

## Finding a language of resistance? Narrating the female self in mathematics

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### Background

Since Valerie Walkerdine's argument in 'Counting girls out' (1989) that girls' underachievement in mathematics during the 1980's was constructed rather than real, much research has focussed on understanding the ways in which girls are positioned as 'successful but not succeeding' in mathematics. More recently, as girls have begun to equal or outperform boys at GCSE level, their continued under-participation in post-compulsory mathematics (Mendick, 2005) demands an understanding of their own self-positioning as 'not belonging' in the world of mathematics, even when they are successful in it, as I have shown in earlier work on undergraduate women. Hence Mendick, in 'Masculinities in Mathematics' (2006), argues that 'doing mathematics is doing masculinity': choosing mathematics and being good at it compromises femininity. One manifestation of this uneasy existence is invisibility: for Walls, speaking at the Psychology of Mathematics Education conference in 2008, girls and women in mathematics 'are required to don a cloak of invisibility that affords them temporary status as honorary males in a male domain, speaking a male mathematical language' (p.4), and like Walkerdine before her, she notes the heavy psycho-social burden of this position. Similarly, Rodd & Bartholomew (2006) argue that the lack of a discursive space for women who do mathematics creates problems for those who choose it at degree level: since the available identities and cultural norms are masculine, young women can only position themselves as good at mathematics by stepping out of the available female identities. They are more likely to choose invisibility as a means of self-protection from the difficulties of 'being a mathematical girl'. More optimistically, my recent work has suggested that some undergraduate women are finding new spaces for being mathematical through critical analysis of their situation and collective challenge to entrenched power dynamics. This paper focuses further on the nature of mathematical women's identity work (Mendick, 2006), paying particular attention to their reflections on, and potential resistance to, the cultural norms which currently still make such work necessary.

### Research Questions

This paper focuses on an exploration of how narratives of self as both mathematical and female are constructed, as a means of investigating the nature and possibility of resistance to cultural norms, and the ways in which such resistance may be resourced. In doing so it asks: To what extent and how is mathematics portrayed as gendered, as a subject in general and in terms of how mathematics teaching and learning is enacted in school/university? How is it bounded? What links are made to personal histories, including family histories, in accounts of doing mathematics in the post-compulsory years? How reflexive are such accounts, and to what extent are they consciously critical? How can we identify resistance in an individual's self-positioning - what forms does resistance take?

### Methods

The data discussed in this paper are taken from an on-going project exploring undergraduate students' relationships with mathematics, drawing on interviews and focus groups involving 29 students spread across four universities and survey data gathered in the same universities and involving 185 students. This paper focuses in particular on interviews with three women at different stages of their university careers, picked for their contrasting life and education experiences: Sarah is a student in her first year of a mathematics degree; Joanne is at the end of a four-year M Math degree, and Beverley is a mid-thirties mature student at the beginning of a BA in secondary mathematics teacher training. The analysis develops separate narratives for each, focusing on the storying of self in terms of time and critical events as in Bruner's 'Life as narrative' (1987), and reflexive responses to those events.

## **Frame**

In this paper I draw on the concept of gender as both habitus and capital as described in Bourdieu's 'Masculine Domination' (2001) and Bourdieu & Passeron's 'Reproduction in Education, Society and Culture' (1990) to explore the nature of girls' and women's self-positioning in mathematics via an analysis of my interviews with Sarah, Joanne and Beverley. This provides a starting point for a discussion of change, or the potential for change, in terms of the ways in which they experience themselves as mathematical women within a sexually ordered social order which defines them as a marked category. In other work I have suggested that families may act as a resource for narratives of self which run counter to discursive positioning, and in this paper I examine further the intersection between gender and family habitus in these women's choice to study mathematics. Drawing on Bourdieu's assertion in 'An invitation to reflexive sociology' (Bourdieu & Wacquant, 1992) of the primacy of field as a network of relations between positions, I consider the degree to which these three accounts can be interpreted as resisting bounded selves in terms of their reflections and perceptions, and whether or not they may be indicative of more than compensatory 'identity work'.

## **Research findings**

Preliminary analysis of the stories told by Sarah, Joanne and Beverley shows that resistance may take many forms and may be unstable in nature. Each account makes reference to family, but in different ways – in Joanne's account, family habitus appears to lead her uncritically towards mathematics, whereas Beverley's story focuses on struggles within the family which is itself a site of resistance. While Beverley portrays her decision to study to be a mathematics teacher as made for her, another reading of her story is one of resistance to early labelling by school. Sarah draws on a feminist critique but finds it difficult to sustain in the face of difficulty; Joanne, on the other hand, as a successful first-class student presents an awareness of gender issues, but appears unchallenged. Taken together, these three stories demonstrate the complexity of analysing and identifying resistance to bounded selves and its role in individual and collective change.