Flipping the Coin: Models for Social Justice in the Mathematics Classroom.

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Abstract: This paper offers a definition of "social justice", a term which is in great danger of being over used and thus losing any meaning, as well as exploring the models **1** *am working with the theorise the issue of social justice in and through mathematics classrooms and mathematics teaching. The paper draws heavily on the work of Rawls* (1971) *as well as recent work from McCarthy (1990), Brandt (1986), and Marion-Young (1990).*

For me the term social justice became important as I realised that activity I was involved in under the guise of anti-racist work drew heavily the beliefs I held about education in general and about mathematics education in particular, which may be subsumed under a heading of democratising schools and classrooms. Here the term social justice may define a way of working which accounts for and works the links between oppressions, inequalities and exploitation's which we see inside and outside our schools and classrooms.

However, recently, Social Justice has become capitalised. Social justice is defined by the 'Report from the Commission on Social Justice' as a hierarchy of four ideas:

- *The equal worth of all citizens.*
- *Each citizens equal right to meet their basic needs of food, shelter and other necessities.*

•*The need to spread opportunities and l?fe chances as widely as possible.* •
The need to eliminate where possible unjustified inequalities. (Commission for Social Justice, 1994. :pl)

the use of language such as 'where possible' seem to offer little hope of any real commitment to structural change, and the concept of 'unjustified inequalities' reflects the Victorian view of the 'feckless poor'.

For me social justice represents a shift in thinking away from equality in classrooms. Equality suggests a norm that we work towards. It does not easily accept and value difference although attempts were made through slogans such as 'equal but different' to address this issue. Maybe social justice can be seen as the beginning of a theory around this slogan.

Social Justice is to also do with power. It is do with how individuals and groups of individuals can feel powerful or be made to feel powerless. It is to do with individual,s feeling in control of decisions which affect the way they live their lives. We feel as though an injustice has been done when someone takes a decision which affects us personally or emotionally and with which we disagree but against which we have no power to argue. Social Justice in this sense is linked to the power to make life choices without being denied access to particular life chances through discriminatory practices, Social Justice is also having the power as well as the right to fight practices we perceive as unjust.

Where does mathematics fit into all this. As a child of 11 I was taught in the 'top' group in my Primary school. On Fridays we had a mental arithmetic test. The child who scored highest in the test sat in desk 1 (next to the teacher) for the following week, the child 'coming second' sat in the next desk and so on. After a week or two I realised that by getting 2 or 3 questions wrong I would be about fifth in the test and get to sit by the door. I could engineer this result as I was confident that I knew all the correct answers and so could deliberately make my 2 or 3 errors. I offer this as a metaphor for confidence and skill in mathematics carrying with it power over life choices. A teacher on a course brought this memory to the front of my mind when she told of a similar experience although her experience had left her feeling powerless and out of control. She felt she could not 'do' mathematics, Fridays brought with them anxiety and panic. She knew she would do badly in the test, would be made to sit in a 'lower' desk and worst of all that her mother would see she had failed when she collected her after school. I also note the gender of the tellers of the two stories.

The issue of 'power' is becoming increasingly important in our research community - I cannot even begin the discuss this here. However the theory of power presented here may be seen as more essentialist than a Foucauldian view as it draws heavily on the work of Rawls - who feels able to define individuals as 'least powerful' in certain institutions. A view which I have sympathy with

Although Rawl's work has been criticised heavily for its romanticism, for its detachment from historical and political realities, and for its neglect of the factors of sex, race and class it offered me a useful starting point for my exploration of social justice and education. It also has allowed me to look at ways in which institutions of education can be examined in order to move towards 'more just' ways of working. It opens up possibilities for change.

Rawls uses the metaphor of 'halving an apple' to explain the basis of his theory. If two people are sharing an apple, one person cuts the apple and the other has the choice of which half they want. The theory being that the first person will be as fair as possible in cutting the apple in order to ensure they receive a fair share. The creation of his Utopia takes place through a discussion by a group of people shrouded by a veil of ignorance - they do not know whether they are male or female, what their ethnic background might be, what their family situation is or what their historical backgrounds are. He suggests, taking perhaps a rather pessimistic view of human nature that this group would seek to protect themselves from harm in the new society they were creating. To build ajust society, we should create a society as if our enemy would choose the position in which we are placed within that society. This argument is extended to say that inequalities in distribution within institutions or societies are only just ifthey benefit the least well off within that institution or society.

Perhaps Rawls offers us ways to critically examine our institutions and our classrooms. Can we apply his tests of justice. Do decisions we take as to the arrangements within our classrooms and our institutions always benefit the 'worst off amongst our learners? Would we feel comfortable if we thought that our enemies could decide where to place us, or our own children in order for us to learn mathematics within our schools. If the answer to either of these questions is no, in what ways would we alter what we teach, or the way that we teach it to accord to Rawlsian justice?

A Rawlsian interpretation of social justice only allows 'unfairness' within an institution if the 'unfairness' benefits the worst off within that institution. Another measure of social justice put forward by Rawl's is the right of all people to decide on a rational life plan which is designed to permit *the harmonious satisfactions of his (sic) interests'* (Rawls, 1971 : 93). A rational life plan is one which *'cannot be improved upon, there is no other plan which, everything taken into account, would be preferable.'* (Ibid. : 93). Education in general and mathematics education in particular is clearly important in bringing this 'rational life plan' to fruition. Academic mathematics qualifications are used as a filter to future career prospects and any 'rational life plan' involving moving into a profession must include success in mathematics. However there are clearly many injustices within the assessment structure in our schools, even were these to be eradicated we have already seen that equal qualifications do not mean equal access for all to future career choices. Rather than suggest that all must be given an equal opportunity to succeed academically at mathematics within the present structure this suggests to me an arena of research is

that of the assessment processes used by mathematics educators in our schools. How can this be transformed to meet the conditions of social justice.

Rawls also suggests that within a socially just society, individuals and groups would feel able to participate actively in the democratic organisations within that society. This view of social justice raise many questions with regards to the mathematical education we offer in our schools. Have we begun to address the idea of 'mathemacy' as Ole Skovmose (1994) calls it, which sees the possibility of constructing a learning of mathematics which is designed to support learners in their development as reflective adults capable of using their mathematics to critique and challenge structures within society. If the purpose of teaching mathematics was to enable our learners to construct a better society we would clearly have to re-evaluate our notions of curriculum and pedagogy.

It would seem to me that these ideas are entirely compatible with the desire that mathematics classrooms should be places where we educate both for mathematics and for a society based on ideas of social justice. It also suggests an acknowledgement that mathematics rather than being a tool to be used to interpret and explain the world around us is also used to create our world. I think this is an important point. We cannot move towards a mathematics for justice without questioning our notions of the nature of mathematics and the nature of mathematical knowledge. Indeed by exploring the social perspectives of mathematics education we begin to question many of the unjust practices present in our schools today and the search for alternatives begins.

However although this Rawlsian perspective offers useful models on which to build a theory of social justice and mathematics education it views the values of justice and autonomy as moral issues detached from everyday hwnan behaviour. This is challenged by Carol Gilligan (1988) who asserts that for many women, the notion of care is a key to the way that moral decisions are made. The push for autonomy within a society leads to a detached view of an individual, living within a hierarchically ordered society, whereas the values of care and attachment create a world of individuals within an attached network of relationships. Incorporating the idea of 'care' within a social justice framework offers extra possibilities for transformation rather than adaptation, and again moves from equality as equal turns to social justice as a transforming power.

Gilligan's work has been criticised by Paul Ernest and Patricia Hill Collins (1990) for relying entirely on middle class, white women within its sample. However by attempting to pull together the links between the inequalities, exploitations and injustices suffered by different groups we begin to move towards a coherence which allows us to operate as researchers. So any theory of social justice must include notions of care and connection with familial and cultural roots, if it is to be a useful model. Clearly a mathematics for social justice must include a perspective of care. We must not strive simply to produce autonomous, independent human beings, ready to play an aggressive role in pushing forward the domestic economy, or confident to take their place fighting for a place in a new job market but must also look towards pedagogies in mathematics which encourage values of sharing, co-operation, joint labour and skill sharing. Most importantly we must involve multiple perspectives when viewing actions and interactions in our classrooms, we must acknowledge difference rather than foster homogeneity.

As a researcher interested in issues of justice in mathematics classrooms I required arenas in which I may act. Drawing on Brandt (1986) the areas of syllabus, pedagogy and the social and cultural environment of the school/classroom and assessment became areas of interest. These arenas may be summarised under headings of;

- what mathematics do we teach?
- how do we teach?
- what do we value?
- how do we feel?

Additionally Cameron McCarthy (1990) offers four relationships which could be observed if injustices are present in our classrooms; (i) a competitiveness which leads to individuals or groups becoming isolated from mathematics and from mathematics learning, (ii) the domination of one group over another in the classroom, of one teaching style over another, of teacher time, of resources and so on, (iii) exploitation by dominant groups of weaker groups or of learners by teachers and, (iv) the cultural selection which can take place within mathematics practices.

Finally Iris Marion Young offers five facets of oppression. That is individual experiences which are shared by all individuals belonging too oppressed groups at one time or another. These facets do not exist separately but can be used to observe instances of injustice within mathematics classrooms. She defines these as, powerlessness, violence, exploitation, marginalisation and cultural imperialism.

These three viewpoints can be used to explore how schools in general, and mathematics practices in particular, both in terms of content and teaching styles, at worst create, or more usually, fail to challenge injustices within society. By using these facets of oppression as filters through which to view classrooms I am working towards building a model of a mathematics curriculum for social justice in our schools. A project which is far from complete and often seems almost impossible to carry out. However I share the view of others that such a project is worthwhile and even important. It has offered me a methodology for my research which ties in with those values I held dear as a classroom teacher. I am not attempting to explain why classrooms work in the way they do - that seems like an even more impossible task, nor am I trying to offer a view of learning which can be generalised to improve our teaching. I have a great suspicion of people who tell me how children learn - it is always to easy to find a counter example. At the moment this framework is offering me a way of asking questions which seem fundamental to me as a mathematics teacher and as human being.

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