The Psychology of Mathematics Education

A Psychoanalytic Displacement

Tony Brown (Ed.)

SensePublishers
The Psychology of Mathematics Education
NEW DIRECTIONS IN MATHEMATICS AND SCIENCE EDUCATION
Volume 13

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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 The series aims at becoming a leader in providing refreshing and bold new work—rather than out-of-date reproductions of past states of the art—shaping both fields more than reproducing them, thereby closing the traditional gap that exists between journal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.
The Psychology of Mathematics Education
A Psychoanalytic Displacement

Edited by
Tony Brown
Manchester Metropolitan University
Dedicated to Dick Tahta, with love.
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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.

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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 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
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(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) 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-centric 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
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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
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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 restate 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-
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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 of learners 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 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.

Before concluding this introduction I would also like to acknowledge behind the scenes activity by Brian Greer who was supportive throughout and offered helpful comments on an earlier draft.

REFERENCES

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INTRODUCTION


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