

The structure and silence of cognitariat*

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Many Americans assume that because business and political leaders agree that the U.S. is a 'knowledge economy', they therefore support an increase in knowledge production and support the university systems that perform the majority of this basic research in the U.S. and other wealthy countries. The reality is something quite different. American leaders are preoccupied with reducing public expenditures on higher education and with lowering the cost of each degree produced. They are containing and cheapening the research and educational systems on which they say the future of their economies depend. This raises the core question I'll discuss here: why would wealthy societies cut back on the sources of high-tech knowledge when they believe their future lies with high-value, high-tech industries? Isn't this contradictory, and also fairly dumb?

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Well yes: some of it is ordinary human myopia and selfishness. Some of it is the result of the artificially created general hostility towards universities and towards the politically independent and racially diverse middle-classes that had been produced by public universities after World War II.¹ Some of it is the result of a business reflex in the United States, which is to address all revenue issues with downsizing and layoffs.²

But looking at this basic reflex only deepens the sense of contradiction. Mainstream experts estimate sustainable 'efficiencies' to amount to perhaps 3% savings a year for the first few years, not the 5%, 10%, or 20% cuts being imposed by state governments. They also agree the real crisis in American higher education is that it is producing perhaps half as many college degrees as it needs, not that it is spending too much money.³ What, then, is the logic of cuts that contradicts the knowledge economy's apparent requirement of a *mass* middle-class, a society that has a majority of college graduates and of knowledge workers?

The contradiction exists only if we assume that today's leaders of the knowledge economy actually seek a mass middle class, desire high standards of living for the vast majority of their population, and believe that the knowledge economy needs armies of college graduates. If instead, we posit that the political and business leaders of the knowledge economy seek a smaller elite of knowledge-based star producers, then the unceasing cheapening of public higher education in the U.S. and elsewhere makes more sense.

Many authors have pointed out over the years that knowledge capitalism obligates firms to seek rents and a monopoly position in their markets.⁴ Clear support for this thesis comes from the oligarchic structure of the information technology and biotechnology industries in the U.S. and elsewhere. A companion thesis has been that there is a fundamental contradiction between capitalism and the knowledge economy, clearly described by André Gorz, since knowledge is abundant and capitalism artificially forces its scarcity.⁵ In fact, the U.S. experience suggests that this contradiction is productive of the system of cognitive capitalism in Foucault's sense of a productive contradiction: the appropriation of abundant knowledge, the privatisation of public and socially-created goods, that is, the famous 'enclosure of the knowledge commons' is the set of operations that cognitive capitalism exists to perform, with full knowledge that it is forcing knowledge out of its creative collective habitat.

In this article I will look at several aspects of this process. One is a systematic stratification within knowledge workers as a class or group. The second is the development of a structural basis for this stratification--proprietary knowledge--that gives the powerful system of financial capital a direct stake in stratifying knowledge workers. The third is the system of unequal universities and disciplines within universities that reproduces the labour hierarchy of knowledge work and that makes opposition psychologically difficult. Finally, there is the practice of 'open innovation' in which a firm defines value-creation not as the output of its own workforce, but as the output of proprietary knowledge workers from a whole network of firms. I suggest that this leads to a new version of the ancient regime's Three Estates, and that this structure needs to be confronted directly by knowledge workers in academia and industry alike.

MANAGING AND DIVIDING

For nearly four decades, a range of American commentators thought knowledge work meant a kind of independence, creativity, and even liberation. Clark Kerr's landmark *The Uses of the University* (1963) described the centrality of the university and its knowledge workers to advanced capitalist economies. John Kenneth Galbraith saw the college-trained middle classes forming a 'technostructure' that ruled large corporations in *The New Industrial State* from 1967. In 1979 Barbara and John Ehrenreich defined the 'professional-managerial class' (PMC) as a new and dominant force in previously binary class dynamics. The decline of the industrial state only fed the claims that knowledge workers were the rulers of the new economy. Robert Reich's 1991 *The Work of Nations* defined 'symbolic analysts' as a new ruling class, one that Richard Florida would rechristen the 'creative class' in 2003, to which all-important social resources would flow.

The fullest endorsement of this idea of a self-determined knowledge class that could make the rules of its own work life came from the moderate, corporatist dean of management studies in the United States, Peter Drucker. In the immediate aftermath of the fall of the Berlin Wall, Drucker offered this vision of knowledge work leading to 'post-capitalism':

'The basic economic resource--'the means of production', to use the economist's term--is no longer capital, nor natural resources (the economist's 'land,') nor 'labor'. *It is and will be knowledge.* . . . The leading social groups of the knowledge society will be 'knowledge workers'--knowledge executives who know how to allocate knowledge to productive use, just as the capitalists knew how to allocate capital to productive use; knowledge professionals, knowledge employees. Practically all these knowledge people will be employed in organizations. Yet, unlike the employees under Capitalism, they will own both the 'means of production' and the 'tools of production'".⁶

But this is not the destiny actually achieved by brainworkers in knowledge companies.

The old industrial goliaths may have needed armies of college graduates to run efficiently, and universities were producing armies of managers, majors in economics, social psychology, and related fields who would enhance efficiency while supporting the company's priorities and the economic system that favoured it. But do knowledge companies want these armies of brainworkers?

There is much evidence to suggest that they do not. The first is that high-tech industries have famously stratified workforces and pay structures in which their blue-collar workers do not make living wages. The second is that when they grew large, they hired as many temporary workers as possible. Microsoft, one of the wealthiest companies in history, was sued for its practice of hiring 'permatemps', second-class employees with different coloured badges and lower wages and benefits who would nonetheless often work with the company for years.⁷ A third piece of evidence is that they are as inclined towards mass layoffs as any other industrial sector.⁸ A fourth is that the large majority of occupational sectors within 'high tech employment' in Silicon Valley declined during the 2000s.⁹ A fifth piece of evidence is that total direct employment in high tech fields (Science, Technology, Engineering, and Mathematics or STEM occupations) was 5.2% of all jobs in the U.S. in 2007, which means that high-tech firms cannot see themselves as sources of mass employment, and must seem themselves as employing only a fraction of college graduates.¹⁰

There are about 7 million STEM jobs in the U.S., while the higher education system produces about 2.3 million bachelors, masters, professional, and doctoral degrees every year (in all fields).¹¹ This means that the U.S. university system could reproduce the entire STEM workforce in 3 years (2 years if we include associate degrees). If a normal STEM careers lasts about 30 years, we can conclude, using very rough figures, that the U.S. university system produces about 10 times more graduates than the economy needs in its technical workforce.

The issue for knowledge industries then, is *not* how they can create armies of knowledge workers. The issue is the opposite: how can they limit their numbers and manage their output? What happens to the nine-tenths of college graduates who, according to our simplified numbers, work in a knowledge economy but who do not directly produce its technical knowledge?

STRATIFICATION THROUGH KNOWLEDGE MANAGEMENT

A big part of the answer is that they are demoted to a lower class of worker. The mechanism is a form of sorting emerged in the 1990s as large numbers of college students who'd grown up with computers entered the workforce with tastes and skills ideally suited to building the Internet and related industries. One term was 'knowledge management' (KM), and it received particularly clear codification in a book by Thomas A. Stewart. At the time, Stewart was a member of *Fortune* magazine's Board of Editors; he later became editor-in-chief of *Harvard Business Review*. KM was part of a system that hoped against hope (and against the economic evidence) that 'The greater the human-capital intensity of a business--that is, the greater its percentage of high-value-added work performed by hard-to-replace people--the more it can charge for its services and the less vulnerable it is to competitors'. The reasoning here was that a company could thrive when it was 'even more difficult for rivals to match those skills than it [was] . . . for the first company to replace them'.¹² KM was thus not window-dressing, but the life-or-death creation of the human capital that would allow a firm to survive in the cutthroat New Economy.

Stewart distinguished between three different types of knowledge or skill. Type C (my label) is 'commodity skills', he wrote, which are 'readily obtained' and whose possessors are interchangeable. This category includes most 'pink collar' work that involves skills like 'typing and a cheerful phone manner'. Type B is 'leveraged skills', which require advanced education and which offer clear added value to the firm that hires such skill, and yet which are possessed by many firms. Computer programmers or network administrators are examples of essential employees who worked long and hard to acquire their knowledge, and yet who are relatively numerous. Ironically, they may have entered the field because it was large: its size may have signalled to them when they were picked a major in college--and to their stability-minded parents--something like 'the high-tech economy will always need computer support specialists'.¹³ Yes, but not any particular computer support specialist, and not at a very high wage.

Type A consists of 'proprietary skills', which Stewart defined as 'the company-specific talents around which an organization builds a business'.¹⁴ The knowledge manager must nurture and cultivate only the skills that directly contribute to the firm's propriety knowledge, and stamp out (or radically cheapen) the first kind of knowledge worker, whose skills are interchangeable commodities. Only the star producers--those who create proprietary knowledge--enable the firm to seek rents, and only they are to be retained, supported, cultivated, and lavishly paid.

Of particular interest is Type B, the large group caught in the middle, those with 'leveraged skills'. Part of this group is not generally associated with four-year college degrees: it includes 'skilled factory workers, experienced secretaries', or back-office bookkeepers. The latter, for example, have accounting skills as well as plenty of informal knowledge about how the particular company works. They have experience-based cultural knowledge that cannot be easily codified and transferred, and that helps them figure out what anomalous figures mean since they've seen them before, or which routes of project approval are slow and which are fast. Such knowledge directly improves efficiency and profits in various ways. Tough luck: they may be trained, intelligent, valuable and even necessary but they are not perceived to contribute directly to the firm's main

sources of profit. Thus a good knowledge manager should try to codify some of their informal knowledge, disregard the rest as irrelevant, and outsource as many of these workers as possible.

The other part of this middle group consists of college graduates who produce much added value with high-end skills. They are people with expensively acquired, difficult knowledge, like code writing in a particular computer language, but who nonetheless are similar to their counterparts in other companies. KM will treat these workers as it treats their non-college colleagues: they must be transformed into distinctive specialists who directly contribute to the firm's proprietary knowledge, or they must be fired and their functions outsourced to a company that specialises in such skills. These employees followed the post-war college path to success: they finished school, did well, are reliable, hard-working, adaptive, and intelligent, but are too similar to their counterparts from other universities to add unique value. They are 'excellent' but they are not 'unique': they are productive, but not proprietary. KM insisted that good college grads are no different from other production workers: there is nothing wrong with them, exactly, but they do not contribute the only thing that counted in the knowledge economy--unique comparative advantage through proprietary innovations. KM codified the major development in attitudes about white-collar labour in the 1990s, which was that, for the most part, they were as interchangeable and disposable as their blue-collar brethren before them.

Once KM had slotted knowledge workers according to their relevance to the firm's proprietary goods, its other major goal followed rather easily. That goal was to convert human to structural capital. Most experts offered the knowledge manager the kind of advice that Stewart did: recognise them and their importance. Give them the resources they need.¹⁵ But don't get permissive and go too far. 'Fund them too much, and you'll start to want deliverables. You won't get what you want. You'll get what the community wants to deliver'.¹⁶ Too much independence for knowledge workers would become a threat to the process by which knowledge was put to productive use. Toward the end of the 1990s, as elite knowledge workers became scarce or mobile enough to strike good deals for themselves, they caused all sorts of corporate complaining about the pampering of coders who acted like teenagers and the rise of a bratty class of 'gold-collar workers'.¹⁷ Granting any bargaining power to knowledge workers--to say nothing of self-management--interfered with the task of maximising their knowledge's value to the firm.

Only satisfied knowledge workers could satisfy the firm's need for proprietary knowledge that would allow rent-like profits, and yet self-management, the central source of knowledge workers satisfaction --as for all workers--could not be permitted in any general way. Self-managed workers posed permanent loyalty problems; they needed knowledge managers as much or even more than, in this view, industrial workers had needed Taylorisation. Management in the knowledge economy consisted of separating employees with proprietary knowledge from the vast majority of knowledge workers, and then minimising this latter group's independence and social protections as thoroughly as had happened to industrial workers in an earlier age.

A THREE-TIERED UNIVERSITY

Meanwhile, the U.S. university was following an uncannily similar path. Faculty members are knowledge workers par excellence; nearly all faculty members in 4-year universities have doc-

toral degrees, and most conduct some level of research. Nonetheless, over the past thirty years, the share of instructors lacking full-time and / or permanent contracts has doubled. The U.S. system now operates with a teaching staff that is 70% temporary.¹⁸ Even in the best-funded science and technology fields, 'the share of full-time faculty declined from 87% in the early 1970s to 75% in 2003.'¹⁹ These non-tenurable faculty members have no say in university governance and little input if any into their own departments. They are on short-term contracts--from 1 semester to 5 years--and are distinctly second-class in relation to the tenure-track faculty; in most cases they can be fired during times of financial stress.

The most important trend in the last thirty years has been the growing inequality between private and public universities. The wealth gap them is the best known of these differences: one of my budget colleagues calculated that Harvard was spending \$60,000 per undergraduate at a time, around 2005, when the University of California was spending about one tenth that amount on its undergraduates. Other gaps have grown as well--graduation rates, student-faculty ratios, acceptance rates, and faculty salaries.²⁰ It is fair to say that the United States now has a three-speed system of higher education. At the top is the Ivy League Plus, which educates the top 1% of the 18 million people currently enrolled in some kind of higher education institution in the U.S. Europeans will have heard of all of these universities, from Harvard and Stanford to Duke, M.I.T., and Cal Tech, and they dominate world rankings as well. There are around 20 of these universities. Next comes a group of about 150 colleges and universities that are 'selective' and have good reputations outside of their local area. This includes public research universities like Wisconsin, Michigan, North Carolina, Texas, Florida, and many others.

This leaves over 3,500 institutions of higher learning that admit more or less everyone who applies, are often focused on regional needs and vocational training, and that must make do with far fewer resources than is the case with the upper two tiers. These third tier institutions are often 'community colleges'. Whatever good things happen for these students in their classrooms--and there is no reason to assume that learning and academic benefits are inferior at these places--these schools confer mass degrees that offer their possessor no special advantage in the job market. Though their graduates have acquired meaningful cognitive skills and some focused credentials, they have obtained no social advantage. These institutions are about basic employability, but not about social mobility. They are increasingly seen as the only destination for knowledge training that the society's leaders are willing to pay for.²¹ They are the training grounds of the true 'cognitariat', knowledge workers and rarely knowledge managers, and in fact heavily managed starting with curricula oriented towards immediate job skills from their first year in college.

Similar tiers have long been part of European higher education, and modernisation is only making them worse. France already had a two-speed system of universities and grandes écoles; the recent legislation passed by the Sarkozy administration--la loi relative aux libertés et responsabilités des universités (LRU; passed in August 2007)--uses the concept of university autonomy to increase an inequality of funding that will lead to a intensified tiering of campuses within the national university system.²² The German 'Elite 10' competition is another example, and was a response to the increased prominence of international rankings of universities--generally from incommensurate national educational traditions and with diverging social missions--in the creation of educational policy. Tiering blocks a direct response to the real problem of these university

systems, which is their gross underfunding--France and Germany spend about one eighth per student of what those elite American universities spend that appear at the top of international rankings.²³

The stark and growing inequality within universities and within the 'creative class' of knowledge workers actually isn't good for knowledge. One simple indicator is the lack of growth in American scientific publications from the mid-1990s on,²⁴ and this stagnation has not only produced a series of high-level reports sounding the alarm,²⁵ but has recently been traced specifically to declining funding for public universities.²⁶ An obvious response would be to reverse the decline of higher education funding as a share of personal income on the traditional capitalist economic grounds that it is a good investment in future prosperity. This argument certainly circulates in the United States. But it is not prevailing. Why isn't it, even as the educational damage done through stratification becomes more obvious?

COGNITIVE CAPITALISM AS OPEN INNOVATION

One reason, once again, is that the rich and famous like paying lower rather than higher taxes. But there is a structural reason that is built into knowledge industries themselves. These now have an innovation strategy that rejects the managerial cadres and white-collar armies of the industrial age. They have a strategy that they believe benefits their own innovation without requiring major 'sunk costs' in a fixed knowledge infrastructure. This innovation strategy depends on leveraging rather than investing, and on a disruptive rather than a curatorial relation to one's own workforce.

The current situation of the high-tech university-industry reciprocity can be summarised via the influential paradigm known as 'open innovation'.²⁷ It is called open because it tries to respond to the genuine insight in the theory of the knowledge worker, which is that knowledge is common rather than scarce, widely rather than narrowly distributed in the population, and mobile in ways that even the most powerful corporations cannot control. As Henry Chesbrough, the business scholar most associated with the concept, has put it, technology-driven businesses must learn to operate a 'landscape of abundant knowledge'.²⁸ The lead intellectual property strategist first for IBM and then for Microsoft, Marshall Phelps, has claimed, 'Whereas some 80% of major innovations during the 1970s had come from inside a single company's own R&D labs, by the dawn of the twenty-first century, studies now showed, more than two-thirds of major new innovations involved some sort of interorganizational collaboration--either between private firms, or between firms and federal laboratories or research universities.'²⁹ 'Open' innovation systems accept high labour mobility and value collaborations outside their institutional boundaries, particularly with universities. Open innovation theory tends to understand that value is created by individual intellectual labour within complex social networks, and puts collaboration across boundaries at the heart of the knowledge economy.

And yet the purpose of open innovation strategy is to absorb the value created by social collaboration into the firm. Microsoft's Phelps notes that open innovation rests on intellectual property (IP) (as did 'closed' innovation). The difference is that 'intellectual property could no longer be viewed solely as a negative right' to block someone else's use of your IP or to extract a tax on that use in the form of licensing fees. 'From now on, IP's greatest value would lie not so much in

being a weapon against competitors, but rather in serving as a bridge to collaboration with other firms that would enable companies to acquire the technologies and competencies they needed to compete successfully'. The lead firm, such as Microsoft, would create networks of smaller firms, subcontractors, and clients whose own products would depend on Microsoft's through a system of cross-licenses that would bind the whole together as one large 'ecology' with Microsoft as its constitutive legal and technological *standard*.

Phelps and other open innovation gurus had figured out that true market dominance didn't come from open warfare for control waged against competitors, since this meant that you alienated customers and allies, soured your public image, lost the chance to access other people's inventions, and lost big chunks of real estate. On the other hand, if you could convince your potential competitors to give you access to their inventions in exchange for something of yours, you could influence--if not directly control--a much larger business ecosystem than before. Moving from sovereignty to governance in Foucault's sense, open innovation companies like Microsoft used open not to undermine their monopolies but to extend them, precisely by making them more flexible. Open innovation gave small companies the chance to access established markets by participating in the Microsoft brand, as well as acquire some IP and financial support. For the bigs, open meant Ottoman-like expansion of a polyglot empire that nonetheless had their code written into all of its operations.³⁰

The most successful knowledge corporations, then, are those who are best at using other people's money *and* other people's inventions. The name of the game is *leverage*. Intel, for example, the world's dominant manufacturer of computer processors, approaches an existing lab, already fully funded and staffed with a combination of federal grants and university contributions, suggests topics and personnel, funds a project for far less than what it would cost them to do it (informal estimates among technology transfer personnel suggest that a company like Intel pays the university lab between 5% and 10% of what it would cost for Intel to conduct the research internally). This is of course money the university would not otherwise have, and it is sometimes accompanied with state-of-the-art equipment and excellent scientific input from Intel staff. For its sponsorship, Intel gets access to research results, often exclusively for a set period, and first pick of inventions that may turn into useful intellectual property. Universities do not generally disclose financial terms--they are not favourable to the university³¹--but they do publicise the alliance with a prestigious firm like Intel and trumpet interim research results. The strategy works for Intel because it can absorb other people's inventions, turning them into its own IP at a discounted cost.³²

Open innovation has a clear implication for knowledge workers. They are not more valuable to a company just because they work for that company. Intel might find a graduate group at a university that does something that is relevant to a product development project and replace their own group that was doing that work before. Since profitable knowledge can come from anywhere at any time, management has no incentive to be loyal to its brainworkers as opposed to the brainworkers at a start-up or government lab or competitor who have just done something interesting. Any individual or group of employees, even if their work is excellent, will be evaluated in some version of KM terms: can they be automated, outsourced with cheaper workers, or turned into sources of proprietary knowledge? Only the latter group will be supported and protected; the rest will often be retained, but with the kind of second-tier pay, resources, and working conditions

that have become normal in the university world. Open innovation logically tries to keep the vast majority of its knowledge workers as liquid as possible. This means retaining the absolute loyalty only of that minority of employees who produce proprietary knowledge while minimising commitments to the rest.

MANAGEMENT THROUGH INEQUALITY

Like other theorists of cognitive capitalism, Gorz anticipates the rise of political tensions between knowledge workers and knowledge managers. Gorz writes, 'Le conflit qui se développe et s'exacerbe entre le capital immatériel des firmes et les acteurs de cette résistance est, à bien des égards, une lutte des classes déplacée sur un nouveau terrain: celui du contrôle du domaine public, de la culture commune et des biens collectifs'.³³

The conflict is real, but resistance is weak. Here I'm going to draw on my long experience as a knowledge worker in a large university system, the University of California, which is both a premier producer of research knowledge and a large corporate entity with a multidivisional bureaucratic structure. Large American research universities allocate very different levels of resources to different types of education. Professional schools receive about three times more funding per student than do undergraduates. Medical students on average receive 10 times more funding.³⁴ Different undergraduate fields receive unequal resources as well: in one case study, engineering received over 5 times the resources per student as the social sciences.³⁵ As I've mentioned, there are also massive differences between public and private universities. U.S. higher education is radically unequal, and getting more so.

These financial differences are usually concealed by rhetoric of common professional status, and by a lack of precision regarding one another's salaries and working conditions. 2009 has been different, as massive budget cuts led to pay reductions and then differential treatment of a kind that is normally concealed. Here is one recent example. Faculty members throughout the University of California system were given 'furloughs', meaning their 8% or so pay reductions would be accompanied by the ability to work 8% less. Many faculty members decided that they would take many of their furlough days during instruction: they would cancel classes. Some were doing this so that the furloughs would be divided between teaching and research. Others did this in order to 'make the budget cuts visible' to the public, so they could see that the cutting of the state budget was hurting higher education. Most of these protesting faculty were in the humanities and social sciences, where they teach more courses than do faculty members in technical fields. The faculty's formal representative body, the Academic Senate, unanimously agreed that some furlough days could be used for instruction. In late August 2009, the head academic officer for all of the UC campuses declared that no furlough days would be taken during instruction, intervening in an unprecedented way in faculty allocation of instruction. At the same time, he developed a mechanism whereby faculty with extramural grants--mostly in the sciences and engineering fields--could replace their lost salary with grant funds (if the grantee so allowed).³⁶

In a single sequence of administrative actions, university officials had overridden the faculty's historic autonomy over its teaching, and then differentiated between faculty with and without extramural grants, allowing the former but not the latter to avoid the pay cut. This is the sequence

that knowledge management routinely involves: first the denial of the knowledge workers autonomy within the organisation, and then a stratification of different classes of knowledge workers depending on whether they are seen to be immediately responsible for the organisation's cash flow. The UC President calls the extramural grant people 'entrepreneurs', and has said on various occasions that these are the people you want to make sure you keep. The loyalists who do the organisation's daily work are given second billing. Their own 'entrepreneurial' activities, such as inventing and designing courses, creating ideas for students that they give away, in short, the value they create by inventive *labour*, are entirely overlooked.

BLOCKED PSYCHOLOGY OF THE THREE ESTATES

These hierarchies within communities of knowledge workers induce anger, withdrawal, and paralysis. The winners may well recognise the issues, but are reluctant to jeopardise their own advantages and feel that they can do little about the overall system. Certainly no electrical engineer at UC San Diego feels able to have an impact on a decision made at headquarters in Oakland by people with whom he has no relationship. Those that benefit from the system tend to try to ignore it, and exceptions are rare.

The losers react with a combination of anger and hesitation. In the UC case, disarray and fragmented strategies replaced the large-scale walkouts that had at first been imagined. The source of the anger is obvious--the sense of unjust subordination, of labour and value-creation that is ignored and even repudiated by the organisation. The hesitation comes from a sense of futility mixed with anxiety that action from one's position of powerless will lead only to further powerlessness and injury. Since the bonds of the organisation are, in a knowledge economy, unquestioning, and since the dominant value is the return that can be measured financially, the losing knowledge worker cannot rely on a stable relationship with senior management. This is true even of faculty with tenure--though their superiors cannot without enormous effort take away their jobs, their superiors have already taken away their stable, honoured, unquestioned, visible place.

One common reaction is wounded narcissism, which Christopher Lasch long ago identified as a common phenomenon in bureaucracies, where one feels that 'professional advancement had come to depend less on craftsmanship or loyalty to the firm than on "visibility", "momentum", personal charm, and impression management.'³⁷ Although knowledge workers are supposedly characterised by their independence, this is the one feature that a concern for their image prevents. Having largely given up on equalising their status by forcing meaningful organisational change, they mostly focus on maintaining favourable individual relationships with superiors, which requires a general acceptance of their dependent place, leading to further resentment, dependence, and paralysis.

There is indeed a conflict between the modes in which knowledge is produced and owned within cognitive capitalism. But this does not translate into a political conflict of the kind Gorz calls class war. Analysts often suggest that two general phenomenon can undermine a productive contradiction like that of cognitive capitalism. The first is *immiseration*, in which bad conditions force a revolt. The second is *inefficiency*, in which elites tire of wasting money controlling people and not getting that last 20% out of knowledge workers made sullen by mediocre treatment. Neither of these function in the case of knowledge economies, where the knowledge worker masses are still

middle class on a world scale, and where a sense of professional duty produces good enough efficiency in nearly all cases (and threats of layoffs and closure where it does not).

If we use a harsher language than is ever tolerated in U.S. discussions, we can see within the Bush and the Obama Administrations the shadow of the ancient regime, signs of a sun king return of the Three Estates.³⁸ First Estate: international-level political and corporate executives enjoy a very limited accountability to the national population at large. This power rests largely on concentrations of wealth that have both intensified over the past several decades, and expanded beyond a tiny group of moguls and great families to include traders, bankers, and executives who make tens or even hundreds of millions of dollars per year. Its lower reaches begin with the top 0.1% of U.S. earners, with incomes above \$1,600,000 in 2007, is better represented by 'the almost 15,000 families with incomes of \$9.5 million or more a year',³⁹ and is skewed toward global corporations and the financial sector.⁴⁰ Its colleges are largely 'Ivy League Plus'--Harvard, Yale et al plus Stanford, MIT, perhaps Duke, and a just a few others, all private. Second Estate: this is the enabling high-tech clergy, and it provides the highly developed legal, managerial, and financial skills that enable successful business and investment in highly profitable, largely oligarchic sectors such as information technology, communications, banking, pharmaceuticals, and others. Medical and engineering knowledge are also important, though more indirectly. Their incomes place them in the top 1% (starting at \$350,000 a year in 2007).⁴¹ They speak technical languages of law, management, and finance that are largely indecipherable even to highly educated non-specialists, and maintain an invisible empire of ownership structures and lucrative transactions whose existence makes itself known only through occasional disasters like the 2008 financial meltdown. Third Estate: the new Third Estate is characterised by the increasing insecurity and political helplessness of the top as well as the bottom of the rest of the population.⁴² Nearly 80% of U.S. society has not had a raise in inflation-adjusted dollars since the 1970s, and their share of both net worth and financial wealth in the U.S. has steadily declined.⁴³ The 19% that follows the top 1% has done the best in this group, but it too has largely seen its stable pension plans converted into mutual funds that lost a quarter of their value in the fall of 2008, has seen its health care costs mushroom, and has seen its ranks thinned through waves of mass layoffs over the past twenty years.⁴⁴ Its children are taking on increasing debt to go to college in order to obtain an increasingly shaky claim on stability and affluence.⁴⁵ This estate includes blue-collar workers in construction, agriculture, and hospitality, but also the vast majority of brainworkers whose jobs require college degrees, additional specialised knowledge, and complicated experiential 'know-how'--nurses, social workers, accountants, urban planners, architects, and college professors with doctorates in anthropology or the history of art. Though the top of this estate enjoys vastly better life chances than the bottom--I do not at all want to minimise the difference between life at the 10% income level and life at the 90%--working conditions for all of this majority group are less secure than they were twenty years ago, its productivity is less appreciated, and its own condition significantly less upwardly mobile.⁴⁶ In knowledge companies and universities alike, a growing majority is unlikely to enjoy security, regular wage increases, or respect for its labour and output. It lacks the financial independence--even the basic sense that if fired there will be another job.

The analogy with France's pre-revolutionary estates is obviously inexact, but its type of social stratification is both intensifying and hardening in most wealthy nations. It represents a near total defeat of golden-age visions of majoritarian rule, mass prosperity, general equality, and the

cultural progress made possible by the reduction of scarcity. Scarcity is back, for all but that top 1% whose accumulation of lunatic, utterly unspendable amounts of personal wealth are themselves a tribute to the fear of the fear of scarcity--of life as it is lived by even the best educated little people in the increasingly defenseless world that these elites have helped create. What Barbara Ehrenreich called the middle class's 'fear of falling' now defines the life of the vast majority of knowledge workers. Knowledge management is there to draw a line around them, and between the second and third estates--between the proprietary knowledge creators, who enjoy the remnants of golden-age security, and those who are merely very well educated, highly trained, very overworked, and who do excellent labour whose effects cannot be captured by the firm but that spill over to less visible members of society, like students, or to society at large.

I see a two-track strategy to deal with all this. The first is the exposure of the leveraging, the free-riding, and the hidden subsidies through which the Third Estate and its institutions support the other two--by which public universities support private industry, to their increasingly detriment. The second is to re-imagine and articulate the broad social and cultural missions that will flow from the other nine-tenths of knowledge workers, the non-technical brainworkers (in the traditional sense) whose ideas about diversity, equality, justice, technology for use, sustainable development, and so many other issues can transform the world. The university is the obvious place for this re-articulation to begin, and it needs to assume a post-Kantian parity of the faculties that will allow all the knowledge lost via the subordination of non-proprietary knowledge workers to make itself felt again.

NOTES

* This is an extended English version of an article that appeared in *Multitudes* 39 (2009).

¹ For an extended discussion of the culture wars and budget wars on the American university, see Newfield, *Unmaking*, especially parts 1 and 2.

² For the history of this now-mainstream corporate strategy, see Uchitelle, *The disposable*.

³ For discussion of these issues as they bear on budget analyses of the crisis of the

country's leading public university system, the University of California, see my Newfield, Regents; Newfield, Notes. See also the statement made by Jane Wellman, Executive Director of the Delta Cost Project in Congressional testimony, College, @ 02:00

⁴ See Negri and Vercellone, *Le rapport*, 41. An earlier example: 'La valeur d'échange de la connaissance est donc entièrement liée à la capacité pratique de limiter sa diffusion libre, c'est-à-dire de limiter avec des moyens juridiques (brevets, droits d'auteur, licences contrats) ou monopolistes, la possibilité de copier, d'imiter, de 'réinventer,' d'apprendre des connais-

sances des autres'. Rullani, *Le capitalisme*, 87-94.

⁵ 'L'impression qui se dégage de tout cela, c'est que dans et sous le capitalisme une économie différente se forme qui est forcée par des artifices à fonctionner comme la continuation du capitalisme, sans que ses lois de fonctionnement propres soient élucidées ni compatibles avec celles du capitalisme. Si, comme vous le suggérez parfois, le capitalisme cognitif est la solution que cherche le capitalisme industriel à sa crise de suraccumulation, cette solution me semble créer plus de problèmes qu'elle n'en résout, tout en les masquant temporairement. Envisager les choses sous l'angle de la régulation nous détourne, à mon avis, du problème de fond, qui est l'incompatibilité entre l'économie capitaliste et l'économie de la connaissance. Celle-ci demande à être une économie de l'abondance, du partage, de la mise en commun de l'auto-organisation omnilatérale par concertation permanente, car c'est ainsi qu'elle est la plus féconde. Le capitalisme cherche à se l'incorporer en rendant rare ce qui est abondant et privé ce qui est public, rentable ce qui est gratuit'. Gorz, *Économie*.

⁶ Drucker, *Post-capitalist*, 8. For a contextual argument that situates Drucker's work on the corporation as oppositional to the Keynesianism with which Galbraith sympathised, see Gilman, *The prophet*.

⁷ The case, originally filed in 1996, was *Vizcaino v. Microsoft*, U.S. Court of Appeals for the Ninth Circuit (1999), <http://www.techlawjournal.com/courts/vizcaino/19990512.htm>. Microsoft settled out of court with a payment of \$96 million to the permatemp plaintiffs.

⁸ See for example, *TechCrunch Layoff Tracker*, <http://www.techcrunch.com/layoffs/>.

⁹ Mann and Nunes, *After*.

¹⁰ Bureau of Labor Statistics, *Chart book*.

¹¹ National Center for Education Statistics, *Digest*, Table 186.

¹² Stewart, *Intellectual capital*, 91.

¹³ For a clear inverse correlation between the size of the information technology occupation and its wages (the bigger the field the lower the wage), see U.S. Bureau of Labor Statistics, *Chart*, Figure 1.

¹⁴ Stewart, *Intellectual capital*, 89.

¹⁵ Stewart, *Intellectual capital*, 98-99.

¹⁶ Valdis Krebs, cited in Stewart, *Intellectual capital*, 100.

¹⁷ Munk, *The new*, 62-66, 68, 72, 74.

¹⁸ For example, see the summary table for an October 2007 report by the American Association of University Professors.

¹⁹ National Science Foundation, *Science*, Chapter 5.

²⁰ For a brief summary see Van der Werf, *Rankings*, A 13. See also Bianco, *The dangerous*.

²¹ See College Board, *Winning*.

²² See Charle and Soulié, *Les ravaes*, especially the chapters by Lorenz and Neyrat. See also Cottet, Zubiri-Rey and Sauvel, *L'émergence*, 56-65.

²³ Calculation based on authors data and data from Education at a glance 2009: OECD indicators,
http://www.oecd.org/document/24/0,3343,en_2649_39263238_43586328_1_1_1_37455,00.html#Findings.

²⁴ National Science Foundation, Outputs.

²⁵ National Academies, *Rising*.

²⁶ Adams, Is the U.S.

²⁷ Chesbrough, *Open*.

²⁸ Chesbrough, *Open*, xiv.

²⁹ Phelps and Kline, *Burning*.

³⁰ The IP executive Phelps is more forthcoming about his intentions than are most of the open innovation theorists. Discussing 'inclusivity value', he says, 'Collaboration is not merely a public relations function. It enables a company to more broadly and rapidly disseminate its technologies and products into the market through the cooperative efforts of others. It provides the framework for pursuing joint product development work with other companies that can lead to greater success in the marketplace. It can facilitate entry into new markets, broaden freedom of action within a market...and provide access to needed outside technologies' (loc 586).

³¹ See Newfield, *Unmaking*, Chapter 12.

³² Chesbrough writes, 'Intel's approach to managing innovation has a number of obvious strengths. It is efficient, because it launches few blue-sky investigations that might lead to dead ends. The approach is also efficient because it reinvents fewer wheels, instead building on the research

discoveries of others (particularly university researchers) and transferring those discoveries into the company's own development process. Intel's approach to innovation saves money as well, because Intel leverages the facilities and personnel of other institutions. Although the company often pays to fund external research projects, these grants likely do not cover the full cost of the researchers, facilities, and other overhead expenses'. *Burning*, 124.

³³ Gorz, *L'immatériel*, 70.

³⁴ Newfield, Notes.

³⁵ Newfield, *Unmaking*, Chapter 13.

³⁶ Letter posted at 'UCOP on furloughs: We're the deciders!' Remaking the university, <http://utotherescue.blogspot.com/2009/08/ucop-on-furloughs-were-deciders.html>; and Pitts, Memo.

³⁷ Lasch, *Afterworld*, 236.

³⁸ For examples of this ideology as it bears on U.S. executives, see Newfield, *Bastille*.

³⁹ Uchitelle, *The richest*. Uchitelle relies on the research of Thomas Piketty and Emmanuel Saez.

⁴⁰ See Piketty and Saez, *The evolution*. One study by University of Chicago academics Steven Kaplan and Joshua Rauh concludes that in 2004 there were more than twice as many such Wall Street professionals in the top 0.5% of all earners as there are executives from nonfinancial companies. Mr. Rauh said 'it's hard to escape the notion' that the rising share of income going to the very richest is, in part, 'a Wall Street, financial industry-based story'. The study shows that the highest-earning hedge-fund

manager earned double in 2005 what the top earner made in 2003, and top 25 hedge-fund managers earned more in 2004 than the chief executives of all the companies in the Standard & Poor's 500-stock index, combined. It also shows profits per equity partner at the top 100 law firms doubling between 1994 and 2004, to over \$1 million in 2004 dollars.

⁴¹ Ip, Income.

⁴² For the U.K. variant on the inequality boom, see Joseph Roundtree Foundation, New.

⁴³ Domhoff, Wealth, Table 1.

⁴⁴ For an accessible overview of the fate of working America, see Greenhouse, *The big*.

⁴⁵ For example, U.S. federal student debt increased 25% in just one year, from 2007-08 to 2008-09, see Chaker, Students.

⁴⁶ Sawhill and Morton, Economic.

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