

## **Towards a conceptualisation of a ‘collective teachers’ mathematical knowledge’**

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My intervention to the seminar series (London meeting) on ‘assessment/audit’ of teachers’ knowledge might be taken as both a warning and an awakening (bit pretentious but I like the alliteration).

I warned of the dangers of excessive ‘colonisation’ of teaching by auditing practices, while recognising that institutionalised teaching cannot ‘de-couple’, and even that the audit/managerial system has its own problem of accountability that may appeal to its ‘use’. I pointed out that auditing the SMK of individual teachers could lead to unhelpful tools, and showed / suggested some tools that attempt to assess PCK, and even ‘collective’ PCK ..... I also referred to the potential for such tools to be formative and developmental as well as summative/auditing (cf my work with Julie Ryan) and referred vaguely to ethics.

But I also intended to propose a notion of (awaken) a ‘collective subject’, a kind of ‘collective teacher’ (with which the individual teacher might be jointly engaged) in practice – and asked what it might mean to assess this ‘collective’ knowledge. I think the discussion at the seminar focussed more on the warning than this notion: probably because my ideas were not well enough formulated.

I think this concept could include (but also includes more than just) the concept of distribution of knowledge that we have discussed quite often in the series. A good place to start is the mentor, visiting university tutor and neophyte trainee teacher jointly engaged in classroom practice. In contrast with traditional practice (the mentor and tutor observe the student ‘teach’) for Roth (ref?) this is best understood as an event in which the three engage together jointly in the teaching activity whose prime object is the students’ learning. I’d propose this classroom practice involves the engagement of a ‘collective teacher’ – and anyone who witnesses young children in classrooms bustling with other adults, parents and staff gets the germ of the idea: the collective teacher provides a kind of collective pedagogic agent in learning activity in which the children’s learning is prioritised ..., but this is just the place where neophyte, mentor and tutor (researcher?) optimises their own learning also. I mean that precisely by ‘combining and sharing’ the teaching act in situ each ‘understands’ each others subjectivity better. [OK, I know there is a place for the detached ‘observer’ too- I don’t want to get into an argument for one over the other – except maybe to symmetrically suggest that the children also might have an occasional lesson ‘observing’ and ‘reflecting/researching’ too?]

Then, also apt or this seminar audience, we all know that a trainee sent to the slaughter in one school could survive quite nicely in a different school: but that this is not just ‘school context/climate’. A really tough ‘street’ school may engender a womb-like staffroom to support a new student teacher, while a well-heeled place can sometimes make a young teacher feel very uncomfortable etc etc. (Much depends on the cultural-history of the student too of course: normatively ‘middle class’, or at least if working class by background has been pedagogically Discoursed into the middle classes).

Then, think of Hutchins account of the distribution of ‘navigational’ knowledge on board a large ship. The collectivity of tools and humans, organised/coordinated through a division of labour (and accompanying interactional norms/rules) in a system is the collective that ‘delivers’ knowledge about ‘where the ship is’. Collective reflection on what the navigation-team is doing as a collective is an important component in helping the team to conceive of itself as a collective subject (which presumably Hutchins work achieved inter alia).

This suggests one sense of the ‘collective teacher’ might be ‘the school’: but while this is an important conceptualisation for understanding how schools are resourced (and how league tables/performativity colonise teaching-and-learning) it is incomplete and possibly the wrong one for thinking about the activity of mathematics learning and the collective mathematics teacher.

Other answers to the question might be (i) quite wide: ‘the (mathematics) teaching profession’, or (ii) quite narrow: the ‘department’ or ‘class teacher(s)’. We might find these conceptualisations both too narrow (should we include mathematicians/learners/children as ‘teachers’?) at one time and too wide at another (there is no point in having a ‘collective subject’ without an object of its collective action).

RQ1: what is the ‘right’ collective subject/teacher for ‘our purposes’?

If it were the ‘right’ collective, then how would one ‘assess’ the collective teacher knowledge? One could assess all the individuals’ teacher knowledge, plot a histogram, or add them up and divide by  $N^1$ . This is essentially we would do if we recruited teachers ‘individually’ judging their cv independently of the particular school or department context (I believe some school systems do this). It is roughly what a politician-auditor needs to do to show that they have managed to improve the quality/qualifications of the teaching profession: ‘we’ must not lose sight of this, because we cannot de-couple, we need resources.

But this is not what I have in mind: I am talking about an assessment tool that helps the collective reflect on its ‘self’, to become conscious of itself, so the collective/we can become what it/we want/s to be....

Research question: what (assessment) tools does the collective teacher need/have available to construct its identity, or more prosaically to inform itself of its/our ‘knowledge’ for teaching?

I think these research questions might suggest a programme of research. I feel if we had answers to these questions we could much better orient ‘ourselves<sup>2</sup>’ as a profession.

On the other hand I see these rather general questions as being helpful to specific research studies, such as the one proposed in my paper with Julie Ryan, but also others I am engaged in currently, such as:

- biographies of professional identity of mathematics teachers,
- the distribution of mathematics in ‘sociable/connectionist’ pedagogies, and across learners’ Programmes/texts;
- transitions between school and HE.

I am sorry I cannot be at this interesting seminar but TLRP calls me to account for the money they gave us by reporting to our auditors elsewhere today: I am known to them as an ‘investment’ of theirs, you know....

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<sup>1</sup> I am reminded that Bourdieu says somewhere that class habitus is the statistical aggregation of the individual habitus’ of the members of the class.

<sup>2</sup> I am a bit self-conscious about the ‘we/our’ in this: in a way this requires an answer to RQ1. And to what extent must we recognise divisions and hierarchies in the profession.