

Is progress good for mathematics/education?

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In this paper I raise questions about the role of progress within mathematics education. I look at how progress defines a linear and teleological relationship between the past, present and future. This idea then sets the parameters within which researchers, policymakers and practitioners work in mathematics education, constraining the questions that we ask, the answers that we give and the actions that we take in the present. I suggest some alternatives to the progressive narrative of past-present-future as perhaps the only way not to answer 'yes' to the question: does mathematics/education make things better?

Feeling backwards

About eight years ago, in my doctoral thesis (Mendick 2003), I argued that mathematics operates oppressively, and specifically contributes to the reproduction of gender inequalities. In the conclusion, I positioned my approach within the larger project of developing a sociology of mathematics and contemplated the implications:

In thinking about what futures may follow from a social theory of mathematics, Connell's (1987) discussion of possible futures, which can be built on a social theory of gender, is helpful. He sees two possibilities: the abolition of gender or its reconstitution on new bases. The first is a deconstructive strategy that is powerful as a direction but is impractical as an immediate goal. However, beyond these considerations it raises questions about whether our current gender relations have any value.

What would be our loss if they went down the gurgle-hole of history?

It has to be said that a great deal of our culture's energy and beauty, as well as its barbarism, has been created through and around gender relations. A gender-structured culture, and quite specifically sexist sensibilities, have given us *Othello*, the *Ring of the Nibelung* and Rubens portraits, to go no further. Much of the fine texture of everyday life, from the feel of our own bodies, through the lore of running a household, to popular songs and everyday humour, are predicated on gender. Our eroticism and our imagination seem to be both limited and fuelled by gender. To discard the whole pattern does seem to imply a way of life that would be seriously impoverished by comparison with the one we know. At best it would be so different from the world of our experience that we can hardly know whether it would be desirable or not. (p.288)

Returning to mathematics, here too the abolition of mathematics is not only impractical but it is also questionable whether a mathematics-free world is desirable. My own view is that it is not. It is clear to me that the social and historical practices of mathematics have resulted in a great deal more than oppression and inequality. A mathematically structured culture, and quite specifically absolutist and sexist sensibilities, have given us the Internet, the central limit theorem, and the Mandelbrot set, to go no further. Just as masculinity is not all bad ... neither is mathematics.

This leads to the second option, the reconstitution of mathematics on new bases ... I am attracted to this option not just because of the positive contributions that mathematics has made to society but also because of my positive relationship with the subject.

So, despite having spent three years and 80,000 words unpicking the role of mathematics within systems of domination, I resisted the idea that the world (and I) might be better without it. Writing at a distance, I wonder how much this resistance was due to my own investment in mathematics/education as, at least potentially, progressive? More generally, I wonder, how much are the theories we use, the questions we ask and the answers we give tied both to an assumed relationship between mathematics/education and human and individual progress and to assumptions about the value of progress itself?

Modernity, Progress and Mathematics/Education

Wendy Brown (2001, 5-6, original emphasis) identifies progress as a key narrative of modernity, along with right, sovereignty, free will, moral truth and reason: “The conviction that history has reason, purpose, and direction is fundamental to modernity ... modernity is ... premised on the notion of emergence *from* darker times and places, it is also structured *within* by a notion of continual progress”. Modernity’s narrative of progress thus constructs particular relationships between past, present and future, and our own relationship to these temporalities. However, Brown continues by focusing on the fracturing of this narrative of progress in contemporary times. She argues that this narrative is breaking down as people now gaze “backwards to glimpse better times” (7); the conjuring of a Golden Age may be familiar, but for the first time, she suggests it comes detached from any progressive story. “Today ... it is a rare thinker, political leader, or ordinary citizen who straightforwardly invokes the premise of progress” (6).

However, my own and others’ readings of mathematics/education policy, practice and research indicates the persistence here of the anchoring narrative of progress, as speaker after speaker “straightforwardly invokes the premise of progress”. Indeed, neoliberal education policy derives its authority from discourses that relate individual and national progress (Archer et al. 2010). This is evident in the policy documents produced by the New Labour government in the UK (1997-2010). Within their policies, progress figures as an unproblematic good. For example, in *New Opportunities* (HM Government 2009), the first white paper focused on education to address the impact of the global economic downturn, the word progress/ive had 45 mentions (compared to only 42 for teacher/s). Two will suffice:

This is also an economy in which the knowledge and skills of people are now the most important resource as well as our best chance of social progress. The countries which succeed will be those which make the most of the talents and potential of all their citizens. (3)

We will not just manage the downturn fairly, but make of it the beginning of a new era for our nation – with an historic commitment to the greatest possible achievement of modern progressive politics as we lay the foundations of true social mobility and social justice in modern Britain. (2)

In the first extract, we see the conflation of national and individual progress, and the binding of these to discourses of economic competition and individual potential. In the second extract, there is an explicit linking of these discourses to a concept of history as linear and teleological: the “modern” and the “new” improves on what has gone before - “with an historic commitment to the greatest possible achievement” - and makes possible a utopian future - “lay[s] the foundations of true ... social justice”. This offer seems difficult to refuse. Teachers too (of course!) want to see progress in the children they teach.

It is not just education policymakers and practitioners who have intrinsically linked education and progress. Roger Dale (2001, 8) identifies that:

Education has been seen both as the dominant symbol and the dominant strategy for that mastery of nature and of society through rationality that has characterized the project of modernity from its origins in the Enlightenment. ... it has been a keystone of attempts to extend the benefits of progress to whole populations, indeed to the whole of humanity. It has come to stand for the possibility of individual and collective improvement, individual and collective emancipation.

This emancipatory narrative, he argues, has been implicitly (or explicitly) taken on by sociology of education research, and has shaped its focus on removing barriers to educational progress. As researchers we see our project as improving, not eliminating, education. As Dale points out, this is very different from researchers in sociology of religion or the family where the research agenda operates independently of their personal views on the social roles of religion or family. In contrast, in the sociology of education, education is treated less an object of study than as a resource.

Mathematics, and science and technology, are implicated in narratives of progress through discourses that position them as the subjects of the future and vital to our national competitiveness and more generally to human progress. The compulsory status of mathematics in the school curriculum attests to this and to its centrality to the 'progressive' project of compulsory education (Jivaji 2011), while quantitative methods provide the apparatus for measuring progress. Within our neoliberal moment, progress in mathematics education policy (and in much practice and research) stands for improvements in national test results: for example, the UK government publication *Making Good Progress in Mathematics* (DCSF 2008) focuses on how to 'convert' good results in the infant school mathematics tests into good results in the junior school tests. The idea of human progress and development in operation is normative. Some lives and histories lie outside its boundaries and thus as Other to what counts as 'normal' and 'human' (Butler 2004). We can see this in recurrent references to school failures using animal imagery for example in the newspaper headline: "Feral youths: How a generation of violent, illiterate young men are living outside the boundaries of civilised society"¹.

One possible (and common) response is to argue that progress stands for the wrong things. So instead of identifying progress with improvements in results, we could argue for identifying it with more equitable results or more 'authentic' learning. Such a response risks contradiction (even unintelligibility) as versions of progress are labelled unprogressive/regressive. To avoid this pitfall we can play with the language, as in the distinction between 'traditional' - chalk-and-talk, results-oriented - pedagogy and 'progressive' - investigative, student-centred - pedagogy (Boaler 1997). We could look to Marxism (or other radical philosophies) to underwrite this strategy so that the direction of history is determined by class struggle, with the revolution of the proletariat bringing an inevitable end to history (Bowles and Gintis 1976).

These are important interventions. However, while they aim to appropriate and reinscribe progress, they leave intact the narrative of progress with its linear, teleological history in which "the past represents the logic for the present, and the future represents the fruition of this logic" (Halberstam 2005, 11). We can see this clearly in Noam Chomsky's use of history in debate with Michel Foucault:

1 <http://www.dailymail.co.uk/debate/article-1214549/Feral-youths-How-generation-violent-illiterate-young-men-living-outside-boundaries-civilised-society.html>

I think it is perfectly possible to go back to earlier stages of scientific thinking on the basis of our present understanding, and to perceive how great thinkers were, within the limitations of their time, groping towards concepts and ideas and insights that they themselves could not be clearly aware of. ... I think that as a matter of biological and anthropological fact, the nature of human intelligence certainly has not changed in any substantial way, at least since the seventeenth century, or probably since Cro-Magnon man ... and that if you took a man from five thousand or maybe twenty thousand years ago, and placed him as a child within today's society, he would learn what everyone else learns, and he would be a genius or a fool or something else, but he wouldn't be fundamentally different. (Chomsky and Foucault 1971)

Here past ideas are continuous with, or “groping towards”, present ideas; past people are essentially identical with present people, “not changed in any substantial way”. Within this framework, the future too is imagined as a natural and inevitable unfolding of history, culminating in a society that allows the flowering of the “human intelligence” that we share with Cro-Magnon man. This future is a melancholic attachment to the past, a form of “temporal colonisation” (Cooper 2011).

I argue that we need to work with a different relationship between past, present and future. I do this because progress is a means of ordering and de/valuing difference; because research shows that mathematics/education increases inequality; because most mathematics is now developed for military or economic purposes; and because perhaps this is the only way not to answer ‘yes’ to the question: does mathematics/education make things better?

Alternatives to progress

A Klee painting named ‘Angelus Novus’ shows an angel looking as though he is about to move away from something he is fixedly contemplating. His eyes are staring, his mouth is open, his wings are spread. This is how one pictures the angel of history. His face is turned toward the past. We perceive a chain of events, he sees one single catastrophe which keeps piling wreckage and hurls it in front of his feet. The angel would like to stay, awaken the dead, and make whole what has been smashed. But a storm is blowing in from Paradise; it has got caught in his wings with such a violence that the angel can no longer close them. The storm irresistibly propels him into the future to which his back is turned, while the pile of debris before him grows skyward. This storm is what we call progress. (Benjamin 1940)

Here Walter Benjamin is writing as a Marxist but against Marxist ideas of progressive history. His disillusion with progress is apparent in his reading of the Klee painting (www.wordglitch.com/?p=43) which hung on his wall. He rejects “left melancholia”, in which people look to the political failures of the past and become immobilised by their sense of opportunities lost. For him the purpose of doing history is the “blasting apart of historical continuity which allows the historical object to constitute itself”. In this way we create possibilities for action in the present. Although not sharing Benjamin's historical materialism, I think Michel Foucault's (1971) genealogy most fully realises this desire to “blast apart historical continuity”.

Genealogical approaches to the past differ from progressive history by looking not for continuity but dissonance, not for identity but difference, not for inevitability but contingency. The resulting histories show not so much progress as transformation. Their purpose is to disturb what we take for truth: “Truth is undoubtedly the sort of error that cannot be refuted because it was hardened into an unalterable form in the long baking process of history” (Foucault 1971, 79). Thus we need to examine

history, and to do so with a particular sensibility, in order to find ways of cracking such congealed truths. Genealogy sets out to:

identify the accidents, the minute deviations - or conversely, the complete reversals - the errors, the false appraisals, and the faulty calculations that gave birth to those things that continue to exist and have value for us; it is to discover that truth or being does not lie at the root of what we know and what we are, but the exteriority of accidents. (Foucault 1971, 81)

Genealogy attempts to induce a sense of “vertigo” (Brown 2001, 97), to induce instability in the ground on which we (think we) stand. Foucault (1971, 88) talks about history as being “effective” only “to the degree that it introduces discontinuity into our very being-as it divides our emotions, dramatizes our instincts, multiplies our body and sets it against itself”. The self is no longer secured by its relationship to the past or the future for it will not “permit itself to be transported by a voiceless obstinacy toward a millennial ending. It will uproot its traditional foundations and relentlessly disrupt its pretended continuity”.

So Foucault, like Benjamin, has political intent. By looking for “seriality, repetition, absurdity, and anomaly” (Halberstam 2005, 140), “genealogy articulates politically exploitable fissures and fractures in the present; it produces openings and interstices as sites of political agitation or alternatives” (Brown 2001, 113). Thus, we no longer need progressive history, with its promise of revolution, as a ground for political action. Indeed when challenged in debate with Chomsky to speak about the future, Foucault refused. As he explained, all the concepts on which we seek to ground such speculation, be they human nature or justice, are formed within our own society and “one can’t, however regrettable it may be, put forward these notions to describe or justify a fight which should - and shall in principle - overthrow the very fundamentals of our society. This is an extrapolation for which I can’t find the historical justification” (Chomsky and Foucault 1971).

I now want to turn to some work in queer theory which develops Foucault’s refusal of the future. Queer theory is characterised by an:

appropriately perverse refusal ... of every substantialization of identity, which is always oppositionally defined, and, by extension, of history as linear narrative (the poor man’s teleology) in which meaning succeeds in revealing itself - *as itself* - through time. Far from partaking of this narrative movement toward a viable political future, far from perpetuating the fantasy of meaning’s eventual realization, the queer comes to figure the bar to every realization of futurity, the resistance, internal to the social, to every social structure or form. (Edelman 2004, 4, original emphasis)

As Lee Edelman (2004) states, queers occupy a position outside the *heteronormative reproductive politics of futurity*. This is a politics secured by the symbolic figure of the Child. For all politics, and perhaps educational politics most of all, find their self-evident justification in their claim to be fighting for the future of our children. We can argue about what politics might be ‘best for the children’ but we cannot reject the criteria itself.

Edelman uses Lacanian psychoanalysis and readings of popular cultural texts to argue that, instead of (just) seeking incorporation into the reproductive order (for example, through struggles for gay marriage and parenting), queers should embrace the negativity of their position:

by saying explicitly what Law and the Pope and the whole of the Symbolic order for which they stand hear anyway in each and every expression of manifestation of queer sexuality: Fuck the social order and the Child in whose name we’re collectively terrorized; fuck Annie; fuck the waif from *Les Mis*; fuck the poor,

innocent kid on the Net; fuck Laws both with capital Is and with small; fuck the whole network of Symbolic relations and the future that serves as its prop. (29)

While provocative, it is difficult to think what politics might follow from Edelman's celebration of the death drive, his insistence that "the future is mere repetition and just as lethal as the past ... [and must] stop here" (p. 31) particularly give its location within Lacan's structural psychoanalysis (Butler 2004).

Judith Halberstam (2005, 2) rejects Edelman's attempts to make "community in relation to risk, disease, infection, and death". More positively she suggests that the "constantly diminishing future creates a new emphasis on the here, the present, the now, and while the threat of no future hovers overhead like a storm cloud, the urgency of being also expands the potential of the moment and ... squeezes new possibilities out of the time at hand". As Foucault and Benjamin approach the past in a way that multiplies the possibilities for action in the present and lends an urgency to such action, Halberstam's approach to the future works similarly. It is here that I recover a sense of hope from the ruins of modernity.

References

- Archer, L., S. Hollingworth, and H. Mendick. 2010. *Urban youth and schooling*. Maidenhead, Open University Press.
- Boaler, J. 1997. *Experiencing school mathematics: teaching styles, sex and setting*. Buckingham, Open University Press.
- Bowles, S., and H. Gintis. 1976. *Schooling in capitalist America: educational reform and the contradictions of economic life*. New York, Basic Books.
- Benjamin, W. 1940. *On the concept of history*. Retrieved 24 April 2011, from <http://www.marxists.org/reference/archive/benjamin/1940/history.htm>
- Brown, W. 2001. *Politics out of history*. Princeton, NJ, Princeton University Press.
- Butler, J. 2004. *Undoing gender*. Abington, Oxfordshire: Routledge.
- Chomsky, N., and M. Foucault. 1971. *Human Nature: Justice versus Power: Noam Chomsky debates with Michel Foucault*. Retrieved 24 April 2011, from <http://www.chomsky.info/debates/1971xxxx.htm>
- Connell, R. W. 1987. *Gender and power*. Cambridge, Polity Press.
- Cooper, D. (2011, 27-29 April). *Educating desire*. Paper presented at the Gender and Education Conference, Exeter, England.
- Dale, R. 2001. Shaping the sociology of education over half-a-century. In *Sociology of education today*, ed. J. Demaine, 5-29. Basingstoke: Palgrave.
- DCSF. 2008. *Making good progress in mathematics*. London, DCSF.
- Edelman, L. 2004. *No future: queer theory and the death drive*. Durham/London, Duke University Press.
- Foucault, M. 1971. *Nietzsche, Genealogy, History*. Retrieved 24 April 2011, from web.mac.com/davidrifkind/fiu/library_files/foucault.pdf
- Halberstam, J. 2005. *In a queer time and place: transgender Bodies, subcultural lives*. New York, New York University Press.
- HM Government. 2009. *New Opportunities: fair chances for the future*. London: HM Stationary Office.
- Jivaji, G. 2011. *'Being good at maths': a precarious occupation*. Unpublished PhD thesis, Birkbeck College, University of London, London.
- Mendick, H. 2003. *Telling Choices: an exploration of the gender imbalance in participation in advanced mathematics courses in England*. Unpublished PhD thesis, Goldsmiths College, University of London, London.