhelming experience is of a reactive impasse characterised by complementarity (over-identification) or abandonment. The other side of this, a K link, might then be thought about as coming about and existing in a place of surrender to an intersubjective third. In these ways I have begun to explore the space that might lurk beyond a 'zone of proximal development'.

In the second part of the chapter I will turn to data from a research project to explore what these theories may look and feel like in the classroom. I will begin by saying something about the project and then move on to the analysis.

THE RESEARCH CONTEXT

The data drawn on here comes from an intensive study undertaken with one class of primary school children across five terms spanning three academic years: from the summer term in Year 4 (pupils aged 9 years), throughout Year 5 and to the end of the first term in Year 6 (pupils aged 10-11 years).

The school is a primary school in England located in a working class, inner-urban multicultural community. The ethnic make up of the school reflects well the community in which it is situated being 50% Bangladeshi with 30% white (UK) working-class and the remaining 20% being of Black Caribbean, African, Chinese and Indian heritages. At the time of the research over 70% of pupils were eligible for free school meals, a social index of poverty commonly utilised within the United Kingdom. It has consistently done well in the local school league tables

coming in the top five and generally performs above national expectations. For a school with this make-up and coming from this urban environment, these are significant and noteworthy achievements although we might want to question the cost that such success comes at (Bibby, forthcoming b).

The data used below comes from formal and informal interviews and discussions with pupils undertaken either singly or as part of friendship groups. Some field notes record work undertaken with groups of ten when the children undertook their own research with research training and supervision from myself. As part of this process some children became very interested in interviewing peers and teachers – those interviews are also drawn on. While the research team chose the adults' pseudonyms, the children chose their own so although they have chosen what might be thought 'gender appropriate' names, their pseudonyms do not necessarily reflect their ethnicity. Each year group exposed the children to three teachers: their class teacher, the parallel class teacher and a support teacher, all three shared the teaching for the year and the children were mixed and split differently for different subjects. Three researchers interacted with the children: myself, Sheryl Clark and Alice Haddon.

Looking at the observation and interview data it is easy to find examples of the difficult feelings engendered by mundane classroom exchanges. These exchanges, which were perhaps lost to the teachers in the heat and bustle of the one-to-thirty-ness of their classroom relationships, were seen and felt acutely by the children. The extent to which this happened and the acuteness of the children's experiences came initially as something of a surprise to the research team.

Despite the benign images conjured by the notion of the 'zone of proximal development', real classrooms are often better characterised as places where learning is fought over and where individuals (adults and children) behave in defensive and resistant ways which will include attacking and hiding. So the ZPD's reliance on willing compliance leaves us with no way to think about more troubling classroom processes other than to split them off from learning and to deal with them as something else (as 'behaviour' for example).

From Bion: A Pedagogic Relationship Characterised by a Minus K Link

While much of what follows are events and experiences borne out of relationships characterised by a –K link, the resilience of the children in seeking reparation remains a remarkable testament to their hopefulness. Unfortunately, towards the end of the Autumn term in Year 6 some children were beginning to despair of improvement and were learning to habituate themselves to the impoverished classroom relationships that were all that was on offer. I have no evidence for the long-term consequences of such capitulation, however, the theory would suggest that they are neither pleasant or hopeful.

As I suggested earlier, the destruction of thought and thinking brought about by the existence of a relationship founded on a minus K link can be experienced as catastrophic and result in the loss of knowing: loss of self to group and loss of

knowledge to self. As a year 6 boy explained to a researcher and his friends during a group interview:

SC   How do you feel if you get put in the lowest (maths) group?

Muhi   It feels not good because I don't feel good. It looks like all the medium stuff went to the lowest, it feels like my brain is going down, like we are doing Nursery work and I'm back in Reception

Such loss of knowledge is more personally threatening than the temporary 'blindness' or 'inability to think straight' often described as accompanying fear of mathematics (for example, Buxton, 1981). Muhi's description is of feeling diminished and infantilised by a teacher who cannot or will not recognise him, his efforts and what his efforts mean to him and to his relationship with her. It is more than the 'content of his brain' that has sunk and been lost (*the medium stuff went to the lowest*), in his analysis he has also lost his position in the school and his peer group (*I'm back in Reception*), and his self respect (*I don't feel good*). This is a catastrophic event. His turmoil is evident throughout this interview and also in his distressed (and distressing) attention seeking actions in lessons. As he explained when the researcher asked him in a lesson why he kept calling out to tell the teacher what number he was on in a mathematics exercise: 'because sometimes she doesn't care what number I'm on'. The teacher was experienced as having no interest in his progress through the very tasks she had demanded he perform; she seems to have abandoned him to his fate in his learning yet she continues to judge and act upon those judgements. Muhi appears to be stripped of any ability to work to influence her behaviours towards him. Her taking of knowledge *about* him is experienced as devouring. Perhaps if she were to spend time understanding why he has become so irritating in mathematics lessons, taking time to learn *from* him, the lessons might be experienced differently by both of them.

From Benjamin: Being Suffocated in Over-Identification

One possible configuration for a relationship in which a space of thirdness cannot be managed is a position of complementarity, a relationship that is very familiar from work in and with schools. As I suggested above, an act of complementarity enables the teacher to relieve her own uncomfortable unpleasant feelings and anxieties through an act of identification with a student or group of students. This position allows the person in control to control completely in the certain knowledge that *they know* what the other person is feeling and thinking. This, Benjamin suggests, amounts to a theft of self by the other. The relief is all the teacher's and the student can be left with the original difficult feelings associated with not understanding the work/ ideas and with the added burden of wondering why they needed rescuing: what was it about their lack of understanding that the teacher could not bear? Are they unbearable? Not survivable? Do they need to hide their impossible ignorance to protect the person who is supposed to be there to help

them? Pushed to these places we can begin to see how the position of the learner could be very difficult in such a context.

In our research this dynamic was exemplified by Miss Middleton's own relationship with mathematics and her mathematics group. Interviewed by the children, she identified mathematics as the subject she least liked teaching: '*I hate it*' she told them. Some reacted to her style of teaching mathematics well, they hated mathematics too and colluded with her through a '*pseudo-mutuality*' to make it unnecessary to engage with the subject. Others found her lack of teaching more problematic. Muhi and his friend Matthew struggled to make sense of why they had both been moved from the 'middle' mathematics group: Muhi into the 'bottom' group and Matthew into the 'top' group. They explained first that they'd been working together and thought they were getting the same marks in their work and tests:

Muhi	Yeah, and we were just opposite each other on our table. … We (got) our work done, we finish it, every sheet. But I don't know why I got kicked out from Miss South's class. Because um, I don't know, because –
Mat.	Maybe you had a low level score
Muhi	I had a level 4, so was his. And I got kicked out. … And Frank said I got kicked out because I keep on talking to Matthew. But we don't really talk, we just talk about our work
SC	So then you got put in another group as a result?
Muhi	Yeah, I got to the lowest. And Miss Middleton hates maths, so guess what she does? She says 'right, get all your times tables done' and then she gets paper and we just have to colour, like reception.
Mat.	Miss Middleton is fun. I wish I was in her maths group
Muhi	But she hates maths. She doesn't even learn us maths. It's (very) boring, we just had to colour like reception (…)
Emran	When Miss Middleton took us just for a bit she never taught us it and I think it was just a waste, I don't know, of teaching. Because I learned more from when we had to do sticking to make a collage

Matthew seems to try to make it okay for Muhi to be in Miss Middleton's bottom mathematics group: it must be fun. But for Muhi there is only frustration, he is left not learning a subject he used to enjoy and he is diminished by the experience. Eventually Emran confirms his interpretation of the lessons, little learning happens. In relation to her assuming a position of complementarity Muhi feels helpless and angry or frustrated: how can he know how to behave with this teacher? Here, in the face of a minus K link, his understanding of himself as a collaborative and successful mathematics learner has been stripped of meaning and

he is left empty. His energies, once focused on learning mathematics, are now taken up with trying to make sense of his sense of loss, disappointment and bewilderment: who am I now that I have been demoted to this non-maths mathematics class?

So, how can we characterise what was happening among the children we spent so much time with? While the analysis here is somewhat gloomy, it is worth holding onto the determination and continuing efforts of the children, the optimism of their will.

From Benjamin: Feeling Abandoned, Wanting to Abandon

Foulkes' suggestion that *what we call mind* arises from our *need for communication and reception*, for being seen and heard, gives us some indication of the fundamental importances of these experiences. Benjamin underlines this importance with her suggestion that feeling *taken into the mind* of the other is central to the development of an intersubjective thirdness in a relationship. The kinds of experiences that can result in feeling unseen and not having been taken safely into the teacher's mind are legion (see also Spindler, 2006), they include being overlooked in the classroom when you have put your hand up to answer a question…

> Minnie   The people that don't put their hand up, she's always choosing them. And the people that we wanna say it and we stretch our arm up so high and then your arm starts to hurt. … There's no point putting your hand up

… and extend to having a contribution misunderstood and/ or passed over, or to feeling misrepresented in some other way. The anger of the children in being overlooked, or of feeling invisible, generated mistrust in the teachers and of their intentions. In another interview Sally and Minnie explained their reasons for mistrusting their teachers' claims, at the start of the new school year, to good will and liking the class, they carried this mistrust forward into their other dealings with Miss Warner:

> Sally   Miss Warner, when she saw us she said she'd heard we were a really good class but I don't know if she believes that. We had to make little books introducing ourselves. What she did was she just put them in this box, like a scrap box and I'm sure I saw Fatima's ripped and Muhi's ripped so she doesn't exactly take care

> Minnie   I think on the outside she likes us and she's just saying, I think she's lying, but inside I think she's saying 'I don't like this class'

The teacher's actions and her words told different stories leaving the girls uncertain which to believe but tending rather to trust the actions over the words. The teachers insisted that lessons were worth doing because they were interesting. Yet these sentiments were belied by actions and experiences. As Rezwana

commented: 'I don't think they even care. All they care about is to do work, blah blah blah'. Rezwana's comment seems to indicate that she feels there to be a lack of caring about the children as individuals. This personal invisibility and felt lack of caring about the whole individual sometimes resulted in some children feeling their teachers did not like them. Sally vividly explained her frustration and she and her friends Sabrina and Sophie explored their feelings with the researcher (AH):

Sally	I put my hand up and she (Miss South) never chooses me, especially in maths. She loves the other Year 5 class and then like um she blames me if I've got it wrong. It's like 'Sally, you don't understand' but it's her, she doesn't understand and then when I'm ignored I don't like it. I feel left out and nobody ignores me! But then she says I only ignore you it's because you're so clever, but then that's not true. … I think it's just that she doesn't like me. No Alice it's true, I don't think she likes me that much.

They described the effect this had on their learning. Like much of the interview data, this extract has an 'us and them' ('done to'/'doer') feel about it and a feeling of frustration and anger can be sensed coming through from the children's descriptions of what it was like being in the classroom:

AH	And what happens to you when you're trying to get on with learning things and you feel the teacher doesn't like you? Does that make a difference?
Sally	Yes, it's a bit difficult to concentrate and then she's like 'you're not concentrating properly', but when you tell her that 'you're leaving me out' then she doesn't know how you feel because its not happening to her!
AH	Because she's not being left out?
Sally	Yeah cos she's being like, everyone's surrounding her going 'Miss South, Miss South!'
Sab.	If I was Miss South yeah, and Miss South were me yeah, I'd just squash her like a fly! (laughter from all three)
AH	And what would you do Sophie?
Sop.	I'd ignore her as well
AH	Yeah but you can't really ignore a teacher so well, it doesn't work so well that way round
Sab.	Send her to the head teacher
Sally	I would ignore them or this is what I feel like to do with this boy in my maths group, getting a ruler and whacking it on his head ... yeah that's what I feel like to do with Miss South 'cos teachers need things like that.

Given their relative powerlessness there is little that the pupils can do in the face of their perceived persecution by a relentless 'doer'; they have little ability to deliver the tit-for-tat responses they might secretly want to make. Their resentment of this teacher suggests a blocked or broken relationship (a minus K link), in which they cannot know or be known by their teacher, instead they have to defend themselves against her lack of empathy. The need to comply with her demands has led to hurt anger and the violence of their revenge fantasies is powerful. Elsewhere, and in the context of having '*The lion, the witch and the wardrobe*' as a class reading book, they express a desire to '*push her into the wardrobe*' and so to banish her to another reality.

Given the difficulty of banishing and 'disappearing' ones' teacher, that some children effectively make themselves 'disappear' is perhaps not completely surprising. Indeed, this is a very compliant, well-behaved class and the simmering resentments and anger remained largely hidden from adult eyes. Any serious and long-lasting fallings-out tended to be conducted privately. There were few public demonstrations of fury or hurt with their peers, let alone their teachers. Indeed, this is ironically part of the reason the class were chosen to work with the project. Earlier I suggested that the metaphor of the zone of proximal development encourages us to ignore any differences between the learner and the teacher and that it seems to suggest that the learner's differences will be relatively unimportant and willingly subjugated to the teacher's benevolent intentions. The extent to which the children looked beyond themselves for validation was remarkable but perhaps, if they were experiencing complementarity (being 'done to') then their lack of learning of how to experience themselves for themselves might make this more predictable. Perhaps, feeling at the whim of seemingly capricious adults increases the need to please them, to propitiate themselves:

> Rhatul   Mr Leader (Head teacher) tells us if you're good at reading and if you are (he) read(s) out the questions and you have to write down the answer to each question … and Mr Leader gave us a prize. (…) And if we can do it, if we've got all of them right, he'll give you a prize. Mr Leader gave us the prize and he was so happy that we could do our times-ing.

It is for the head teacher that Rhatul and (he suggests) his peers learn, their success is offered to him for his approval and his happiness; their pleasure is in his happiness, not their own achievements. For some, however, getting positive attention was experienced as difficult: what could be seen and celebrated felt beyond them. Emran (being interviewed in Year 5 with friends Matthew, Muhi and Jack) explained the inequity of the 'table points' system in which the tables (seating was arranged by the class teacher) were rewarded with yellow slips, ostensibly for working well, and individuals were punished with red ones:

> AH   And is table points a good idea do you think?

> E   sometimes they (the teachers) don't even expect us (boys) to be doing hard work, they go to another table and just give (the reward) out

AH	So it's not to do with whether you're working hard
E	No
AH	What do you think its to do with?
E	Tidying up

There was a great deal of ambivalence and confusion about who was 'doing' what to this group of boys. As the discussion continued where the persecution was coming from shifted:

Muhi	And the golden slip thing, I don't want it! All the girls, especially Beyonce they just help because they want to win something and when we say, can we help she goes 'Nooo' and it ain't fair
Emran	They just do it to get rewards and yellow slips (…)
AH	Do you think the girls get more rewards than the boys?
E	Yeah. And Bobby, because he's quiet he gets a yellow slip
Mu.	Just because Bobby's quiet it doesn't mean he should get a yellow slip and lots of things
AH	So he gets lots of things because he's quiet
E	But when the teachers aren't looking he bosses everyone!
Mat.	Yeah he does
Jack	He doesn't boss me because I've never given crisps
E	AND he never gets his own crisps, he just wants more and more from ours

Here we begin to get a sense of the complex social and emotional economy of the primary school peer group and the way that they looked to each other and their teachers to see and be seen. We can hear Muhi resisting what he seemed to read as the manipulative quality of the table points/yellow slip system and the boys' shared disgust at Bobby's apparent duplicity and the teachers being taken in by this. They grapple with key questions: Who is judging who and how? What is valued? How can I be seen and valued? Who is in control? Do they use their power fairly? In this exchange too we begin to see *the intense jealousy, rivalry and envy* that first takes place among siblings and later schoolchildren *reversed into demands for equality and fairness* (Mitchell, 2003, p. 11).

What was notable was that, in over a year spent with this class, at no time did we see or hear of issues like this being picked up or discussed. The teachers seemed happy to remain in control, the children's compliant behaviour and success with SATs (compulsory 'Standard Assessment Tests') meant that they were not forced to consider the status quo within which they operated. That the children felt persecuted did not result in the teachers experiencing their half of the dichotomy;

the persecution they experienced was projected outside, onto government and their tools: the relevant departments, inspection regimes, the league tables, policy writers and so forth. It is my belief, however, that the doer-done to dynamic was very much alive and well in this classroom and this school. The adults and the children were certainly stuck in an impasse in which the children subjugated their desires and needs to the pleasures of the teachers and the teachers continued to control and dominate from a position of misplaced omnipotent benevolence. Schools and classes in more challenging circumstances may not be so quiet.

In a classroom landscape such as this the safe flower-filled, meadow-like 'zone of proximal development' is shown for a sham. This is a far more dangerous place to be: filled with shifting and ambivalent relationships and unstable booby-traps with paradoxical qualities. This is a friendless place of hard existential uncertainties to be managed alone and with few allies.

BEING IN THE CLASSROOM – WHAT MIGHT BE

If these are the difficult feelings that the children in the class experienced, do we have any sense of what they felt the wanted? What was felt to be missing?

Wanting to be Seen and Heard - Reaching Out for an Intersubjective Thirdness

If the teacher is to remain in control all the time and to always be the 'more experienced other' then developing reciprocally educative relationships is not going to be possible; the dynamic will always be one of mutual antagonism, an impasse of doer and done to duality. The non-mutual learning described above and experienced by the children as acutely unsatisfactory left them wanting something more mutual and interrelated, something more nurturing and sustaining.

In the children's own research it became particularly clear that there was a desire on their part to open channels of communication with their teachers – to establish a different kind of communication redolent of a K link, a getting to know that would involve mutual trust and a dialogue, a space that we might characterise as intersubjective. Of the three research groups two generated data on the effects of their relations to teachers ('What do we mean by "fun and "boring"?' and 'Why do we feel different when we do tests and challenges?') and one group specifically interviewed teachers in an attempt to get to know them better. In the preparation, conduct and analysis of this research it was remarkable the extent to which the children made efforts to hold the teachers in mind, to offer opportunities for reciprocal and mutual understanding and to manage and transform what they thought they knew would be the teachers' anxieties. It was also notable that in this school the children were so little considered that their efforts to see, understand and value their teachers did not touch the adults; what the children had to offer could not break through the teachers' deafness to anything but the clamour of the demands of the outside (OfSTED, DFES, league tables etc).

It is not unusual for children to be curious about their teachers and to entertain fantasies about their lives beyond the 9-3.30 that is shared: do teachers really live

in school, sleeping in cupboards or the staffroom? However, it is less usual for pupils to be given an opportunity to interview teachers and to explore their own motivations for wanting to do so. The first event of note to me as a facilitator of the children's research project was the hostility, suspicion and anxiety raised by their initial letters asking whether teachers would be prepared to be interviewed. Interestingly none of the teaching staff felt able to refuse the requests for interviews (one member of the support staff did) but it was apparent that the interview was resisted in action by at least one teacher; a disturbing experience for the child interviewer. Nor did the hostility get directed at the children, it was directed towards me. There was a suspicion that I had directed the pupils and that I was using them to interview the teachers as a sneaky way of getting to more of them. This was an unpleasant experience and seemed to speak volumes of the lack of trust within the school and also a lack of seriousness about the children as people with interests and opinions. In times of OfSTED and constant surveillance it is perhaps understandable that this reaction might be a possibility; that does not lessen the shock of its reality. More importantly, the teachers' denial of the children as people more than learning-taker-ins-and-test-performers raises issues about the kinds of relationships that they can countenance; they seemed intent on remaining the *doers* to the children's *done-tos*, of remaining in control.

> One-way recognition misses the mutuality of identification by which another's intention is known to us. To separate or oppose being understood from self-reflective understanding or understanding the other misses the process of creating a shared third as a vehicle of mutual understanding. (Benjamin, 2004, p. 27)

During the analysis of the data from the teachers' interviews the children noticed and reflected on what they identified as anomalies. For example, they noticed that, when asked what subjects they liked teaching, all the teachers mentioned either literacy or mathematics. Other areas of the curriculum were only mentioned in terms of subjects the teachers did not like teaching. This rang hollow to the children, surely some must like teaching other parts of the curriculum best? And was it really possible that they all spent all their time outside of school eating? But perhaps the most troubling aspect of the interviews was a rather different silence, again identified by the children. Two of the teachers who had been interviewed had talked about doing things at the weekends and in holidays with their daughters but the fact that they were married to each other and that the children belong to both of them was not acknowledged despite this not being a secret. This was noticed and talked about by the children as if it was some kind of betrayal. The children talked for a long time about whether, if I had asked the questions (as an adult) or if they asked again, we would get the same responses. While they understood, and reminded each other, that the teachers might want privacy about their lives, the way they had chosen to draw boundaries was troublesome to the research group and read as inauthentic and also as a slur on the children: they don't trust us.

The desire for a 'we', for closeness and mutuality, for a different, more reciprocal relationship also came through in other, less overt ways; for example, in their continuing to seek approval after many felt rebuffs and rejections. The extent to which the physical and psychic space of the classroom was out of their control was struggled with throughout our time of listening to the children. It was a theme they all (boys and girls) returned to in a variety of small and large ways. The loss of the carpet space in Year 6 was particularly mourned and, felt with the physical distance from friends generated by the teachers deciding who was to sit where, led to very complex and painful feelings of isolation and loneliness. Rani particularly struggled with her feeling of isolation from her teacher and her peers. Now they had lost the close physicality of the carpet, of being able to lean a little to one side and make contact with a friend, of being able to whisper a comment while the teacher read. Now, sitting on chairs around tables, everyone was far away, there was no physical contact and a whisper might be misconstrued, reaching out with warmth might be punished. The loss of intimacy and trust was experienced as a kind of ache but, like a lost tooth, something to learn to live with.

DISCUSSION AND CONCLUSION

Benjamin suggests that the only way out of the doer/ 'done to' impasse is to recognise our own participation in the dyad, she suggests that we need to '*surrender our resistance to responsibility, a resistance arising from reactivity to blame*'. That is, we need to stop feeling stuck and reacting with tit-for-tat behaviours and to do this we need to own our complicity.

> Once we have deeply accepted our own contribution – and its inevitability – the fact of two-way participation becomes a vivid experience, something we can understand and use to feel less helpless and more effective. In this sense, we surrender to the principle of reciprocal influence in interaction, which makes possible both responsible action and freely given recognition. This action is what allows the outside, different other to come into view (Winnicott, 1971). It opens the space of thirdness, enabling us to negotiate differences and to connect. (p. 11)

What would this look like? How can groups (schools, other groups) move beyond a doer/'done to', submit or fight, win/lose or continue to confront/fight dynamic? And what would this look like in mathematics lessons? Would it be any different to other lessons? As stated above, the difficulty here is that the dynamic is demonstrated in the words. If the solution is seen in terms of winners and submission then the power imbalance that has started the difficulty is maintained: the two-ness of the relationship (us and them, good and bad, right and wrong) and the uni-directionality of the communicative endeavours is perpetuated. However, surrender, Benjamin suggests, provides a different space. In surrendering I am not submitting to your demand, however, I am suspending my demand that you listen to me so that I can listen to you and so that we can think together. It is, she suggests, in the act of surrender that a third space can be created.

But is this a state of being that might be desirable in schools? What would it mean for the adults to surrender control in this way and to own their complicity in the blocked relationships of the classroom and school? This is the hard part – for teachers to 'recognise that the object of our feelings needs, actions, and thoughts is actually another subject, an equivalent centre of being, is the real difficulty'. (Benjamin, 2004, p. 6) The difficulty of this demand is not immediately obvious; of course teachers know that children are individuals. But this cognitive knowing is not enough. All of the teachers interviewed as part of this project were clear with the research team that they valued the children and their contributions, the school thought of itself as a 'listening school', yet this is not how they were experienced by the children. And the real test is that they had no idea and no way of coming to know this. The cognitive model of teaching and learning founded (however loosely) on benign Vygotskian principles of 'leading the children' to a state of knowing and of 'assessment for learning' (Black & Wiliam, 1998; Black, Harrison, Lee, Marshall & Wiliam, 2003) as a guide to letting the children into the secret gardens (labyrinths?) of assessment and the curriculum was backfiring and only the children's good intentions and polite acceptance of adult authority kept the lid on the feelings. The learning that was taking place was that one had to come to terms with an impoverished view of oneself, that how one felt was unimportant as long as you kept doing the work, and that pleasing the teacher was the key to success and provided a thin form of nourishment. The children were learning to be what the teachers expected them to be, they were learning to *want to do only what the tutor wants [them] to do*, and that was very little.

> In a world without shared thirds, without a space of collaboration and sharing, everything is mine or yours, including the perception of reality. (Benjamin, 2004, p. 22)

In the classroom both teacher and child are learners. However, the things that they do not know, while connected, are different: among other things, for the teacher what is unknown is how each child will come to understand and make sense of the mathematics they are teaching while for the child the unknown is the mathematics. But for both of them their shared unknown is how they and the other will react to their coming to know of their unknowns; this is the intersubjective work that underpins the pedagogical work in mathematics and in other curriculum areas.

So drawing on Benjamin and Bion, a functioning pedagogic relationship might be thought of as a place that can tolerate thinking, that can contain anxiety so it does not overwhelm and stop thinking. It is a relationship that can enable both learners (teacher and pupil) to bear not knowing, that can enable us to take the journey from familiar, known places (of not-knowing) to a new place (of knowing) and to do the identity work that would enable the learner to rethink herself and to adapt to her new sense of 'self as knower'. Such relationships might underlie the apparently ideal mathematics classrooms of writers such as those reported by, for example, Lampert (1990) and Ma (1999) and Watson, de Geest & Prestage (2003), although there is no space here to undertake that investigation.

Enabling these relationships to develop is the ethical work of the teacher. And this is a non-trivial task for it involves being the 'grown up'. That is to say, it means containing one's own anxieties, fears, desires and furies and not projecting them onto the children; not acting out when to do so seems like the only bearable course of action. It means being able to take a position of vulnerability, of *taking the side of the child rather than the side of the law* (Matthews, 2007), of exploring ones' own desire for punitive vengeance rather than only the child's resistance to our mathematics (Taubman, 2006). Ultimately, the nature of any 'zone' between the teacher and learner or better, amongst learners, will need to be continually contested, struggled over and nurtured, not assumed and left to its own devices.

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