We are in the midst of a 'research-bourgeois' revolution within higher education in the UK. Part of the global project of neo-liberalism to strengthen the link between money and work, and driven by research assessment, diverse research use-values are being subordinated to homogeneous RAE-value. Academic research workers are becoming alienated from the product of their labour. Once freely available to all academics, 'intellectual commons'—well-stocked library, material security, time and other resources—are being enclosed, access becoming dependent upon production of RAE-value. Two new classes are emerging in academia as some research workers are forced to alienate their own research-labour-power, selling their ability to carry out research work to 'research capitalists', who are able to appropriate a portion of the RAE-value which results.

Alienation, Class and Enclosure in UK Universities

David Harvie

Introduction

The working conditions of many academics in UK universities have deteriorated sharply over the past two decades or so, even if 'for many the academic labour process remains in its core activities [of teaching, research, scholarship, counselling and administration] remarkably constant' in terms of the *type* of work performed (Miller, 1991: 111). There have been dramatic and drastic changes in higher education: university budgets, together with funding in general, such as student grants, have been cut; student numbers have increased; and, assessment of both teaching and research has been introduced with a vengeance. There has been a consequent effect on academic workloads. Academics have been squeezed by pressure from three sources. First, there is an increased number of students: a system designed to impart learning to a small elite, as well as providing an element of pastoral care, is now struggling to adjust to mass education. Second, related to the burgeoning student population, and despite the employment of dedicated administrators in many departments, there is a growing burden of administration. Third, there is research, the focus of this article.

My key argument is that academic researchers in UK universities are in the midst of a revolution which is somewhat akin to the transition from feudalism to capitalism. If successfully completed, this revolution will have disastrous consequences for the degree of freedom and job security enjoyed by the majority of research academics. As part of this revolution we are seeing a number of related processes:

- the subordination of essentially unmeasurable research use values to quantifiable 'research value';
- the alienation, in at least two senses, of academic researchers;
- primitive accumulation and enclosure of academic 'commons';
- the emergence of two classes of academic, a research capitalist class and a research proletariat, with the class of research capitalists starting to challenge heads of department ('lords of the manor') in terms of the economic and political power they wield within higher education;
- an increasing degree of specialisation and division of academic research labour.

Higher education and capital; universities as intellectual commons

The integration of higher education into the capitalist economy has long been recognised by Marxists and other critical thinkers.[1] As far back as 1918, Veblen noted the function of universities as business enterprises, operating in competition with each other and at the expense of scholarship (Veblen, 1918, cited in Halsey, 1992: vii). Theorists of the 'social factory', such as Mario Tronti and Raniero Panzieri, have argued that, in shaping young workers, in (re)creating labour-power, schools and universities are central to the process of the reproduction of variable capital, and hence to the continued accumulation of social capital (see, e.g. Tronti, 1973; Cleveland Modern Times Group, 1976; Panzieri, 1976). Coming from quite a different Marxist tradition, Samuel Bowles and Herbert Gintis would at least agree that integrating young people into the economic system is one of the education system's key roles (Bowles and

Gintis, 1976). There is a long history of links between business and universities, with an equally long history of people organising struggles against these links and the subsumption of the interests of both university students and staff to those of capital accumulation. Early examples of this opposition, in the UK and the US, respectively, are discussed in Thompson (1970) and Caffentzis (1975). More recent ones, in the Canadian and US contexts, respectively, are discussed in Newson and Buchbinder (1988) and Ovetz (1996). Interesting in the context of economy-business-education links is the explicit recognition by recent British governments that education policy will be guided by the expressed needs of 'business'. Of course the position of the UK government fits squarely with that of the OECD, which sees the rightful role of education as one of contributing to 'international economic reconstruction and competitiveness' (Smyth,1995: 3). The past couple of decades have seen even closer links between universities and private sector companies as academics have sought money to make up for falling state funding.[2]

Recent changes that have taken place in universities are discussed by Miller (1995a). Relationships at three 'levels'—'the state and universities', 'the economy and universities' and 'university management and academics'—are said to be especially important in interpreting these changes. At each 'level' there are forces acting to pressurise academics. While I have no argument with Miller's account of these shifts and forces, they tell only part of the story. The dynamic forces described by Miller are all external to academics: but, as I argue below, there are also forces which are internal to the body of academics. Within universities, Miller counterpoises 'management' (or 'the university') to 'academics', though of course 'management' may well include many (mostly senior) academics who have gained managerial status through appointment or election to a governing body (e.g., senate or council) or position (e.g. head of department). Although Millar is well aware that different individuals and groups are being affected in different ways by current changes, for the most part he views academics, as academics, as a universal body.

Other changes and trends have been identified and theorised. Major themes are the 'marketisation' of relationships and rise of managerialism within higher education (Kogan, 1988; Miller, 1995b; Trow, 1994; Bargh *et al.*, 1996; Dearlove, 1997), and the proletarianisation of academics (Halsey, 1992; Miller,1995b;

Dearlove,1997). And Hugh Wilmott argues that the major developments of the past ten or so years have 'significantly eroded the protection from pressures to render [academics'] work more commensurable with the commodity form of value' (Wilmott, 1995: 995).

Slaughter and Leslie define 'institutional and professorial market or market-like efforts to secure external monies' as 'academic capitalism', in their book of the same title (Slaughter and Leslie, 1997: 8). In this article, however, this term would convey a different meaning. That is, I would understand 'academic capitalism' to imply the organisation of research work within academia through the dynamics of 'research value' operating in a similar way to the 'law of value' in wider society. Despite the integration of education institutions within the capitalist economy, the relationship until recently has largely been external. By this I mean simply that the internal organisation of universities, and other research institutions, has not been capitalistic. They have not been realms within which anything like the law of value has operated. Despite its 'ivory tower' moniker, higher education has not been any bastion of 'liberty, equality and solidarity', though many academics have enjoyed far better conditions than many other workers. Rather, universities have historically been organised along lines which in some ways have been far more akin to feudalism and/or an artisan-centred economy.

To illustrate the point it is worth considering the position of the British university academic two decades ago. Someone employed as a Lecturer or Senior Lecturer enjoyed almost complete job security. In return, an academic was required to devote a fairly small proportion of their time to teaching and administrative duties. A level of research activity was also expected, depending upon the particular institution, but monitoring of this was minimal: the contracted obligation was to *engage* in research or other 'scholarly activity', rather than to produce a research *output*. Research output of high quantity and quality would almost certainly be rewarded in terms of academic prestige and through promotion, to a Readership or Chair, say, which may or may not have brought financial benefits. However, even a university lecturer who published nothing could expect to enjoy a high and, for the most part, rising income, which placed them amongst Britain's highest earners.[3]

This situation of material security allowed research activity to be organised in a particular way. In some respects academics were akin to artisans, in terms of the degree of autonomy they enjoyed. In other respects, they were perhaps more akin to serfs, being required to devote a certain proportion of their time to departmental duties (teaching and administration), with these duties being allocated on the basis of a mixture of custom and tradition, collegiate decision-making and head-of-departmental dictat. Within this system, most academics worked alone and the products of their labour-research formed a collection of use values.[4] Academics did research because they wanted to and, with few external pressures, published only if they thought they had some ideas or results worth publishing. At a subjective level 'good' research was distinguished from 'bad'. There were generally-accepted notions of 'good' journals, departments and individuals, but these things were not quantified, nor was there a close correlation between research quantity and 'quality', on the one hand, and material reward, on the other. The requirements for research—library facilities, an office, an intellectually stimulating environment and, probably most importantly, time—were freely available to all academics who wished to make use of them. For employed academics these resources were *intellectual commons*; the 'tithe' that they paid in return was the set proportion of their time which they had to devote to teaching and administrative duties.[5] For students, though not the focus of this article, the combination of less pressured academics, well-stocked libraries, a reasonably generous grant system and few graduation employment worries meant that for them too, universities were intellectual commons.[6]

Old university system academics were usually answerable to their heads of department. Indeed, many 'old-style' contracts included a clause requiring lecturers to 'perform such duties as are reasonably required by the Head of Department'. But with nearly all academics enjoying tenure, the departmental head's position was more akin to that of the feudal lord: he or (very occasionally) she could try and discipline the 'lazy' lecturer, using moral pressure or extra administrative or teaching duties, but sacking them was usually not an option. Nevertheless, one opinion is that heads of department were much more powerful, and less accountable, in the past, and in some cases had the power to destroy an academic's career.[7] Unlike the feudal serf, the academic was of course free to move from department to department, university to university. However, with fewer pressures to constantly improve research performance, and seek promotion, there was simply less reason to do so. In practice, many academics remained 'tied' to the same institution for many years, even decades.

Within this system, academics passed through a period of apprenticeship, completing a doctoral thesis, under the guidance of an established academic, the 'Master', a point made in passing by Marglin (1974). An important characteristic of this apprentice system was that the project was the student's own— a prospective Ph.D. candidate would usually write their own proposal, obtain their own funding from a higher-education institution or funding body, and choose (or negotiate) their own supervisor(s). Once the apprenticeship was satisfactorily completed, young academics could fairly easily move into a lecturing position, gaining control of sufficient resources—the researcher's 'commons': sufficient free time, money, use of a library and possibly a computer—to continue their own research. Thus the apprentice became artisan.

In another important respect, the old university system was akin to feudal society: both were highly patriarchal. In 1990, *The Report of the Hansard Commission on Women at the Top* described universities in the UK as 'bastions of male power and privilege' (Hansard Society for Parliamentary Government, 1990; quoted in Brooks,1997: 37-8). Margherita Rendel's work on British universities suggests women have experienced both horizontal and vertical segregation from men throughout the twentieth century. Horizontal segregation exists when women and men work in different types of occupation. Vertical segregation is where women and men tend to occupy different levels in the same occupation. Rendel argues that between 1912 and the mid-1970s, the degree of horizontal segregation decreased as women obtained academic positions in a wider range of subjects, but that vertical segregation remained unchanged. For the period 1972-1979, however, she suggests both types of segregation increased (Rendel, 1980; 1984; both cited in Brooks,1997: 16-17).

In 1991 (i.e., before the abolition of the 'binary divide'), women represented 23% of the 47 thousand total *university* academic staff in England and Wales, but held only 5% of Chairs and only 11% of other senior positions (Readerships and Senior Lectureships). Conversely, women occupied 26% of Lectureships and 44% of the 'other' category—contract research and teaching staff. To put it another way, in 1991, a male academic employed in an English or Welsh university had a 12% chance of occupying a Chair and a 22% change of occupying another senior position.

For academic women the corresponding figures were just 2% and 9%, respectively (Universities Statistical Record 1992; cited Brooks, 1997: 22). Regarding horizontal segregation, in 1991 women occupied 76% of academic positions (and 67% of Chairs) in nursing, and around 35% of posts in clinical medicine, psychology, language based studies and education. But fewer than 8% of academic physicists and civil engineers were women, who held, respectively, just 1.3% and 0.5% of senior positions in these two disciplines (Universities Statistical Record 1992; cited Brooks, 1997: 28, 30).

Neo-liberalism and the imposition of the law of value in higher education

The attempt to impose the law of value in academia can be seen as being part of the economy-wide and global project of neo-liberalism, also known variously as neo-conservatism (the New Right), monetarism, Thatcherism (in the UK) and Reaganism (in the US). Few areas of the economy and society have the escaped the attentions of New Right theorists and policy makers. In public sector organisations, this project has expressed itself in the progressive cutting of state funding and the state-enforced introduction of concepts and organisational forms from the private sector. Thus, driven by the rhetoric of 'quality', 'efficiency' and 'value for money', bureaucratic forms of organisation have been replaced by markets, 'administrators' (along with head teachers, college principals, general practitioners and others) have become 'managers', and patients, passengers, students, tenants and claimants have all become 'customers' (Pollit, 1993; Kirkpatrick and Martinez Lucio, 1995a; 1995b; Clarke and Newman, 1997).

Miller (1995a) describes some of the external changes to university funding, and the legislative and legal frameworks, which have been forcing the process of 'marketisation' within higher education. Block grants from central government fell from making up 77% of total university income in 1974 to only 55% in 1987. In 1986 the basis for funding changed: funding for research then became dependent upon a department's research reputation and the amount of awards it was granted from independent research grant-awarding bodies. In 1986, the year of the first research assessment exercise, the proportion of research funds allocated on its basis was 10%. This rose to 30% in 1989 and 100% in 1992 (Miller, 1995a: 16 and 144). Moreover, the 1991 White Paper *Higher Education: A New Framework* and subsequent 1992 Education Act provisioned increased competition and selectivity in research funding (ibid, 1995a: 17–18).

Linked to the funding question is that of labour contracts. The 1988 Education Reform Act 'appointed commissioners to ensure that university statutes make provision for the dismissal of staff on the grounds of redundancy—that is, when the institution ceases to carry on an activity, teaching or research, for which a person was appointed' (ibid, 1995a: 17). Miller suggests the national pay dispute of 1988-9, with its imposed settlement of May 1989, was significant in that it paved the way for both performance-related pay and market-related pay at the discretion of local university management (ibid, 1995a: 134). In 1993, at Aston University, for example, control over the use of discretionary money passed to departments with the development of the 'trading company model', which designated academic, administrative and service-providing departments as cost centres (ibid, 1995a: 145-7).

Neo-liberalism is fundamentally concerned with strengthening the link between money and work, which, for the majority of academics, includes research work. Fundamental to the neo-liberal project, as applied to the higher education system, is the quantification or valorisation of research, which is progressively alienating researchers from the product of their labour (academic research). If there is to be a strong link between money and work in universities then academic research work must be quantified. In the UK, this is happening through research selectivity exercises, the universal, i.e., across all disciplines, roughly four-yearly Research Assessment Exercise (RAE). Standards of measurement vary. In some disciplines authorship of books is the principal unit. In others, such as economics, refereed journal articles are preferred, with journals ranked such that a publication in one may be 'worth' much more than a publication in another. The point is that research output is no longer simply a use-value; it now has RAE-value which, as I argue below, has an similar purpose within academia to exchange-value or value, in the usual Marxist sense, in the wider economy.[8]

There are two points which should be noted about research and its RAE-value. Firstly, (RAE-)valorisation is not something which occurs after the research has been produced. Rather, for many researchers, RAE-valorisation has necessarily become an organic part of the production process itself. There is a growing pressure on nearly all academics in the UK to produce research *for* the RAE. Thus, there is a strong incentive for research projects, and the papers they will most likely yield, to be conceived, planned and executed with the next RAE always in mind. Given the rewards and costs involved, this is almost inevitable.

Secondly, the RAE-value of research is not determined by the actual, or concrete, research labour time taken to produce it. Instead the RAE-value of a journal article, say, is determined by some notion of 'socially necessary' research labour time, how long it would take for the 'average' academic to produce. These more 'objective' social standards, or norms, are as yet incompletely worked out, which is not surprising given that there have been only four research selectivity/assessment exercises to date (in 1986, 1989, 1992 and 1996) and given the difficulties from the assessors' point of view. A common view of the 1996 Exercise, though it is not proven, is that 'economists' (i.e., those researchers working in economics departments or assessed by the panel of economists) were judged by their four 'best' journal articles over the previous four years.[9,10] Thus, we can interpret this as meaning that if one wants to be considered a 'good' economist, one must publish (at least) one article, in a 'good' journal, every year; alternatively, that the socially necessary research labour time for the production of a 'good' article is tending towards one year. Of course, the four-yearly assessment is rather unwieldy, generating both a flurry of 'transfer activity'—'top' academics moving to universities and departments which wish to improve their rating and are willing to pay—prior to the research submission deadline and a vast workload for the assessors. According to the more informed rumours, research selectivity therefore appears to be moving in the direction of continuous assessment. The *Times Higher Education Supplement* recently reported the possible cessation of the RAE after the 2001 exercise, partly because the Department of Trade and Industry 'is questioning whether the RAE is the most efficient way to finance universities to produce the kind of science research that can be developed commercially to benefit the economy' (Thomson, 1999). Presumably the ideal scenario (from the assessors' perspective) would be one in which researchers and their research are assessed at the time of publication.

At present, Research Assessment Exercise results are published in the form of a rating on a seven-point scale, ranging from '5*' for the most research-productive departments, down to '1'.[11] It is possible that more disaggregated figures, rating research groups within a department or even individual academics, might also be made available, at least to the department concerned if not more publicly, though there is no evidence of this happening to date. As a result of this process of RAE-valorisation it is increasingly possible to *measure* the RAE value of a labour economist's research, say, against that of a growth-cycle theorist, or possibly even an astrophysicist or a specialist in renaissance Italian literature (or whatever). Of course, the comparability of RAE-scores across disciplines is not universally accepted. In the 1989 exercise, for example, there was considerable variation in mean scores (i.e., calculated across all universities) across subject areas. In a five-point scale, these ranged from 3.6 or 3.7, for metallurgy and materials, pharmacology, and theology, down to 2.4 or 2.5, for anatomy, business and management, clinical dentistry, and education. This would strongly suggest that a score of 4, say, achieved in one discipline was not necessarily comparable to a 4 achieved in another (Johnes and Taylor, 1990: 155ff). There are many other problems with the mechanics of the RAEs. Some research suggests, for example, that the 1996 Exercise was biased in favour of panel members' departments (Roberts, 1999).

Research selectivity, and the process I am describing as RAE valorisation, is having or is likely to have a number of effects:

1. *Performance-related pay*. Of course, to some extent, academics' pay is already dependent upon their individual research performance. In the 'old' (i.e. pre-1992) universities, at least, promotion (which nearly always carries enhanced pay, of course) already depends upon an academic's research record to a far greater extent than their ability in either of their other two 'core' activities of teaching and administration. (The situation is somewhat different in many of the 'new' universities, the former polytechnics. Many of these institutions have promoted academics who have concentrated on teaching and administration. At the same time, many new universities, and some old, have used Readerships as a cost-free form of 'promotion' for productive researchers.) The same can be said of the award of discretionary points in the salary scale. With the RAE inducing far more 'transfer activity' between academic

departments it is likely we will see a closer link between research performance and remuneration. Put simply, many departments in search of a high RAE research rating are willing to offer higher salaries to attract academics with impressive CVs; in turn these same academics' current employers must be prepared to offer them comparative rewards in order to retain them.

One recent proposal is the introduction of profit-related pay schemes which would first require academics to accept a notional pay cut. The removed slice would go into a 'profit pool', which would then be redistributed. Proponents argue the end result would be increased pay, but this would be dependant upon the university achieving a 'surplus'. This proposal would also involve a change in contracts which would undermine national collective bargaining. The introduction of differentials between universities would also pave the way for wage differentials within universities. (See AUT, 1996.)

2. *Influence on the type of research done.* Harley and Lee suggest the RAE, in economics at least, is forcing researchers towards the orthodox, neo-classical paradigm. Their argument is simply that the orthodox journals are more prestigious and therefore articles published in those journals are 'worth more' than those published in non-mainstream alternatives. They present evidence to show that many economics departments actively encourage applicants with mainstream-journal publications when they have job vacancies. Academic economists with insecure job tenure are thus under pressure to do research within the orthodoxy (Harley and Lee, 1997; Lee and Harley, 1998).

More generally, the pressure on all academics, whatever their discipline, to produce research output, as opposed to simply being engaged in research, must mean there is an incentive to undertake 'safe' research projects, that is, those which are more likely to yield publishable, if not earth-shattering, results. Johnson suggests the RAE promotes 'normal' science, in the Kuhnian sense (Johnson, 1996: 115, f/n 5). And Fox has argued that, besides functioning 'to control junior members of the academy, disguise power struggles, and justify decisions that are non-merit based', 'the reward structure of publication can perpetuate intellectual hegemony' (Fox, 1992: 103/190, f/n 2). Moreover, with assessment every four years, the incentive must be not to embark upon lengthy research projects. Some of these constraints on researchers' free thought are offered as *advice* to academic authors in a guide on *How to Publish in Top Journals* (Choi, 1998). For example, Choi recommends not writing papers on 'breakthrough' ideas, at least not in the early stages of one's career. He also warns against putting two good ideas in the same paper. You wonder what would have become of the British mathematician Andrew Wiles in such an environment. In 1994, whilst based at Princeton University, Wiles solved the 350 year old Fermat's Last Theorem, a fantastic achievement. Wiles had been fascinated with the problem for much of his life and during the seven years he spent working on the problem at Princeton, with no certainty of success, he did little other research (Singh, 1997). Or of Sraffa…

3. *Alienation.* There are several aspects to alienation, detailed by Marx in the *Economic and Philosophic Manuscripts of 1844* (Marx, 1997). With research selectivity academics are under pressure to maximise the RAE-value of their research. At the limit, this will be the only consideration when submitting and publishing work and in all other respects the destination of their research product will be a matter of indifference. Thus, the researcher exchanges their product for RAE-value and through this mechanism of exchange becomes alienated from this product. Editors of *Capital & Class* have certainly noticed a trend in this direction over the past few years.[12] Where once *Capital & Class* would have been first-choice, many authors are now more likely to initially submit articles to 'higher-ranking' journals—usually journals which reach a far smaller socialist/communist readership. Of course, changes in an author's 'target' journal will probably force changes in their paper's content, too. The corollary is that socialist/communist analysis and research loses out.

Again, at the limit, research done purely to generate RAE value does not satisfy the human need to create (understanding and knowledge in the case of academics). Such research work becomes a chore imposed by others and is undertaken merely to satisfy needs external to the activity itself. This is not to say all research work performed in such an environment is necessarily dull and laborious. Research workers, like more fortunate groups of workers everywhere, may well take pride in their work and be lucky enough to satisfy some of their instincts for craftspersonship. Of course, it is these very instincts which capital would wish to preserve, provided it can harness them. But it is the rare craftsperson who is able to produce for their own use and for sale without distinction. The point remains that research done for RAE purposes is not a full expression of the researcher's own free creativity.

Research capitalists and proletarians, publications as capital, and the accumulation of academic capital

Alienation in a stricter sense involves not only alienating the product of one's labour, but one's labour-*power* as well—the selling of one's ability to work. Here both labour-power *and* the product of any resulting labour belong to the employer. If we equate 'ownership' with named authorship of research papers, it is clear this already happens in academia, whenever a research 'assistant' or 'fellow' is employed.

What matters in academia are publications. For 'economists', what matters most are single- or first-author articles in a 'good' refereed journal, published recently such that they 'count' towards the next RAE.[13] Having ('owning') such publications provides one with greater access to the resources necessary to pursue further research—research 'means of production'— which are made available through obtaining an academic job and/or research grant. The research worker, as a rule, 'possesses' few such publications and therefore has an extremely limited access to these 'means of production'. The research worker, in short, owns nothing but their ability to do research and is therefore forced to seek employment as a research assistant.[14] On the other hand, the 'research capitalist' has many publications to their name, is someone who possesses 'research capital'. Ownership of research capital not only means that this person is likely to be able to obtain a senior academic job, they are also likely to be successful in applications for larger research grants. Large research grants allow one or more research assistants (or research fellows) to be employed. The crucial point here is that these researchers thus employed are working on someone else's project. Of course research managers do not have complete control over the production process nor can they appropriate all that is produced, but again this is to miss the point: in any work-place, the employer's control of the work process and the product is limited to a greater or lesser extent and is subject to struggle. Directors of research projects are named authors on resulting papers. (Arrangements concerning authorship vary, of course. In some projects the research assistants will be first-author; in others their name will appear only in the acknowledgements.) In effect, research directors are setting in motion research labour-power. It is the 'ownership' (authorship) of publications which confers this power on them and the result, if the project is successful, is the ‘accumulation’ of more RAE-value (publications). The situation for the research assistant at the end of a research project varies. Sometimes, they will have gained authorship of a sufficient number of publications, as part of the project, to be in a position to obtain a lecturing job, say, which allows them greater freedom, though this might be only as a result of struggling to pursue their own projects at the same time as their research-assistant research. In other cases, the research project will end leaving them in the same position as at the beginning—‘owning’ insufficient publications to do anything but obtain another research assistant position, and thus continue as a ‘research-proletarian'.[15]

It is increasingly common for some academics to simultaneously direct several projects. Such an individual may well approach the extreme of a ‘pure’ research capitalist. This person is able to employ a large number of research workers, who not only do the bulk of the research work, but whose job also includes writing new research proposals, under the direction of the research capitalist, to fund the next project and most likely to secure their own future employment. In such a way the research capitalist is able to accumulate a vast number of publications and control huge resources. With their extensive CV this person is likely to gain widespread authority within their discipline, through editorship of key journals or positions on funding councils, say, and is thus able to have disproportionate influence over its future direction. With their control of significant monetary resources, they will wield considerable power within their own department and university, therefore challenging the established hierarchy of heads of departments, deans and so on.[16] Of course, research capitalists may simultaneously be heads of department, but this doesn't affect the argument—after all, some feudal lords became successful capitalists.

This shift is illustrated by the way many departments now describe themselves. It is striking how the language of descriptive documents—the often glossy brochures which are sent to prospective job applicants, business ‘partners’, clients and sponsors, and so on—has changed. For instance, these documents now carefully detail research-funding successes. Two decades ago, such details would have been considered vulgar. Also illustrative is the way indicators of academic prestige have altered. The more traditional trappings of success—a large office and a powerful computer (even if it is only used to send and receive email!)—are still valued. But, more important, besides one's CV of course, is the number of research projects and researchers one directs—how much research labour-power one has the power to set in motion.

Enclosures and primitive accumulation

Well-endowed libraries and other research facilities, combined with freedom from both material worry and onerous teaching and administrative burden, were the academic-of-old's 'intellectual commons'. The current ongoing process, of marketisation, assessment and so on, in Britain's higher education institutions is then one of *enclosure* and *primitive accumulation*. Academics are being separated from these 'commons', whilst control of the basic research resources is passing (not uncontested, of course) to those whom I am describing as research 'capitalists'.

The process is uneven, of course. At the most basic level of material security, the proportion of UK academics employed on permanent contracts is declining sharply. In 1994/5, just 60% of UK academics were employed on permanent contracts, and by 1997/8 this figure had fallen still further to 55%. Of the 17,000 academic appointments made in 1997/8, only 18% were to permanent contracts, compared with 78% on a fixed term basis (AUT, l999a). In fact, according to *Labour Force Survey* figures, only people working on campsites or for recruitment agencies have a higher rate of job insecurity than higher education staff. Moreover, the situation is markedly worse for women and ethnic minority academics. In 1997/8, 50% of women academic and research staff were on casualised contracts, compared with a figure of 38% for men. Nearly 50% of non-white British academics were on fixed term contracts, compared with a figure of 'only' 34% for their white colleagues. (Office for National Statistics, 1999; Swain, l999a). In a report analysing Higher Education Statistics Agency data, the AUT suggests that if present trends continue, more than half of all UK academic and research staff will be casualised by 2003/4 (AUT, l999b: 35).[17]

In a large number of departments, even for those academics with tenure, access to the 'intellectual commons' is being squeezed, by the pincers of rising student numbers and falling budgets for essential research resources—library, computing facilities, conference attendance and so on. The typical academic in such a department, if they wish to engage in a serious research project, is likely to be forced to depend upon a series of discretionary grants in order to 'buy out' teaching, purchase an adequate computer or subscribe to an essential journal their library no longer stocks. In those 'top' departments with better 'permanent' research facilities, the long-term maintenance of these facilities is likely to depend upon 'good' collective research performance and researchers in these departments will be under considerable pressure (both formal and informal) to 'pull their weight'. The situation regarding access to research facilities is worse for those staff without tenure—fixed-term lecturers or contract research staff. According to the Association for University Teachers, many research funding bodies discriminate against contract research staff and/or lecturers on short-term contracts, denying them the opportunity to apply for research grants in their own right (Cloonan, 1998). Such researchers really do have no option but to (attempt to) sell their own research labour-power.

Prospective Ph.D. students increasingly find themselves in a similar predicament. With fewer opportunities to obtain university or research-council funding to research their own chosen topic, many are forced to apply for studentships which are tied to particular supervisors, working on particular projects. To such supervisors, research students may represent a source of cheap research labour.

It is not clear what effect the research-bourgeois revolution will have on the status of women within academia. To the extent that women are far more likely than men to be employed on casualised contracts (see figures above), and are correspondingly less likely to hold a senior position with easier access to external research-funding, it would seem the emerging research proletariat will be disproportionately female (and the class of research capitalists will be disproportionately male).[18] Nor do the prospects for righting this gender imbalance appear promising. Ann Brooks claims women academics are less productive in terms of research and publishing (Brooks, 1997: 43,120,124), which would suggest academic women will have less opportunity to improve their research-class position. Concerning the state's role, Acker has argued that whilst government has pursued 'a number of aggressive higher education policies in recent years, none [was] concerned with gender equality' (Acker, 1994: 148; cited Brooks, 1997: 128). And in a study of 'equity and staffing in Further and Higher Education', conducted between 1991 and 1994, Farish and her co-authors found that 'during the period of the project, equality as a policy issue seemed to be on the move *down* rather than up the policy agenda' (Farish *et al*., 1995: vii; their emphasis). Associated with the rhetoric of 'equal opportunities' is the issue of the representation of women, which in turn affects workloads and ability to pursue research. Thus Brooks argues that academic women 'are drawn on heavily for committee membership due to the need for balance and equity in the representation of academic staff on committees. [...] However, [they] frequently find themselves serving on low-level "housekeeping" committees which are time-consuming, *detract from research and publishing*, and are at the departmental or faculty level, as opposed to the university "decision-making" level' (Brooks, 1997: 125; my emphasis). It may not be an exaggeration to liken shifts in the *loci* of power in universities over the past few decades to those in wider society over the past few centuries. In society as a whole, the ruling class responded to working-class and women's struggles to gain political representation by shifting the basis of its social power to the 'economic sphere'. Within higher education, as previously marginalised groups have won greater access (both as students and staff) and political representation—for example, in the 1960s, student groups and radical staff successfully demanded seats on university governing bodies and courses in women's studies, black studies, Marxism, and so on—real power is being relocated away from university committees, instead coming to be based upon research performance.

Specialisation and division of labour

A by-product of this research-bourgeois revolution is to accelerate the process of specialisation and division of research labour. This further contributes to academic alienation. First, academic disciplines (and sub-disciplines) are becoming more specialised and there is an exponential growth in new specialisms. With this growth it becomes more difficult for any single researcher, struggling to keep up with advances in their own and related specialises, to step back to view their work in a broader perspective. The new pressures to produce 'good' (that is, publishable) research at the 'cutting edges' mean practising researchers have even less time in which to pursue the goal of wider intellectual understanding. In effect researcher workers are becoming increasingly alienated from society's body of knowledge, which they have helped create and continue to expand. And as researchers become alienated from societal knowledge, this leaves others with more political and economic power free to interpret and therefore appropriate this knowledge for their own ends.

Second, at the level of individual research projects, an increasing proportion of research is collaborative, whether or not such research is done under the direction of a research capitalist or is more self-managed. Research groups range in size from just a couple of people to teams of perhaps one or two dozen people. In such projects, each team member specialises in a different aspect of the research, and may have limited or no involvement in the other aspects. Consequently, they may not fully understand the final results. It now seems common for the presenter of a (multi-authored) paper in an applied economics seminar, say, to prohibit questions on the econometrics on the grounds that this was carried out by (one of) their co-author(s) and they do not really understand it! Also common is the applied econometrician or statistician who analyses data sets with only a very hazy understanding of either the conditions under which the data was collected or the theoretical framework driving the quantitative questions they are supposed to be answering. From the practitioner's perspective, the focus here is on the use of technique, rather than knowledge as such. In these cases it must be said that the researchers have become alienated from the knowledge they are producing.

The extent of the research-bourgeois revolution in higher education

The process of primitive accumulation and capitalist revolution I am attempting to describe has reached different stages in different academic disciplines. Broadly speaking, at the risk of being charged with technological determinism, this appears to depend upon the extent of the material needs of research in that discipline. Another factor is the degree to which 'outputs' can be separated from 'inputs'. In arts subjects and many social sciences research and production are very personal; output is inseparable from (personal) input. The process is most advanced in the physical sciences, in which research activity demands a large amount of expensive equipment. It is common for research in subjects like astrophysics and chemistry to be carried out by teams of a dozen or more people, under the direction of a single senior researcher. It seems to be least advanced in the arts where, on the whole, very little equipment is required to do research. The social sciences and humanities lie somewhere in-between.

Collaborative research does not necessarily mean research undertaken by research workers directed by a research capitalist; nor does it necessarily that the members of a research team will be alienated from the research 'product'. It may instead indicate greater co-operation amongst free producers and a voluntary pooling of resources. However, the extent to which collaborative research has become more widespread over the past few decades, across a range of disciplines is interesting and suggests my thesis cannot be immediately rejected. Table 1 shows the mean number of authors per article published by seven different journals, including *Capital & Class*, over the past four decades. By regressing the logarithm of average author count against time, it is possible to obtain an estimate of the annual growth rate of the average number of authors per article for each journal.[19] The resulting estimates, along with their associated t-statistics and probability values, are also shown in Table 1.

In four of the seven cases—*Economic Journal, Journal of Econometrics, Quarterly Journal of Mathematics and Nature*—there is a clear and statistically significant trend towards more collaborative work. One would also expect evidence of increasing collaborative work in the other 'hard science'-type journal, *Science*, though like the similarly-general *Nature* average author count throughout the period 1981-1998 is high at 3.9. There is little evidence of a trend towards increasing collaboration in publishing in *Capital & Class* and *Sociology*.

The extent to which my thesis applies probably varies across the higher education sector. For example, in his report on an earlier draft of this paper, Andrew McCulloch suggests that, in the new universities, the greatest threat to academic freedom and autonomy has come from management 'innovations' such as modularisation and distance learning. These 'innovations' have been used to force expansion on the sector as a whole, and in these circumstances he argues that research assessment has been used

Table 1. Cooperation/division of labour in academic research: average author count (mean number of authors per article) in seven journals.

	Economic Journal	Journal of Econometrics	Capital & Class[a]	Sociology[a]	Quarterly Journal of Mathematics (Oxford 2nd Series)	Science[b]	Nature[b]
1969	1.24			1.53	1.17		
1970	1.20			1.25	1.19		
1971	1.18			1.27	1.15		
1972	1.06			1.24	1.20		
1973	1.14	1.45		1.06	1.20		
1974	1.16	1.44		1.44	1.22		
1975	1.30	1.38		1.33	1.18		
1976	1.21	1.20		1.06	1.18		
1977	1.39	1.46	1.14	1.50	1.16		
1978	1.50	1.48	1.35	1.27	1.22		
1979	1.30	1.61	1.15	1.17	1.25		
1980	1.36	1.58	1.25	1.71	1.17		
1981	1.44	1.57	1.18	1.10	1.19	2.92	3.00
1982	1.48	1.36	1.24	1.36	1.30	3.73	3.82
1983	1.35	1.67	1.36	1.35	1.30	3.70	3.80
1984	1.37	1.77	1.00	1.35	1.38	3.60	3.73
1985	1.43	1.57	1.23	1.50	1.45	4.45	3.20
1986	1.42	1.58	1.27	1.33	1.36	3.92	4.17
1987	1.54	1.70	1.09	1.35	1.32	3.92	4.08
1988	1.50	1.61	1.18	1.19	1.31	4.47	3.42
1989	1.61	1.67	1.21	1.15	1.57	6.13	4.00
1990	1.54	1.78	1.28	1.18	1.43	4.18	4.18
1991	1.45	1.68	1.23	1.53	1.38	3.98	4.12
1992	1.57	1.77	1.21	1.53	1.58	4.25	4.18
1993	1.52	1.65	1.21	1.21	1.39	4.42	5.17
1994	1.59	1.77	1.16	1.38	1.56	2.93	4.80
1995	1.56	1.67	1.14	1.32	1.53	3.12	5.17
1996	1.97	1.80	1.56	1.29	1.47	4.40	4.50
1997	1.64	1.85	1.24	1.20	1.50	2.70	5.88
1998	1.77	1.70	1.29	1.29	1.63	3.05	4.50
Mean annual est. growth rate, $\hat{\beta}$%	1.38	1.04	0.26	0.03	1.13	–0.75	2.58
t-statistic	10.16	6.18	0.88	0.13	10.89	–0.83	5.55
Probability value[c]	0.00	0.00	0.39	0.90	0.00	0.42	0.00
No. of years	30	26	22	30	30	18	18

Notes: a. The Journal of Econometrics and Capital&Class were not published before 1975 and 1977 respectivdy;

b. Science and Nature each publish several thousand articles annually. The averages shown for these two journal are calculated on the basis of random samples of 60 articles for each year. They only cover the period since 1981, for which the necessary information has been available on electronic indexes;

c. The probability values given as '0.00' are all smaller than 10^{-4}.

defensively by the old universities 'to preserve their form and pre-eminence. Research is a weapon that can be used repel the insurgents with their vulgar ideas'. Now this culture of modularisation and distance learning has become more established, 'managements [in the new universities] are squeezing staff to produce research'.

I would agree that a variety of methods have been used to impose more work on academics, but I do not think there is an exact correspondence between this and the pre-1992 'binary divide' between polytechnics and universities. It maybe the case that the new universities (former polytechnics) have borne the brunt of the expansion in student numbers, but old university academics have not been immune to the pressures of modularisation, bigger class sizes and the mass of bureaucracy associated with teaching quality assurance (TQA). Conversely, and as McCulloch acknowledges, many new university academics are expected to not only be 'scholarly', but to actually produce research. For those whom this is the case, and with regard to their research work, such academics will be subject to the imperatives of 'research-valorisation' which I have attempted to describe. Thus, I would argue my thesis does indeed apply across the whole sector, although its reach may vary.

The poverty of opposition

The process I have been describing is marked by the limited extent of most critiques and opposition. The fundamental purpose of the 'research law of value' is to control academic workers through the imposition of a strong link between money and work. Research assessment also influences the nature and content of academic research. There is a possibility that, eventually, in order to get the rewards (RAE-value, funding) all problems to be tackled must be sanctioned as such by the 'establishment'—well-established researchers, funding agencies, parliament, corporations. Academics end up being cajoled into solving problems for the establishment—capital's problems! This is already very clear in those fields more closely affected by military research. It is also illustrated by the transition from 'industrial relations' to 'human resource management' (HRM). And a bias towards capital's problems is noticeable in the Economic and Social Research Council's

'Mission Statement': the ESRC 'aims to provide high quality … research on issues of importance to business, the public sector and government' and its 'mission' includes 'contributing to the economic competitiveness of the United Kingdom, the effectiveness of public services and policy, and the quality of life' (ESRC, 1999).

RAE-valorisation should be opposed in its totality. Unfortunately most opposition to date seems to have focused on attempting to modify the way in which research assessment is implemented. This follows from the charges of, for example, bias in favour of panel members' departments (Roberts, 1999) and inconsistency across subject areas (Johnes and Taylor, 1990). One might even view the 'old'-university academics' union, the AUT, as being complicit in the process of RAE valorisation. In its submission to the government's next comprehensive spending review, it is calling for an extra £1 billion per year in government spending on higher education. This would 'include money to … reward improved results to the research assessment exercise' (Swain, l999b). Lee and Harley's concern is with the effect of research assessment on non-mainstream economics. They argue that the future existence of heterodox economics is threatened by the RAE, and that the RAE should therefore be ended if heterodox economics is to survive. A second, less preferable option, would be to wrest control of research assessment from the Royal Economic Society, opening up the panel-selection process and making the Exercise more accountable (Lee and Harley, 1998). My argument is with the *quantification* of research work and the reduction of research work to pure RAE value. Any *reform* of research assessment will still concede the point that its purpose is to aid the imposition of work. In a reformed RAE, for example, Marxism could become a potentially 'profitable' niche market.[20]

Perhaps the idea of a 'research strike', along the lines of the proposed Art Strikes, is worth debating. A three-year Art Strike, for 1977-1980, was first called for by Gustav Metzger in 1974; in 1985, the PRAXIS group announced their intention to organise a three-year Art Strike for the period 1990-1993. The intention of these advocates of Art Strike was to draw attention to the extent to which 'art' is integrated into capital. Artists, however radical their work, however critical of capitalism, are nevertheless largely dependent upon the network of dealers, galleries, etc. of the 'art world', which are fully organised along capitalist lines in order to make profit. At the same time as the art system can instantly recuperate even 'revolutionary' art work, capital and the state 'needs art as a cosmetic cloak to its horrifying reality, and uses art to confuse, divert and entertain large numbers of people' (Metzger, 1974). Artists' collective withdrawal of their labour would thus offer an extreme challenge to the art system and its position within capitalism.

Academic researchers, as cultural workers, are in a somewhat similar position to artists. As academics, it is possible to be critical of the state, but only provided one's criticism is well-referenced and fully refereed! By publishing such work, we not only critique capital, we also show evidence of a satisfactory or high level of research productivity. In such a way our own critical creativity can be recuperated. A collective refusal to engage in any research activity—a refusal to write or referee papers, articles and books, to attend conferences, etc.—would present a challenge to both the use of our creativity for capital's broader ends and the way in which our own work is coming to be organised along capitalist lines.

The Art Strike proposed by Metzger failed since he was unable to mobilise support from other artists. The PRAXIS group did not have higher expectations of success. They fully intended that their proposed Art Strike would create as many problems as it would resolve. 'The importance of the Art Strike lies not in its feasibility but in the possibilities it opens up for intensifying the class war' (Home, 1989: 3). In a similar way, key to any Research Strike would be the propaganda and discussion produced in the period preceding it. The importance of a Research Strike would lie in its potential to draw attention to the increasing integration of academic work within capital.

Condusion: social antagonism and class in academia

My argument perhaps becomes still clearer if we understand class, not as a defined group of people, but rather as being based primarily on the antagonism in the way human social practice is organised. Although 'the polar nature of the antagonism is reflected in a polarisation of the two classes, the antagonism is prior to, not subsequent to, the classes: classes are constituted through the antagonism' (Holloway, 1998: 183-4). Holloway suggests social antagonism

> is a conflict between creative social practice and its negation, or, in other words, between humanity and its negation, between the transcending of limits (creation) and the imposition of limits (definition). The conflict does not take place after subordination has been established, after the fetishised forms of social relations have been constituted: rather it is a conflict about the subordination of social practice, about the fetishisation of social relations (Holloway, 1998:183).

Research, the pursuit of knowledge and understanding, in any field you care to think of, is creative human activity. For many 'professional' thinkers there is (or was) no real distinction between work and leisure. The absence of such a distinction would imply no alienation. Although in the past there have been barriers between 'disciplines', these were far less clear cut than they are today. But the human creativity that is research is being 'defined to death'. Within academic research there seem to be limits whichever way you turn: what to read, how to think, how to write, how many words to write, whom to cite (creative work turned against creators), where to publish and so on and so on and now, with 'research assessment', how many articles to publish. Of course, there are always people attempting to overcome these limits. There are always people attempting to transcend discipline barriers, despite the huge costs often involved, in terms of reading new literatures, putting one's position within one's 'own' discipline at risk, and so on. However, many transcending papers, which cut across '(sub)disciplines' end up reimposing limits as they become the seminal paper of a new '(sub)discipline'.

This antagonism in academia, between creativity and its limitation, is not especially new. What is new is the power which 'research assessment' promises/threatens to measure and define. In turn measurement and definition offers capital greater opportunities to limit and control intellectual creativity within universities through enclosure of 'intellectual commons'. Researchers thus become alienated from their creative output. What is also new is the extent to which 'research assessment', and its related research-funding arrangements, offers a small minority of academics the opportunity to participate directly in and benefit from the exploitation and appropriation of the research work, the creativity, of others, the majority of us. It is in this way that antagonism in academia is now constituting two new classes within academia.

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Notes

1. More mainstream researchers have also considered the relationship between higher education and the wider economy. Geiger (1992) offers a useful history of science research funding in U.S. universities in the post-war period and links with business and the state. Many other contributors to the same volume (Whiston and Geiger,1992) take for granted that university research should serve the needs of capital accumulation (in their words, 'increased productivity', 'competitiveness', etc.).
2. The acceptance of private funds has generated controversy, as it is seen (rightly, I believe) by some as a threat to academic freedom and autonomy. See, e.g., MacLeod (1998).
3. In 1979 the average gross weekly earnings of full-time male university staff was £148.70, some 50% more than the all-employee average of £98.80. This placed male academics in the top decile of earners. The New Earnings Survey did not publish a figure for female academics (nor in either of the two adjoining years). In 1997, female academics' gross weekly pay was £481.30, 18% above the average for all workers, whilst that for their male counterparts had risen to £555.90, 'only' 36% above the average for all workers. (Department of Employment 1979; Office for National Statistics 1997).
4. This was perhaps less true in those sciences, such as applied physics and chemistry, which have always been more closely connected to industry, especially 'defence'.
5. Of course the university system was financed through general taxation, rather than by academics themselves. Academics' teaching and administrative duties could be compared to the feudal tithe in that the time required for them was set quite independently of what the academic did in their remaining time, i.e., their research 'performance'.
6. Although I am describing these resources as 'commons', that is not to say that anybody could access them. The old university system was elitist and patriarchal, both with regard to its student intake and its employment practices.
7. This was not the case in all universities and departments, of course. In many, there were collegiate forms of governance. In some places departmental heads were elected, in others the position was rotated.
8. The Chairman and Deputy Chairman [sic] of the Business and Management RAE Panel for the 1996 Exercise discuss some of the issues surrounding standardisation and method of measurement of research performance.

They recount that every paper submitted to their panel was read by at least one panel-member, who then made a judgement as to its 'worth' (Cooper and Otley, 1998).

9. Books are not worthless in RAE terms, but perhaps only 'count' as much as a single article.
10. In History and English the assessment period is six years.
11. The seven-point scale evolved from the five-point scale used in earlier RAEs. Besides 5 and 5*, 3B and 3A are distinct scores.
12. The author was a member of *Capital & Class*'s editorial committee for the period 1995-1998.
13. In other disciplines the preferred form of publication may vary: books for historians, compositions in music, and so on.
14. This is perhaps not strictly true since some people become lecturers without first having been research assistants. However, competition for lecturing jobs is very fierce and to become a lecturer one usually needs both a Ph.D. and to demonstrate one's potential to produce 'good' publications.
15. My concept of 'research capital' differs from Pierre Bourdieu's 'cultural capital' (e.g., Bourdieu, 1986). Possession of cultural capital confers status and power and thus, indirectly, greater assess to economic capital. The benefits it confers on its owners are personal. With research capital, the link between its ownership and the ability to set in motion another person's (research) labour-power is far more direct. Moreover, research capital can be accumulated as a direct result of the control it allows of others' research labour.
16. Continued influence within one's department/faculty/university and discipline will depend upon continued success in commanding research labour-power, i.e., directing research and obtaining publications. In this sense, the role of the research capitalist is as constrained as that of the research worker. Although unlikely to slip into the research 'proletariat', the mantle of research 'capitalist' can easily be lost.
17. This document reports that since the signing of the *Concordat on Contract Research Staff Career Management* in 1996, there has been a slight downturn in the use of fixed-term contracts for researchers in the 'new' universities, but that rates of casualisation have continued to increase in the 'old' universities (AUT,1999b: 70).
18. AUT (1999b) contains extremely comprehensive information on the material situation of women academics in 1997/8, *vis-à-vis* their male colleagues, with data broken down by grade, institution and subject area.
19. Assume the average author count grows (or contracts) exponentially. Then we can write $(\text{author/article})_t = A\exp(ßt)$, where A is a constant, $ß$ is the growth rate, also constant, and t is time (the year). Now, taking logs of both sides we obtain $l\text{n}(\text{author/article})_t, = a + ßt$, where $a = l\text{n}\ A$. Then we can estimate, using Ordinary Least Squares (OLS) the regression equation $l\text{n}(\text{author/article})_t, = \hat{a} + ßt + \mathcal{E}_t$ where $ß$ is the estimator for $ß$ and $\mathcal{E}_t$ is the error term.
20. This point is probably controversial. Of course Marxism can create problems for capital. In this sense it might be useful to argue for a uniform reward for all publications. This demand undermines research assessment since it does not consider issues of 'quality', refereeing and so on. But I think it is also true that Marxism as political economy, rather than critique of political economy, can have some uses for capital. The important point is that there

is an antagonism between doing research in order to critique capital and doing research which will be quantified as part of one's work within capital. The fact that this very paper may be included in my own department's submission to the 2001 RAE is an irony which is not lost on me.

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