# Who Are You Today? Complementary and Conflicting Roles in School-Based Research

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This article is about my experience of being a researcher in mathematics classrooms. It is about how, as a researcher, I interact with other members of the school community (teachers, children, parents, non-teaching staff), but also about how the researcher interacts with the other 'selves' who accompany me into the classroom (a primary school teacher, an experienced teacher educator, the mother of a primary school age child). I am particularly concerned with the relationship between the roles of researcher and teacher and I want to explore the interactions between these roles in ways which may shed light on my effectiveness in both I find increasingly that contrasts with parenting can both throw professional roles into sharp relief and provide insights into other possible ways of behaving.

The article is written in the context of a specific, and perhaps rather unusual, research setting, but I also aim to address some general issues which seem to me to be relevant to much classroom-based research. In one sense, this generality transcends the subject matter of the research, but I feel that there are also many points where the fact that my research was about *mathematics* is of particular significance

My interest in the researcher/teacher relationship is not so much in the macro level of research design, but more in the micro level of individual interactions in the classroom. The methodology for this exploration is very much 'researching from the inside' (Mason, 1994) As well as the writings of other researchers, I shall draw on notes from my own research journal and those of other participants in the project, as well as observations and anecdotes from friends and colleagues.

After offering some background information in terms of a brief consideration of other research in this area and a description of the research context, I present a series of episodes which have stimulated my reflections. The central issues I see arising from them are discussed in the final section of the article.

## Background

### Practitioner research and researchers as practitioners

The literature on educational research abounds in texts on classroom observation, and on the teacher as researcher – Hitchcock and Hughes (1995), Hopkins (1993) and Hammersley (1986) are typical examples. Many different descriptions are given of styles of practitioner research and the difficulties of carrying out such research are well documented. There is currently an increasing interest in the inverse situation: researchers (generally based in Higher Education) taking the role of classroom teachers within their research projects and exploring the methodological issues which may ensue.

For example, Wong (1995a) describes the conflicts he encountered as a researcher/teacher in a science classroom, and attributes them to the differing goals of the activities of teaching and research:

> In brief, the primary goal of research is to understand; the primary goal of teaching is to help students learn (p. 22)

He describes an incident in which he found himself torn between a desire to continue questioning a particular child, to explore her understanding of a scientific phenomenon, and the need to maintain the pace of the lesson and consider the needs of the rest of the class. He concludes:

> My actions as a researcher compromised my role as a teacher. (p. 23)

Wilson (1995), in a direct response to Wong, presents a different view of the researcher/teacher relationship:

> placing research in competition with teaching is both limited and limiting. [...] I use the skills of teaching and research intentionally, to look in different ways at everything I do (p. 21)

Wilson goes on to raise some questions about what 'counts' as teaching and research, but is perhaps less clear, in this short contribution, about the ways in which she feels her skills in research and teaching are complementary.

Despite their overt differences of opinion, Wilson and Wong are agreed, as indeed are many other authors, that undertaking research which involves teaching is likely to have profound effects on the individual's views of both activities.

> It was [...] virtually impossible to work as a researcher/teacher without carefully considering and altering my views of research and teaching and the relationship between them. (Wong, 1995b, p. 22)

My own view, as I will elaborate, lies somewhere between the two positions presented here I do not see teaching and research as necessarily in competition: indeed, I see them as often being complementary I recognise that my research informs my teaching, but that my experience as a teacher also informs my research. However, I do see situations in which the roles of teacher and researcher may be in conflict, when I may need to position myself consciously in

one role or the other in order to be effective Through unpacking the interactions between roles, my aim is to present some frameworks for making such decisions

**The research context**

The research project on which I have been working for several years is concerned with exploring the effects of high levels of access to portable computers on children's mathematical learning. It is based in a primary school, involving children aged 6 to 11 years. Our research takes place mainly in normal classroom settings. The activities used within the project are planned jointly by researchers (Dave Pratt and myself) and classteachers, [1] arising as far as possible from the regular work planned for the class, but with opportunities to extend the mathematical ideas involved through the use of appropriate software

In the first phase of the project, we worked with three classteachers over a period of two years. It was an important part of the project design that this period would be one of considerable professional development for the classteachers, in terms of both their confidence with computers and their knowledge of mathematics (in which none of them were specialists). As well as planning activities with them, we visited their classrooms regularly to observe and collect data.

One of the factors which influenced our choice of the school in which to base our project was that Dave and I both liked the atmosphere of the school, and the general approach taken by the classteachers. During the first phase of the project, good professional relationships developed among the project team as we all got to know each other's teaching styles. Just as importantly, we also become good friends Without the friendship which built up between various members of the project team during this period, much of the classroom-based research which we undertook would have been much more difficult to carry out The classteachers often felt vulnerable working in areas of both mathematics and computer use which were largely new to them. It was as important that we had confidence in each other as teachers, as that the classteachers trusted us as researchers.

Although Dave and I were mainly interested in cognitive issues, studying how children's mathematical learning is affected by the use of the computer, our data were collected largely through a more ethnographic approach: observing lessons, collecting examples of children's work, interviewing teachers and children There were occasions on which we were invited (by the classteachers) to teach in particular lessons, but in this first phase of the project, our role was clearly as researchers

During the second phase of the project, Dave and I were able to work more intensively in school Each of us was attached to one class during a school term, working alongside the classteacher, but having responsibility for teaching mathematics and science for three half-days per week. Although I has previously been a primary school teacher, this was a new experience for Dave, whose teaching background was at the secondary level. The timetable was arranged so that we were not teaching at the same time: thus, we were able to act as researchers in each other's classes

The classteachers were generally present during the lessons and regarded them as an opportunity for widening their own experience. Sometimes they worked alongside the teacher and sometimes they acted as a second researcher, sitting with groups of children and taking notes on their work. Thus, the roles of teacher and researcher were clearly defined for us all within any particular lesson, but the transitions between roles were frequent.

It is worth mentioning one more feature of the school setting which had a significant but less obvious influence on our work. The school has very good, open relationships with parents Many of the non-teaching staff, and the voluntary helpers in school, are parents. It is also common for members of the teaching staff to have their own children in the school, and both Dave and I also have daughters there. During the second phase of the project, all three of the classes we worked with contained children of members of the project team Although this situation could have been problematic, generally it added an interesting extra dimension to our work

## Episodes in various roles

**At home (parent, teacher, researcher)**

My daughter Lilian (age 8) is having a discussion with her father, Ronnie.

> Lilian: Dad, what's fifteen times two.
>
> Ronnie: You can do that, little girl
>
> Lilian: No - just tell me.
>
> Ronnie: Well, two tens are twenty, and two fives are ten, so that makes thirty.
>
> Lilian: That's not it. Well, I came down fifteen stairs, two at a time - what sum is that?
>
> Ronnie: That's fifteen divided by two.
>
> Lilian: What's that?
>
> Ronnie: Fifteen divided by two is seven and a half.
>
> Lilian: No! That's not right! It's eight!

Lilian leaves the room, annoyed. Later, I join in the discussion.

> Janet: I think fifteen divided by two is seven and one left over
>
> Ronnie: That's a better way to think of it
>
> Lilian: No, it's eight I'll show you!

Lilian goes to the top of the stairs and walks down them two at time. She counts her steps, and gets eight.

> Janet: But the last step was only one, and the others were two That's why I said seven and one left over; seven steps of two, then one left over

Lilian: [Crossly] No! It's eight!

Janet: There's no need to get upset. Try it again.

Lilian: No. It's eight. [Starting to whine]

Janet: Come on now, time for bed

There are lots of things going on here, but I am interested primarily in what it is about this conversation that makes it different from one that might have taken place in the classroom. There are obvious superficial differences, like the one-to-one, indeed two-to-one adult attention Lilian is getting, and the context of climbing stairs - but with a little imagination those could have occurred in school.

More interesting to me are the less obvious features which mark this out as a parent/child exchange. First, the discussion about mathematics is initiated by the child, and starts on the surface with a question which the child could have answered for herself. Lilian does not really want to know the answer to 15 x 2. (Neither does she actually want to know the answer to 15 ÷ 2, as she already knows that the answer to her question is 8.) It seems as though she wants to talk about the ideas and to try to match what she knows to the appropriate bit of mathematics.

Secondly, although Ronnie responds in the way a teacher might do, by turning the question back to her, she feels free to refuse to answer, and he accepts this. Then, Lilian asks another question - perhaps the one she really wanted to ask, but could not articulate initially. When her father answers this one, she disagrees with his answer and gets quite cross. By the time I join in, it is already clear that Lilian is not going to accept any answer but the one she already believes, and she becomes angry and upset when she is contradicted. It is clear throughout this exchange that Lilian is in control. She initiated the discussion and took what she wanted from it. She also decided when she had had enough and wanted to end the conversation. She responded emotionally when she did not get the answer she wanted. She felt safe to do all of these things with her parents in a way she likely would not have done at school in a situation where she felt similarly confused about a mathematical idea. Lilian also knows that her parents are both mathematics teachers and she is used to having us ask her mathematical questions about everyday situations. She knows that we will be interested in her question.

It is also clear how both Ronnie and I move between 'teacher' and 'parent' roles as we talk to her. We both try to challenge and extend her thinking, but also accept her control of the situation. However, there is a tacit third role in this interaction. Both Ronnie and I are, from slightly different perspectives, interested in children's understanding of mathematics. I talked to Lilian about her question because Ronnie had described their conversation and wanted to think about what it was Lilian was really trying to understand, and what the difficulties might be. When I intervened, I was making a considered attempt to explore her thinking. It was as a researcher, rather than as a parent, that I remembered the discussion several weeks later, and wrote it down.

**At school (researcher)**

Early in the first phase of the project, the classteacher Martha was using lap-top computers with her class for the first time, working on a data-handling activity which she had chosen and planned with other members of the project team. The children had gained reasonable confidence with the machines and the software, and Martha had introduced the question 'What affects how a toy car rolls down a slope?' Dave and I have reported elsewhere on some of the children's work on this activity, and on the classteacher's own insights about the approach to collecting and handling data (Ainley and Pratt, 1993, 1995). I have used extracts from field notes and research journals to give below three different views of what happened in Martha's classroom during a particular week.

*Janet's story*

Visiting the classroom, I tried to be as low key as possible, allowing Martha to take the lead in the lesson. I sat with groups of children, taking field notes on my own lap-top. Extracts from my notes reflect my attempts to record my observations without getting drawn into 'teaching' or solving technical problems about using the software.

> I'm sitting at a table, but because I'm writing on my lap-top (like all the children) and looking at the screen I feel more invisible than I would with pencil and paper [...] It's very hard not to get drawn into solving problems, so I have come away to three pairs of girls working in the book corner. [...] The girls with the extended ramp I watched on Tuesday are busy testing, with a fine disregard for accuracy. They are holding the ramp in place, but not noticing that they keep moving it. They have so much information to collect about each car that it is a very long process. [...] Some of the ramps are so steep that they cannot record information easily.

Both the style of the activity and the use of the technology were new to Martha and to the children. I had anticipated that there would be some time spent exploring less profitable approaches before much progress was made, though I had not discussed this explicitly with Martha. However, as time went on my notes reflect some anxiety about how the activity was developing.

> About 2.15. Some [groups] are still typing in their field names. Most have 4 or 5 records at most. Martha is stressing that they need lots of data, but in practice this is going to take a long time. I'm not sure how much data handling is going to happen.

Re-reading my notes evokes a strong sense of the discomfort I felt at this point. As a researcher, I felt frustrated that time was passing and nothing very interesting (mathematically) was happening. I was aware that I had other calls on my time which might prevent me seeing later stages of the activity.

At the same time, I felt that as a teacher I would have done things differently, that the lesson was losing momentum and that the children needed some clear direction in order to move on. However, I was very conscious that this was not my classroom: I was *not* the teacher, and had a strong sense

of an etiquette which did not allow me to intervene I was not sure how clear Martha's mathematical and scientific understanding of the situation was. At this point in our relationship, I often found it hard to read her reactions, as a previous day's journal entry indicated

> My heart sank a bit at Martha's introduction, which was very brief. [...] I would have wanted to let them play with the cars first, and then spend more time discussing possible variables [ .] However, as things progressed I revised my opinion [... ] I must be careful not to underestimate Martha!

In the classroom, my tensions were soon resolved.

> As usual, just as I was wondering if Martha has realised things are going a bit awry, she came and talked about it. [. .] Martha feels a bit at sea, I'm going to try talking to the whole group.

Stepping into the role of teacher made me feel much better I was able to take control of the direction of the children's work and pull together ideas for their future investigations, even though I was not going to be there the following day to see the results. In a fairly short discussion about what they had done, and what they might do next, I felt that they had made some progress. After my previous worries about how things were progressing in Martha's classroom, I felt at this point that the situation had been partially retrieved. I discussed this with Dave, who would be making the next visit to Martha's classroom.

*Dave's story*

Extracts from Dave's journal and field notes indicate how the next lesson progressed, but also give some insights into a different perspective on the roles of researcher and teacher Dave is prepared to intervene more explicitly to influence Martha's planning, though like me, he finds that he has possibly underestimated her perceptiveness about the situation

> Yesterday, Janet worried me by her report of the previous day It seems that Martha had found problems helping the children through the scientific process involved in the experiments [. ] Janet and I decided that I would get in early and try to talk to Martha about how the children might be focused more and that this could result in them using the spreadsheet instead [of the database] which they would find easier In practice, Martha herself had come to much the same conclusions

As the lesson progressed, with children now working with spreadsheets on more focused investigations, Dave seems to see his role as being a co-teacher as much as being a researcher. His field notes are all written in the past tense, describing incidents that have taken place, and in which he has been involved, rather than trying to record events as they happen Dave intervenes directly to show children techniques on the computer, and also takes the initiative in suggesting to Martha how the activity might proceed.

> Larger groups were formed by merging all those who wanted to do the same thing There were two weight groups, one surface group, and one ramp height group. [...] I had talked to Martha about the need to keep all other things the same In fact then they might as well use spreadsheets. Martha was unsure about how to use the spreadsheet However, after I had shown one group, she was clearly much happier and was able to see how to teach the other groups

Despite the fact that Dave and I regularly looked through and discussed each other's field notes, these differences in research style were not apparent to us at the time. Our attention was generally focused on what the children had done and issues to do with the mathematics or the technology. It was only at a later stage that I began to reflect on, and then explicitly discuss, the issues raised by our different approaches However, Martha herself was much more aware of and perceptive about our different approaches.

*Martha's story*

For Martha, this incident was something of a turning point, at which she might easily have rejected the project because of the pressures it was putting upon her. She reflected her conflicting feelings openly in her journal, despite knowing that we would eventually read it.

> I'm not sure what to say about today. At the moment I feel clearer again about the situation but at 2 30 this afternoon I felt confused and very dissatisfied about the whole thing, and wishing I had never heard of lap-tops

With typically disarming honesty, she also commented on our behaviour

> I do feel that this phase of the project is being approached differently by Dave and Janet Janet is really sitting back and taking on the role of the observer rather than supporter, helping only when I am desperate I wonder why?
>
> I felt much clearer this morning about the task for today and the way ahead [ . ] I talked things through with Dave before we started and he seemed to think my plan was workable, and that we, both the children and myself, needed to go through that rather busy and confused stage I realised that I definitely had learned a great deal. [ ] I wonder if Janet allowed me to go down the wrong path intentionally? [. .] I felt much more comfortable with Dave taking a more active role with the children With Janet, when she is just observing, I feel as if I am as much the guinea pig as the children and the computers are - (I know I am really) - but it feels as if I'm on teaching practice

When I first read Martha's journal, I found it surprising and hurtful. It presented an image of myself which I did not recognise, and which I felt was unfair Since then, Martha and I have been able to discuss this incident several times with good humour: it has become known as 'that Thursday afternoon'. Setting aside personal feelings, Martha's perceptive comments provided a starting point for some further consideration of the interactions between teacher and researcher. As a researcher, I had made a deliberate attempt *not* to intervene nor take any part in the teaching or organisation of the lesson. I had, wrongly, assumed that she might

feel threatened if I behaved like another teacher in her classroom, and had ignored other possible interpretations of my behaviour. In fact, as a teacher educator, I do spend a lot of time in classrooms observing students on teaching practice, and Martha was well aware of this.

It was interesting that both Martha and I felt more comfortable when I took the role of teacher, and not just because at this point the lesson started to work better. Reflecting on the incident, I was also struck by Dave's rather different approach to being a classroom researcher, which I will discuss in more detail later.

**At the research centre: planning work in school (researcher, teacher)**

When we were planning our work in school in the second phase of the project, we knew that we had to interact with a number of different groups of people: children, classteachers involved in the project, other teachers and non-teaching staff in the school, the head teacher, parents, governors, visitors to the project. Our roles were inevitably perceived differently by these different audiences. We felt that it was important that we were seen to be teachers by a number of these groups; particularly by children, parents and other teachers in the school. We therefore planned to do a number of things to identify ourselves as teachers:

- planning and running lessons, setting up activities, marking work, leading class discussions, demonstrating how to do things with the computers;
- housekeeping jobs in the classroom (taking registers, putting up displays, giving out messages);
- dealing with discipline and behaviour problems in the classroom and around school;
- dressing like teachers;
- attending (some) staff meetings;
- helping with the Christmas concert and joining in with staff social events;
- meeting parents (with the classteachers) for consultations on Parents' Evenings.

However, a number of things set us apart as not being teachers, partly through conscious decisions and partly through force of circumstances:

- we were known by our first names to everyone (something which initially happened by accident, but which we actively maintained);
- we did not do some 'teachers' jobs', like playground duty, writing reports, keeping reading records;
- we were not in school all the time, as we spent some time each week on other aspects of our research (data analysis, reading, planning);
- we sat in classrooms when we were not teaching;
- we were generally open with children about our research role

**In school: teachers as researchers (teacher, researcher)**

In the second phase of the project, the classteachers understandably found taking the role of researcher in their own classrooms difficult in a number of ways. Initially, they seemed to feel guilty about simply sitting with one group of children: there was always something else that they 'should' be doing. This guilt was closely linked to the (perceived) reactions of other teachers, and in fact they often used the times when Dave or I was teaching to do other jobs around the school, or to cover classes to release their colleagues. They also found the issue of taking notes a little intimidating, partly because we wanted them to use the lap-tops for this, and they felt their typing skills were not good enough, and partly because they were afraid of not knowing what to write. They had some anxieties about not being able to understand the mathematical problems the children might have.

However, when we did persuade them of the value of their research role, they were always full of excitement about what they gained from the chance to observe one group of children closely for a whole lesson. They spoke about this experience as a 'luxury' and a 'privilege': words which seem to relate to their feelings of guilt.

**In the staff room (teacher, parent)**

At the end of the school day, Mary (the classteacher I work with) and I often spent a few minutes in the staff room, tidying up or having a coffee. Mary referred to this as 'time for turning back into a mum'. This reminded me of a comment made by a mature student I was supervising on teaching practice in school.

> It's all an act isn't it? I think I've learnt how to be a teacher. But I sometimes find I'm still being a teacher when I get home

I have also become aware that I often use car journeys (from home to work, from my office to school) to move between roles, cutting myself off from one situation and focusing on the next. I think it is a habit I developed when my daughter was very young, and getting her up, fed and dressed took all my attention, leaving no space to think about my working day until I got back into the car outside the nursery.

**In school: talking to children (researcher, teacher, parent)**

Because I was interested in children's perceptions and expectations, I talked to some of the children from the project classes at the end of our year in school. In particular, I was interested in whether they had any sense that Dave and I behaved differently from their regular teachers. The responses from three children are summarised in the comments in italics in the following conversation.

> *You think the same way . because you're all adults, and you know more.*
>
> Janet: Do all adults think like that?
>
> *Yes* [a bit hesitant]

Janet: Is it because we are teachers that we think the same way?

*Yes. When you want help teachers always come and help you.*

Janet: Are mums and dads like that?

*NO! They say, 'In a minute', 'I'm busy!', and then they say 'It's bedtime', and they still haven't done it.*

Janet: Do you think Dave and I do things that are not like teachers?

*Dave doesn't shout at us.*

*Dave was just someone who came in our class sometimes and helped us, and reviewed what we were doing* [his hands mime taking notes on the computer] *and we could ask him for help.*

Janet: How would you describe what Dave and I do in school to a new person in your class?

*You're the lap-top teachers*

Despite having a clear awareness that teachers behave in different ways from parents in the context of requests for help, and a general sense that Dave was somehow not a teacher (just someone who came in our class sometimes), the children do not seem to have any vocabulary for talking about this role. The bottom line is that we are still teachers.

**At home again (teacher, parent, researcher)**

Lilian has decided that she needs to know how to tell the time. She wakes me up in the morning, brandishing a play clock. We lie in bed, working our way around the clock: '12 o'clock, five past 12, ten past 12, ..., five to 1, 1 o'clock'. We carry on until we get back to 12 o'clock. Then, at her request, we do it all again, with Lilian moving the hands and me saying the times, and then again, with her doing both jobs. This kind of repetition is exactly what she needs in order to see the pattern of naming times past and to the hour. She enjoys the rhythms, we both have fun, and at the end she can read some times successfully when she asks me to 'test' her.

I have taught 'telling the time' many times in school, but I would never have thought of using repetition in this way. It would have been too boring, too time consuming, perhaps too simple. I realise that when we work on mathematical techniques at home, I often use repetition like this. For example, if Lilian worked out 27 + 10, I would then get her to do 37 + 10, 47 + 10, ... to practice the idea. In school, I would be more likely to mix up questions to give the same kind of practice: '25 + 10, 42 + 10, 75 + 10 ...' I am interested in why one approach feels natural at home, while another feels right in the classroom: perhaps I would be a more effective mathematics teacher if I took the time to play with numbers in school the way we do at home.

But being a teacher at home is not always fun. The following comment comes from a research student, who is also an experienced teacher.

> It's really nice when my daughter asks me to help her with her homework, but I find it really difficult. I start explaining like I do in school, and she says, "No it isn't! That's not right!" and I don't know how to react. Children in school don't respond to me like that.

What both these anecdotes have in common is the confidence the children show in asking for, and rejecting, help from their parents. In telling the time, the help offered seemed to match what the child wanted and needed, perhaps because I chose on this occasion to follow her lead. In the case of the homework, and the earlier episode of counting the stairs, the help was quickly rejected, perhaps because it was too 'teacherly'.

## Discussion

**Approaches to being a classroom researcher**

In the extract from Martha's journal I quoted in the episode described earlier, she commented on differences in the ways she felt Dave and I acted in the role of researcher in her classroom. These differences became more apparent to me during the second phase of the project, when I was involved in teaching, with a researcher in my classroom. In simplistic terms, I would characterise two research approaches, reflected in Martha's comments, as those of *observer* - closer to being a 'traditional' researcher - and *experimenter* - closer to being a teacher. These approaches can be summarised briefly as follows:

| Observer | Experimenter |
|---|---|
| passive - monitoring activities, but not intervening, using the teacher as an agent | active - intervening to make an input to the activity, to see what happens |
| trying to record everything, without too much filtering | focusing on recording what is most interesting |
| holding back - not wanting to invade the teacher's territory | getting involved - fitting into the territory by behaving like a teacher |
| minimising the effect of the presence of the researcher | deliberately acting as a catalyst |

These are not intended as clear-cut categories. Certainly, neither Dave or I feel our behaviour fitted entirely into one column or the other, but the polarisation serves to expose the often subtle distinctions more clearly. The two styles are also seen more clearly in the context of the reactions of teachers to the presence of the researcher.

Martha seemed to feel more comfortable with an *experimenter* in her classroom than with an *observer*. One story I can tell for this, in retrospect, is that an *observer* reminded her of being assessed (even though the observer's attention was predominantly on the children), while an *experimenter* felt like having another teacher working alongside her: a familiar situation which had positive associations.

In my role as a teacher within the project, I sometimes felt resentful of an *experimenter* in my classroom: I felt that my control of the overall direction of the lesson was being undermined. Dave, as a teacher, has reported times of frustration at the presence of an *observer*, feeling that without active intervention on the part of the researcher to move children's thinking on, opportunities were being missed.

As a researcher, my reactions to the two approaches of observer and experimenter are less clear-cut. I often feel uncomfortable as an *observer*. To watch children's activity and not join in feels unnatural. I have a sense that I am not doing anything. (This feeling has resonances in the experience of standing back as a teacher to assess what is happening in the classroom. There may be echoes here of Martha's reaction - why is she not helping?) However, at another level, I know that what I am doing is important. The significance of children's words and actions is not always immediately apparent: it is only through detailed and uncritical observation that they can be captured. Mason (1994) stresses the importance of 'giving an account of' something before attempting to 'account for' it. As an observer, I have this model in my head. I try, often unsuccessfully, to record incidents without judgement.

Wong (1995a) reports a similar concern in reporting his dilemma in the classroom.

> as a researcher, I was reluctant [to intervene] for fear that I would alter the "phenomenon" (p. 25)

There is an attempt here to eliminate the researcher from the research context: to create an invisible, neutral monitor, keeping the subject of the research 'clean'. This image is appealing; clinical, efficient, 'correct'. Many researchers would perhaps like their research to be seen in this light. However, in our project, the researchers were not neutral observers, but active participants in shaping the research context. Whatever we did or did not do in the classroom, we had been involved in planning the activities that the children worked on, often discussing in detail with the teacher how a new stage of the activity should be introduced. In this sense, assuming the role of *observer* in the classroom was to some extent a pretence.

In contrast, I often find acting as a *experimenter* when I am in the classroom more comfortable: I feel I am doing something, and getting some responses to my actions. There is a great satisfaction in making a comment or asking a question, and recording the effects on children's activity. I find the role of experimenter seductive: I use this word deliberately to convey both the pleasure and the lingering sense of unease. It is this unease which I want to explore further.

The rationale which Dave and I have discussed for acting as an experimenter is that we have already set up the learning situation and want to see its effects. Specific interventions in the classroom are made as a result of observing children's progress and judging that they are in need of further input to challenge or extend their understanding. Having made the intervention, the researcher can then withdraw to observe the effects of the intervention. The tension for me lies in the discipline required to make this withdrawal.

Having begun by looking at the interactions between researchers and teachers, I end by looking at the relationship between the researcher and the teacher *in myself*. My mental image is of stepping across a line between two areas of activity. Sometimes the step is deliberate; sometimes inattentive wandering. Once I step over that line and begin to be a teacher, I have an investment in the children's success, and I am looking for evidence of this, in ways which may be at odds with my role as a researcher.

**Conflicting and complementary roles**

> I do not assume roles unless I become an actor. Mother is not a role; teacher is not a role. [ ] When I became a teacher I entered a very special - and specialized - relation. (Noddings, 1984, p. 174)

Wilson (1995) uses this comment to support her argument against the value of seeing the roles of teacher and researcher as distinct. Wilson goes on:

> When I decide to do research on my teaching, I don't enter the classroom one part teacher, one part researcher. I'm Suzanne, moved at once to help students learn and intensely curious about teaching and learning. (p. 20)

Of course, in one sense, Noddings and Wilson are correct: in the moment of acting in the classroom, the language of assuming roles is quite inadequate to describe the complexity of the relationships in action. However, when I talk about taking different roles, I do not see this as having implications for changes in my interests and intentions. When I 'turn into a mum' on the way home, I am, of course, still a teacher, and a researcher, and many other things. As a teacher, I am also concerned with understanding children's learning; and as a researcher, I still care about helping children learn. Roles are about ways of behaving, and about the perceptions and expectations other people have of that behaviour. I want to use the notion of roles as a deliberate device to recognise and label choices, and to allow me to re-enter experiences imaginatively in order to explore other choices which I could have made.

I want to look in detail at ways in which I might act differently in different roles, by taking two examples of types of interactions I have with children.

> *I intervene when children are working: how far do I take my intervention? How do I decide when to stop?*

- *As a teacher*, I want to lead children forward, to present new opportunities, and to try to get children to take notice of them. I get led into questioning and telling. I want the children to succeed, so I may go on until I am happy that they have. Children generally do not feel able to say when they have had enough of my intervention: indeed, they may be happy for me to carry them along my line of thinking.

- *As a researcher*, I want to know more about the children's thinking, to see what they can do, to explore their understanding, but not to put words into their mouths. I want to ask questions, but their

purpose is different. I may ask the children's permission to intervene and I am more likely to withdraw quickly if the children are struggling. In some ways, this is more like being a parent than being a teacher: it would feel uncomfortable, and probably be unproductive, to insist on pursuing a topic when the children clearly do not feel comfortable.

- *As a parent*, I would probably ask if help is wanted. I can easily read the signs about how far to go. My daughter feels no inhibitions about refusing the offer, or saying she has had enough. I greatly value the confidence which she shows in such situations, which seems to me to be powerful both in terms of her own learning and in terms of the opportunities it offers me for gaining insights into her thinking. As a parent, and as a researcher, I am anxious not to damage that potentially fragile confidence.

*How do I respond for a request for help?*

- *As a teacher*, I make a decision based on what I think they need. I may give hints to help them think it out, rather than responding directly. The children generally accept my help unquestioningly, and would be puzzled if I refused to help them, as was made clear by the children I interviewed.

- *As a researcher*, I may deflect the question, or even ignore it if I am concentrating on another group (but I would feel uncomfortable about actually refusing to respond). I may question the children to try to understand their problem, which they probably find irritating or confusing, as Wong's pupil clearly did.

- *As a parent*, I may refuse directly, for a variety of reasons, and this does not feel uncomfortable at all: as the interview revealed, children recognise this trait in parents all too well. On other occasions, I may give the help that Lilian wants (and perhaps use it as an opportunity to do some teaching), but she will also reject my help if it is not exactly what she wants, or if I too obviously turn into a teacher.

These responses are obviously crudely drawn: any real situation would be much more complex. However, I find it useful to focus on the differences in the underlying *purposes* of my actions, and in how these actions match the *expectations* of the children, and their perceptions of my purposes.

In the interview with children from the project which I reported earlier, it appeared that there were some ambiguities in how Dave's role was viewed. Such ambiguities about perceptions of my role underlie some of the tensions I feel in acting as a researcher/teacher. I find that there are considerable advantages in being able to step into the role of *teacher* when I go into a classroom as a researcher. As we considered in planning for our work in school, the role can act as a camouflage which allows me to walk into the classroom without standing out as a stranger: I know how to dress and behave, I know appropriate ways to speak to children, I have some strategies for getting and holding the attention of a class, I understand the rhythms of the school day. These things make it easy for me to be seen as a teacher.

Of course, *teacher* is not simply a role I assume. Because of my experience as a teacher, I have some understanding of the complexity of what goes on in classrooms, which can be confusing for an outsider. I can generally interpret and respond to the ways in which teachers and children behave. On the basis of that experience I can make predictions about how children will respond to particular tasks, and the difficulties they may encounter. This inevitably informs and shapes how I see the activity of the classroom as a researcher.

Interestingly, I find it much harder to go into a classroom as *parent*; on parents' evenings and Open Days, perhaps because I know too much about classrooms. I feel uncomfortable, and do not know how to behave. My inability to be 'a normal mum' is a constant source of embarrassment to my daughter. But my experience as a parent undoubtedly informs both my teaching and my research, offering another way of seeing what children say and do, and a different range of ways of talking to children and creating space for them to talk to me.

However, if my main agenda in the classroom is as a researcher, there may be considerable advantages in not being seen as a teacher, particularly by pupils. The incident described by Wong (1995a) which I referred to earlier centres on him questioning a child. His concern is that in extending his questioning, as he wants to do as a researcher, he is compromising his responsibility as a teacher. In discussing this incident, Wong comments on the pupil's reactions to his questions:

> she was clearly becoming uncomfortable with the situation. She seemed confused with my requests for her to explain again. She may have thought that she had just provided an explanation [...] why did I want her to explain again? Also, she may have been expecting me, as the teacher, to respond to her initial answer with some sort of evaluative response. (p. 25)

I suggest that there is a conflict here which makes it extremely problematic for Wong to act in the role of researcher, whilst the pupils see him as a teacher. The pupil is confused by his repeated questions, with good reason. I have written elsewhere (Ainley, 1988) about the different ways in which the purposes of questions may be perceived by teachers and by pupils. It is very likely that pupils will see a teacher's questions as what I have called *testing questions*: that is, questions that the teacher already knows the answers to, designed to test the child's understanding. In this case, the request to explain again will naturally be disconcerting.

A colleague who is an experienced teacher, and now a research student, raised a similar point when discussing how student teachers learn the tricks of how to be a teacher:

> But how do you be a researcher? When I ask children questions they are still telling me what they think the teacher wants to hear.

As a researcher, I often ask questions which are superficially similar to those I would ask as a teacher ('How did you do that?', 'Why did that happen?', 'What will happen next?'), but my purpose for asking them is different. I am much more likely to be able to get the kind of responses I want in a relaxed conversation when the children feel confident. The children's perceptions of me as a teacher can get in the way, particularly if they feel they have to give the 'right' answers. In order to have the kinds of conversations I want to have with children as a researcher, I want to position myself a not-a-teacher. My experience as a parent sometimes provides ways to do this: I often deliberately make references to my own family, or to familiar aspects of children's culture, such as television programmes, as well as more intuitive use of language patterns and body language which are more appropriate to being a parent.

Although I do not see the long term goals of teachers and researchers as fundamentally different (Ainley, 1998), their more immediate purposes in the classroom certainly are. To be an effective researcher (and perhaps also an effective teacher) I believe that I need to be aware of the attractions and constraints of both roles.

## Epilogue: the ghost of the mathematician

After finishing the first draft of this article, I realised that there was a silent presence hovering in the background: the unmentioned role of the mathematician. Although much of what I have said might apply to any school-based research, there is significance in the fact that my research is about mathematics. The role of mathematician is one that I find extremely problematic, which is probably why I have tended to ignore it up till now. Unlike the other roles I have discussed, which seem comfortable and familiar, the role of mathematician is not one I find it easy to assume: I feel I do not know how to be a mathematician.

This feeling is partly about my personal history (I never completed my first degree in mathematics, and so I am really not a mathematician) and partly about social context: in many situations in the U.K. at least, being a mathematician, and particularly a female mathematician, still marks you out as being deeply weird. In some ways, this actually makes me want to be more assertive about being a mathematician; to say, in effect, yes, I am a mathematician, and a mother, and a teacher and a normal human being. But, in actual fact, I generally find it easier to approach this from the opposite direction: to establish my membership of other communities of practice before revealing the ghost in the background.

Working as a researcher in mathematics education in primary schools, with teachers whose own knowledge of mathematics is limited, presents some particular problems. Teachers may feel more vulnerable allowing a researcher into their classroom to explore a subject where their confidence is limited. Designing activities and questioning children in ways which challenge the children's understanding can also expose areas where the teacher's knowledge is less than secure, and that needs to be handled with a good deal of sensitivity, not least to the children's expectations. A strength I admire in all three of the classteachers in our project is their willingness to be open with us, and with the children, if they feel unsure about mathematical ideas. We are fortunate to work in a context in which teachers see our involvement in their work as an opportunity for them to learn about mathematics: the relationship between school-based research and teacher education is another whole story.


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## Note

[1] The term 'classteacher' is used throughout to denote the regular members of the school staff involved in the project. This is distinguished from 'teacher', which refers to the person taking the role of teacher at a particular time.

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