

Towards a theory of value in education¹

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Quite early on in our TLRP Widening Participation in Further and Higher Education (F&HE) Mathematics project, the ‘exchange value’ or ‘currency’ of mathematics (mathematics qualifications, grades, and credentials) arose as a key feature in students’ and teachers’ accounts of learning and pedagogy, of the institutional culture, and of career aspirations and decision-making. By contrast we also looked for and found maths being described as ‘useful’ (e.g. in engineering etc.) As such the ‘use’ and ‘exchange’ (or ‘currency’) of mathematics became analytic categories generating explanations, for example:

- in showing why students following an innovative ‘Use-of-mathematics’ programme considered mathematics to be significantly more useful (Davis et al., 2008c);
- why students talked of their educational aspirations in sometimes distinctly contrasting repertoires, such as that of aspiring ‘to become a success’ or ‘for personal satisfaction’ – with distinct roles for exchange and use value of mathematics respectively (see Hernandez et al., 2008); and
- why teachers and principals spoke of the needs of students primarily as a need for grades/qualifications. Thus they may say they have a ‘duty of care’ to students to optimise their grades; e.g. to ensure they drop mathematics early on rather than invest in learning a subject which may provide less currency than that of another subject (e.g. media/psychology etc.) See Williams et al. (2008 on line: *Interweaving narratives with CHAT: the institutional culture and ‘voice’*²)

The aim of this paper is to situate our understanding of the conceptions of ‘use’ and ‘exchange’ values of mathematics education within a theoretical framework. The original theory and methodology of choice in the project included Cultural-historical Activity Theory (CHAT) as a means to situate activity in classrooms within institutions and wider social structures and discourses, and hence situate learners’ and teachers’ subjectivities (for more on this see Williams et al., IJER special issue 2007). In summary and very briefly, CHAT provides a framework of concepts for understanding collective activity as structured by Activity systems, constellations of systems, and boundary objects and crossers that link systems (after Vygotsky, Leont’ev, Bakhtin, Engestrom and Cole, etc). It derives from Vygotskian/Marxist materialist psychology and should by no means contradict a classic Marxist political-economic theory of value in education developed hereafter.

CHAT views classroom mathematical activity as social, as ‘collective/joint object-oriented’ activity (for a very simple account, see Ryan and Williams, 2007). I argue that in this theory ‘values’ should have a crucial role in shaping subjectivities, i.e. the subject’s projection of their (perceived, ideal) needs onto the ‘object’ of activity (the collective task at hand). Because a collective of acting subjects is engaged in a joint

¹ This is a précis of a fuller working paper and paper in preparation for AERA(2008), with references etc which can be found at:

<http://www.lta.education.manchester.ac.uk/TLRP/TLRP%20theory%20of%20value%20in%20education%20-%20anon.pdf>

² <http://www.lta.education.manchester.ac.uk/TLRP/iscar%20williams%20et%20al.pdf>

activity, the 'object of activity' is always at the nexus of their many perceived 'ideal outcomes' that motivate the actions of all those individuals involved. 'Values' are bound up in 'ideal outcomes' in so far as these ideal outcomes are subjectively perceived needs, because these needs are mediated by cultural norms and values.

Engestrom R. et al. (1996) point out the primary contradiction between use and exchange value inherent in the object of activity in medical practice. The object of activity as perceived by the patient is that the doctor is there to 'help/cure the patient', which is useful to them. But in fact there is another perception of this object (perhaps the practice administrator, manager – who might also be the doctor) which is to record it as a unit of funding (hence exchange value) for the practice. Thus exchange and use value offer an analysis of the primary contradiction within the commodified 'object' of activity in their health care system: this provides a material, economic basis for a contradiction in 'values' from the point of view of the different agents and subjectivities involved.

The educational institution is likewise typically resourced in relation to (the exchange values of) its recorded, assessed, certified, grades and credentials (administrative, institutionalised, bureaucratised outcomes of the activity of learning). Thus, a school may advise a student to pursue statistics at GCSE in year 11 rather than shift their study from a lower tier GCSE to a higher despite the needs of the student, because they envisage a reward for their school/College league table position.

But our context requires a rather different analysis; the object of education seems to serve somewhat different social and economic functions to that of health, and its 'use' is open to some debate. Thus the need for an institution for 'another grade C, even if it is in media studies and not maths' may be justified as in the learner's interest too, even though it may be argued that as a budding scientist they may have more 'use' for mathematics than for media studies. As such the contradiction between 'use' and 'exchange' in education is less obvious and more difficult to disentangle.

Lave & McDermott's (2002, hereafter L&M) consideration of 'alienated' or 'estranged' learning achieved three aims. The first two involve significant, but different analyses of 'learning' as a form of or analogical to 'labour under forced, capitalist conditions'. The third is methodological: they argue the merits of their 'close', analogical reading of (great) works, in this case the analogy: estranged (or alienated) *labour* = estranged (or alienated) *learning*. The main body of L&M's argument uses Marx's essay 'Estranged labour' (Marx, 1844) to formulate a strictly analogical account of 'estranged learning', in which the exchange value of knowledge (viewed as a 'commodity') is seen as the means by which the products of learning (grades etc) are forcibly appropriated and hence alienated from the learner. This alienation leads the learner to become alienated not only from knowledge, but from learning itself, and so from other learners, and from educators and education in general.

L&M emphasise that by here 'learning' indicates institutionalised, schooled learning, quintessentially conceived of as directed at grades, awards and accreditation (the unnecessary 'surplus value' of school learning). They allow that the many sites for informal learning outside school institutions may remain unpolluted – as it were – by expropriation. In this first analogical, 'discourse' analysis the authors bring

educational theory to the text, to generate the mapping of Figure 1. I argue this insightful analogy offers an explanatory framework for (almost) all of the findings of our project regarding the way exchange and use are discoursed in our data, but nevertheless it is theoretically flawed, in the sense that the analogy leads to an incorrect view of the commodification of knowledge. ‘Knowledge’ is not ‘actually’ a commodity in the scientific, economic, Marxist sense - and the ‘alienation’ of ‘surplus value’ (‘grades/credits/qualifications’, including the whole accreditation system) in school learning is economically problematic. This is revealed by L&M when they correctly posit the education system as part of the system of distribution and the inter-generational production of a new division of labour and hierarchy of consumption within capitalism (citing Willis, 1997, inter alia).

Figure 1 from L&M (NB a fuller account of the analogy is described and discussed in the extended version of this paper, see footnote 1).

Marx: quotes form 1844	Lave & McDermott; Here is our translation into the sphere of alienated learning and distribution:
<p>““Capitalist production is not merely the production of commodities, it is, by its very essence, the production of surplus-value. The worker produces not for himself, but for capital. It is no longer sufficient, therefore, for him simply to produce. He must produce surplus-value. The only worker who is productive is one who produces surplus-value for the capitalist, or in other words contributes towards the self-valorization of capital. If we may take an example from outside the sphere of material production, a schoolmaster is a productive worker when, in addition to belaboring the heads of his pupils, he works himself into the ground to enrich the owner of the school. That the latter has laid out his capital in a teaching factory instead of a sausage factory, makes no difference to the relation. The concept of a productive worker therefore implies not merely a relation between the activity of work and its useful effect, between the worker and the product of his work, but also a specifically social relation of production, a relation with a historical origin which stamps the worker as capital’s direct means of valorization. To be a productive worker is therefore not a piece of luck, but a misfortune...” (1867: 644).</p>	<p>“<i>Learning under capitalist production</i> is not merely <i>about</i> the production of knowledge; it is, by its very essence, <i>about</i> the production and <i>distribution of assessed knowledge</i>. The <i>learner</i> produces not for himself, but for <i>his or her place in the system</i>. It is no longer sufficient, therefore, for him simply to <i>learn</i>. He must produce <i>knowledge appropriate to his situation</i>. The only <i>learner</i> who is productive is one who produces <i>test scores</i> for the <i>school</i>, or in other words contributes towards the self-valorization <i>and redistribution</i> of the <i>educational hierarchy</i>. If we may take an example from outside the sphere of material production, <i>students and teachers</i> are productive when, in addition to belaboring their <i>own heads</i>, they work themselves into the ground to enrich the owner of the school. That the latter has laid out his capital in a teaching factory instead of a sausage factory, makes no difference to the relation. The concept of a productive <i>learner</i> therefore implies not merely a relation between the activity of <i>learning and its useful effect, between the learner and what is learned (and can be shown to have been learned)</i>, but also a specifically social relation of <i>education</i>, a relation with a historical origin which stamps the <i>learner</i> as the <i>school’s</i> direct means of valorization. To be a productive <i>learner</i> is therefore not a piece of luck, but a misfortune...”</p> <p>(L&M, <i>ibid</i>)</p>

I have trouble with much of this mapping: as with any analogy it only seems to go so far. I accept that the alienation of (school-) ‘learning’ may come from ‘unfree’, controlled learning, controlled here by the ‘educational establishment’, which sets the rules, the curriculum, the tests etc. When learners direct their work ‘for’ the test and their grades, then the object of their learning may be alienated from them: the production of ‘grades’ turns the learner into a ‘grade-producer’, in competition with

other school-learners (because a higher grade only means 'higher' in relation to others, a norm, for use in competition against others for scarce resources).

Credentials - the products of learning - are then (at least in part) expropriated by the educational establishment (the school/institution/ministry of education) as 'value' (which is indeed surplus to the learners' true 'need') and is used to justify institutional resourcing and even salaries/income. As such they enter the real political economy in society- but we note there is no place for capital and the state on the right side of this analogy.

The latter part of L&M's paper follows presumably from such a critique of their essentially analogical approach - a critic might have pointed to the 'productivity' of labour, and the 'consumption' aspect of learning. They then refer to the possibility of analysing education and learning from this 'other' side of the political economy under capitalism, viz the exchange or distribution side, and conclude that from this perspective credentials provide a means for reproduction of a hierarchy of distributed knowledge and consumption that similarly alienates learners. This is a quite different, and potentially very productive argument: they use Marxist political economic theory itself, rather than analogy, to explain alienation of learning.

Clearly the learner can't sell their grades in a free capitalist market, or exchange them for those of others, and if they give them to someone else that 'other' person does not thereby acquire the (useful) knowledge the original learner acquired in the process. The value of the 'grades' is symbolic, and what it signifies is a property of its owner that is not otherwise immediately visible. As such, they may be valuable to their 'owner', as the true value of the learning acquired by the learner is an enhancement of their labour power when they eventually come to sell their labour on the market to a future producer. As Bourdieu and Passeron (1977) say of the notion of symbolic (and this includes educational capital) they may even be exchanged for access to economic capital.

Labour power, as Marx has it in *Capital*, is a commodity purchased by the capitalist (exchanged for wages) whose purpose is extracting surplus value (i.e. the accumulation of more capital). The exchange value of this labour power is reflected in wages, but Marx insists that its true 'value' is determined by the value required to reproduce that labour power— classically this was formulated on a day by day basis as the value of the consumer goods required for workers' subsistence (but Marx included in such 'costs' the workers needs both material and cultural, normative for a particular historical period).

However, the 'use' value of the labour power (that is the surplus it provides for the capitalist) is very much a matter of the skill, effort, commitment, and education of the worker, as well as the quality of the system of production/activity. Marx analyses the productive effectiveness of 'free labour' compared to slave labour in the USA in this regard: because the 'free' workers had to sell their labour on the market they provided a quality of work the slaves never offered, and this (inter alia) allowed the owners to invest in ever more powerful means of production that made slavery uncompetitive. The continuing enhancement of the technical quality of the means of production continues to call for better and more educated labour power (which is itself the essence of the 'means' of production).

As L&M suggest the education system can be regarded as part of capitalist consumption: that is, it is part of the necessary work of 're-production' of the labour power of the work-force, along with food, clothes, housing, health etc. By consuming education, the collective of students reproduce the workforce (and its division of labour) for the next generation. The nearer the students get to the labour market, the clearer becomes the competitive, individual jockeying for 'distinctions' that serve to attune the labour force with the labour market.

The difference between education and food/clothing/housing (and health) is that the former (alongside parenting etc.) takes place on a generational time scale, and this is an important difference, as the time-lag makes feedback from the market-place into the education system problematic. There is therefore a perhaps essential and inevitable introduction of state-planning. As Marx points out in *Capital*, the state generally has to defend the quality of labour power from the ravages of individual capitalists whose private, competitive enterprises have little interest in protecting the quality of labour power at large.

Obviously, it behoves the capitalist state to make the re-production of labour power as 'efficient' as possible, while planning to offer variegated labour power for the next generation. The trend towards resourcing educational institutes by the qualifications they bestow on their learners can be explained by this search for 'efficiency': this also encourages specification of and standardisation of the 'knowledges' involved. However, pre-specification of what is to be learned is problematic and hence vulnerable to other forces, e.g. efficiency.

Here we have one obvious contradiction: the efficiency of the educational investment may be in contradiction to the development of a highly productive 'useful' future labour power. This is in part the contradiction between the state's costs now and the economy's needs in the future. This contradiction may be at the core of the curriculum, and one sometimes hears this in the voices of industry when they comment on curriculum development: do they want thinkers-problem-solvers-inventors, critical 'knowledge workers' or do they want 'obedience, facts, and skills' befitting operators of (currently imagined) means of production?

Marx's analysis of the genesis of the commodity begins with the production of human objects prior to commodity production and exploitation generally, i.e. with an absence of 'value' – except in the pure sense of the 'use' of an object (called its use-value). This use is realised in consumption, e.g. of the food we eat, and the air we breathe, etc. (these may not even be commodified). However, all commodities have a use-value, realised in their eventual consumption, e.g. tools for production, subsistence for labour, and labour power.

On the other hand Marx also stresses that production, consumption, distribution, and exchange are not separate, autonomous activities. Rather, production involves consumption (of the means of production, of labour-time). Likewise the workers' consumption involves production and reproduction of labour power.

The experience of enjoying doing mathematics (as music, theatre, sport, etc.) can be seen as a realisation of this intrinsic, 'use' quality of mathematics in cultural

consumption. After Vygotsky we note that the semiotic ‘instrument’ begins in external (socialised) use but becomes inwardly directed (typically in planning activity). Thus, a mathematical model is never quite simply a labour-tool, but always works reflexively inwards on the self- on ones cognitive capacities through reflection, and so on mathematical identity – and to satisfaction of cultural needs for consumption and reproduction.

At any rate, the ‘use’ value of this mathematics to the ‘user’ is in their enhanced (mental) capacities and labour power: in their enhanced capacities for work, for production and consumption, whether in their home or working life (one of the contradictions again- the ‘use’ to capital is also a ‘use’ in the workers ‘own’ time). The implication might be that the use value of mathematics need not be entirely appropriated in (even schooled) learning.

This theoretical analysis of use and exchange value has taken us some way from the empirical ‘codes’ used in our analyses of learners and teachers’ discourses. The secret that is hidden from view is in the reproduction of labour power, for the next generation, which is properly always a work of consumption: producing truly useful labour power requires that learners experience the power of mathematics in consumption, i.e. in its use.

2987 words

Abstract: In this paper I explore theoretical conceptions of ‘use’ and ‘exchange’ values of mathematics in education within a Cultural-historical Activity Theory (CHAT) perspective. I draw on Lave & McDermott’s study of ‘estranged learning’, and from Marx’s Capital. From the former, one deduces the source of learners’ alienation from learning in the exchange value of mathematics education. However, I turn to Marx’s Capital to find the underlying political-economic meaning of its use-value, and conclude that the use-value of mathematics education derives from (i) its value to learners in consumption, and (ii) its value in enhancing (mental) labour power.

97 words