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**Cognitive Psychology and Neuroscience
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Thomas Gradgrind, sir — peremptorily Thomas — Thomas Gradgrind. With a rule and a pair of scales, and the multiplication table always in his pocket, sir, ready to weigh and measure any parcel of human nature, and tell you exactly what it comes to. It is a mere question of figures, a case simple arithmetic. Charles Dickens, *Dombey and Son* (1854).

My dream is that the time will come when every drill press will be speeded just so, and every planer, every lathe the world over will be harmonized just like musical pitches are the same all over the world...so that we can standardize and say that for drilling a 1-inch hole the world over will be done with the same speed... That dream will come true, some time. Carl Barth, *Chicago: A Social History* (1914).¹

In the ontology of Empire value is outside measure. Hardt and Negri, *Empire* (2000).²

Everything can be measured and what gets measured gets managed. McKinsey & co. slogan.

2. Organization

In the early years of the twentieth century, Frederick Taylor and a small band of disciples — such as Carl Barth — entered battle on factory floors in Chicago, Philadelphia and other east-coast US cities. Armed with stopwatches and clipboards, these pioneers of scientific management were fighting a war and they knew it. A war against 'systematic soldiering' and the 'common tendency' to 'take it easy'. A war to induce, coerce and cajole workmen to 'do a fair day's work'. A war over the control of production and over craft knowledge. A war to appropriate to managers workers' knowledge of specific tasks: *the war over the shop floor*. A war over *the shop floor*.

A century on and capitalist production has spread far beyond the factory walls. It has been argued, most famously by Hardt and Negri in *Empire*, that the production of *the new* — material stuff that can be counted, weighed, measured — is no longer hegemonic. Capital has invaded

¹ Barth 1914, p. 889.

every aspect of human lives and production is increasingly immaterial, producing information, affects and percepts. It is increasingly difficult to distinguish production from production, the sphere *not* capitalist production from that *outside* it, where labour-power is produced. When immaterial production is centre-stage, the skills, know-how and attitudes of workers are (re)produced by the relational practices learnt and re-learnt in the home, from uncles and aunts, sisters and brothers, mothers, fathers and lovers. The immateriality of labour implies an activity that emphasises and is self-aware of its cooperative nature, a biopolitical activity that produces affects³. Hence cooperation is far more likely to be of a horizontal, rhizomatic nature, organised on the basis of networks, informal workgroups, peer-to-peer relationships, and even social ties, rather than directed by the boss standing at the apex of a hierarchy. The value produced by this labour is therefore 'beyond measure', because the immaterial living labour producing value is identified with 'general social activity', 'a common power to act' that cannot be disciplined, regimented and structured by measuring devices such as clocks. In such circumstances, exploitation still continues, but not through the subjection of labour to capital's measure. This exploitation continues 'outside any economic measure: its economic reality is fixed exclusively in political terms'.⁴ In the context of what Hardt and Negri call Empire, value can at most be indexed 'on the basis of always contingent and purely conventional elements' imposed by 'the monopoly of nuclear arms, the control of money, and

Yet, we argue in this paper, the war over measure continues right there, at the point of immaterial, self-organised and cooperative production. Capital is indeed pervasive, and its means of measurement often appear distant and elusive. But they nevertheless contribute to the constitution of the norms and modes of production, the *order*, *production*, *organisation* and *ontology* that delimit our social doing. While thinkers such as Hardt and Negri are celebrating the impossibility of measuring immaterial production, the heirs of Frederick Taylor and Dickens' Gradgrind are attempting just that. An army of economists, statisticians, management scientists and consultants, information specialists, accountants, bureaucrats, political strategists and others is engaged in a struggle to commensurate heterogeneous concrete human activities on the basis of equal quantities of *value*.

transformation of the nature and modalities of academic work; and, imposition of heteronymous constraints that bound the forms of social cooperation of academic work. In higher education we may be 'pushing through' Empire, but we see no light at the end of the tunnel.

The paper is structured as follows. In section 2 we discuss the context of the struggle over measure in academia. Here we will briefly review the British government's calls, and consequent policies, for universities to become more competitive and to emulate business. In section 3 we burden the reader with the burden of our toil, providing concrete examples of the multiplying chores and barriers constructed across the flows of communicational, affective and creative work. These we categorise under the rubrics of standardisation, quantification and surveillance. 17()278.08 Td

to align itself with the needs of capital; globally, education systems and institutions have now become a terrain for marketisation agendas.⁷ Charting the 'entrepreneurialisation of the universities' and the 'rise of the corporate university' in the United States, the editors of *University of the Future* suggest that '[w]hat is new about today's university is not only that it serves the corporation – for it has always done that – but that it *is* it'.⁸

polytechnics) are also competing in the global higher education market. Luton and Middlesex universities, for example, both earn more than one-sixth of their total income from non-European Union students. The corresponding figure for LSE is roughly one-third, as it is for SOAS.¹³ Foreign students are important to the UK's economy

the flows of communicational, affective and creative work. It seems clear — from discussions with older academics and from accounts such as A.L. Halsey's *Conversations* or Slaughter and Leslie's *Academic Culture* — that the forms of measure we describe below are new.²⁰ Indeed, measure in any context seems to be new.

Measure, as we would now recognise it, simply did not exist in the post-war university or polytechnic. Of course lecturers had to perform various tasks — teaching, administration, pastoral care — but for the most part these were shared and rotated, allocated on the basis of custom, collegiate decision or head of department's say-so. A certain level of research activity in research or other ischolarship was expected of all lecturers. The 1960s and 1970s saw a significant increase in research activity, with the introduction of research fellowships and research grants. The 1980s and 1990s saw a further increase, with the introduction of research degrees and research centres. The 2000s and 2010s saw a further increase, with the introduction of research degrees and research centres. The 2020s and 2030s saw a further increase, with the introduction of research degrees and research centres.

preparing, collating and cataloguing this documentation involves an immense amount of work, which must start up to 18 months before the visit.

- In 1998, a Joint Costing and Pricing Steering Group, a bloc comprising universities, colleges and funding bodies, including the Higher Education Funding Council for England (HEFCE), initiated a Transparency H76.85292(o)-2.70898(u)8.46394()-12.521(r)-2.22761(s)-2.8385(s)-2.

number of responses. Managers have frequently suggested *no alternative* (TINA) and instead urged us to 'work smarter, not harder'. This seductive slogan is deployed not only to dampen staff resistance to further deterioration in our working conditions. It moreover attempts

struggle goes on in any sphere of social production in which capital seeks to valorise itself vis-à-vis the self-valorising practices and desires of the producers (whether 'material' or 'immaterial').

performance and a moving standard, and once the condition of their livelihoods is increasingly tied to the condition of meeting or beating these standards, we have in place the dynamic process that Marx associates to the formation of socially necessary labour time (SNLT) in capitalism.²⁹

In this section we will discuss a few contested measuring processes that highlight value as a category of struggle in the case of UK Higher Education. It is perhaps important to anticipate that an immediate political implication of this approach is that breaking with these homeostatic mechanisms that attempt to couple the value practices of intellectual and affective work to the value practices of capital, requires in the first place a recognition of the problematic of their coupling. We should certainly not dismiss immaterial labour as being 'beyond measure',³⁰ for capital's managerial discourse believes otherwise:

As services become an ever-larger part of the global economy, managers are rightly looking for ways to improve productivity and efficiency. Services may be difficult to measure and standardize than the manufacture of products, but executives should not abandon hope.³¹

What is even more worrisome about this inducement to keep faith in capital's measure is that capitalist managers acting upon this belief will put capital's measures above all else. Through measures of things and processes, they will always end up making our lives hell. And it goes without saying that this is not because we believe they are sadists. Rather, as Marxists, we believe that they are agents that — to a large extent — personify social relations of production. Furthermore, following De Angelis 2007, the frontline clashing of different values and measures that these social relations of production express, passes through all subjects in capitalism, including managers, although, perhaps, do a different degree and intensity.³²

²⁹ For a more extensive discussion of the link between value and measure along these lines see De Angelis 2007, pp. 175-194.

³⁰ Hardt and Negri 2000, p. 294.

³¹ Harmon, Hensel and L ()5.51401(r)(n)19.68d In, d gvaB354494(n)-9335771()5.51224()5.5125(b)()5.5161(e)

The structure of our analysis below follows another consideration linked to the question of measure. This is the fact that the homeostatic processes emerging from the struggles over measure tend to be disposed in self-similar ways at different scales of social action, in what has been called a 'fractal-panopticon'. Briefly, De Angelis argues that the market order as conceptualised by, for example, Friederich Hayek has organisational properties similar to that of

some 'research committee', based on past and potential research performance. Thus a 'better' researcher, i.e. one who has more or more prestigious publications, may be allocated a larger research-time allowance. A full-time lecturer's hour allocation is supposed to sum to 1575 or similar over the course of the year (37.5 hours/weeks $\times$ 42 weeks).

It is easy to ridicule as 'abstract' or 'made-up' such workload models and the 'norms' of which they are constituted. From one perspective — a perspective that values the communicative and relational aspect of teaching and its potential to inspire students from a wide variety of economic, academic and cultural backgrounds — these 'norms' are ridiculous. Rather than standardisation, the conditions of an increasingly heterogeneous student body and 'widening access' would necessitate maximum self-managed flexibility and autonomy of judgment by individual staff and departments. In turn, this would require a context of abundant 'under-utilised' resources that can be put to use when specific needs require it, but be kept otherwise as the normal context of creativity and sociality.

But these norms are also *productive* in the sense that they help shape *the* *order* of academic labour in both its educational and research features. They do so by counter-posing the measures of capital, which privilege the meeting of abstractly defined targets (whether these indicate financial viability or consistency with government policies), to the immanent measures of immaterial labourers, who instead privilege the intellectual and relational content of their work. Thus, for example, an 'inefficient' lecturer becomes one who is unable to *meet* the norm, one who spends more than, say, two-and-a-half hours preparing each lecture, or an educator who assigns 'excessive' value to the relational practices with students who do not conform to the standard academic background and so need particular attention. Conversely, an 'efficient' lecturer is one who uses the pittance of his or her research allowance and produces

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Work allocation models exclude a variety of activities. For example, allowances for meetings (which yearly increase in number) are not always granted, nor is time for the writing of student references. Our informal interviews with several staff across the sector also reveals that strategies of work intensification frequently occur when middle-ranking managers fiddle with the weights and parameters of the workload model, in a bid to squeeze an increasing number of activities into the maximum time permitted by the contract. At other times, when this maximum is exceeded by a significant amount, management discourse is deployed to make sure that the meaning of the figures is not taken 'literally' as an absolute amount of work performed (which would run against the national contract), but rather as an indication of 'relative labour inputs'. But such management reliance on the workload model immediately opens up a tactic of struggle against this form of measure, namely a type of work to rule or, rather, a work to the workload model. Every time one is expected to perform a task for which no hours have been allocated, the task is refused and possibly forwarded to the line-manager.

This framework often reveals a contradictory set of incentives. On one side, academic staff are pushed to become 'more efficient', that is, to spend less time preparing teaching material and engaging in discussions with students. On the other side, there is an incentive for lecturers to hide from management any 'efficiency gains' they do make, i.e. instances when they beat the norm, with the fear that, as next-year's weights are calculated in a context of reducing resources, the goalpost are shifted once more.

We have already mentioned (in section 3) the so-called transparency reviews, imposed on English and Welsh universities by the UK Treasury and implemented by HEFCE. Transparency reviews have been designed to discover the relative proportion of time *currently* spent on various classes of activity, such as 'teaching', 'teaching-related', 'research', 'administration' and so on. Such information would enable all institutions 'to determine the full economic cost of all their activities at a level appropriate to their decision-making' and to 'se6521()sa58557(u)9.69011(n)-26407(c)8.336

Glasgow flat is sparsely furnished and its windows have no curtains because, as she explains to Alban, the novel's protagonist, her job involves 'a lot of staring into space'. Real-world academics who have been as candid in their transparency review time-use diary have been reprimanded by managers for not taking the exercise seriously.

Measuring competition in higher education

Let us now zoom out of individual institutions and explore the measuring processes within the higher education sector as a whole. Here we can understand that the rationale for this measuring of academic labour largely emerges out a struggle for funding among increasingly resource-constrained institutions. While it is obvious that this 'resource constraint' has been politically engineered by a string of neoliberal governments, yet, it now acts as a context in which individual institutions make 'economic' choices and define labour processes.

Measure across and competition between HEIs takes place in a number of ways. First, the standardisation and record-keeping processes generate a large volume of comparable statistics, which, in turn, allow the production of league tables. Such data includes: staff-student ratios; 'progression rates' and 'retention rates', i.e. proportion of level-1 students who proceed to level-2, etc.; proportion of students awarded degrees in particular degree classes (First, Upper Second, etc); proportion of students employed six months after graduation; 'scores' awarded to departments by the QAA following inspection visits; and, performance indicators regarding 'widening access'. The rationale for the collation and publication of such statistics and league tables is to make the market more 'efficient': by increasing the quantity of information available to applicants, they are then, supposedly, better able to exercise their 'consumer rights' in choosing universities that are most 'appropriate' to their needs and budget. In reality, such choice is restricted to a core of students with 'traditional' school backgrounds. For the bulk of university students, poorer and possibly from 'disadvantaged' backgrounds, choice is restricted to institutions in their localities or those with looser entry levels.

These indicators also form the basis for a proportion of HEIs' state-funding, which we discuss below. Thus they influence universities' funding both directly and indirectly, and consequently, put pressure on staff to meet targets, whether this is through intensification of labour, restructuring of the forms of labour or simply, as

engineering and mathematics departments prompted the government to order HEFCE to investigate this potential crisis. Although HEFCE concluded that there was 'no general crisis', the Royal Society has argued that too many science departments have been closed without students' needs being safeguarded. Ten universities have recently closed chemistry departments for lack of demand and in 2005 Sir Howard Newby, chief executive of HEFCE, warned MPs that applications to study those science discipline had fallen up to 30% in recent years.

public funding is awarded to enable universities to meet HEFCE's 'strategic aims' which are set by government policies. These include: (i) 'widening participation and access'; (ii) 'enhancing excellence in teaching and learning', which takes almost half of the £1 billion available; (iii) 'enhancing excellence in research'; and (iv) 'enhancing the contribution of HE to the economy and society'. All four strategic aims are 'underpinned' by three 'cross-cutting supporting aims': (i) 'building on institutions' strengths'; (ii) 'developing leadership, governance and management'; and (iii) 'excellence in delivery: organisational development within HEFCE'. For each of its aims, HEFCE has defined 'key performance targets by which we plan to demonstrate, in measurable terms, our progress towards the aim and objectives.'

Regarding *public funding*, HEFCE's position is that 'a dynamic, world-class research sector is not only vital for the health of universities but crucial to economic growth and social cohesion.' A 'key element' of the strategy is thus to strengthen the 'contribution [of the national research base] to national competitiveness'. HEFCE recognises that '[m]easuring the outputs from the research that we fund is not straightforward'. But it notes that '[s]ome encouraging work has been done in recent years, for example in developing bibliometric indices and reasonably comprehensive output measures; and we intend to build on this. With other funding bodies, we will sponsor studies of the social impacts of research and develop tools for measuring the outcomes of investment in research.'³⁹

- *Non-UK citizens and non-residents* The constraints on education funding imposed by government policies are not only a means to facilitate ongoing competitive restructuring in higher education. These constraints also provide an opportunity to channel

³⁹ See Harvie 2000 on 'research selectivity' as a neoliberal process of measure designed to strengthen the link between money and work.

the know-how, skills and expertise of staff to fulfil broader government targets: to have a

power that is both adequately educated and sufficiently compliant. Producing such labour-power is, of course, the function of the education system. (Labour-power also has to sufficiently healthy, which is the function for capital of health services.) Debates on the relationship between

benchmarking, for instance, was pioneered by Xerox, which defines it as 'the continuous process of measuring products, services and practices against the toughest competitors or those companies recognised as industry leaders (best in class)'.⁴⁵ Parallels can also be found with management strategies in material production: 'quality circles', 'workgroups', and so on. Workers are granted more freedom to self-manage, but this freedom is always framed and constrained by management's goals, i.e. to maximise profitability. Finally, permeating every 'level' of scale and every sector, is the measure of the financial markets, as financial derivatives allow the 'commensuration' of different forms of asset and heterogeneous 'bits of capital': derivatives

publications and new labour-power. Thus the socially necessary labour time of both activities is forced down, increasing the pressure on other researchers and teachers (diachronic process).

Our interpretation of measure has several implications for the way in which we understand, not only immaterial labour, but also the production of value and the law of value, the circulation of struggles and the production of alternatives, and capitalist development. We conclude by hinting at some of these implications.

First, immaterial labour is not a practice that is inherently communist because it is 'outside' or 'beyond measure', which is what Hardt and Negri seem to imply. The political and strategic question for us is not whether capital measures immaterial labour, but at what level and with what frequency it does so in different contexts vis-à-vis different class compositions and organisational reaches of immaterial and affective workers.⁴⁷ Moreover, the overcoming of capital's measure is not a 'tendency' that will pla

But it is also the case that capital — via its army of economists, statisticians, management scientists, etc., etc. — struggles to measure immaterial 'outputs' in its own terms (profit, efficiency, competitiveness and so on). In thus doi

to articulate the “underground” struggle against/beyond capitalist measure within universities to struggles against/beyond measure in other contexts of social production.

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