Cultivating Campus Citizens, the Economy and Technology: On the New Alchemy in Higher Education

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Introduction

Writing philosophically about the purposes and values of higher education is a delicate process and problematic to boot. No amount of admiration can conceal the present funding concerns of higher education institutions. Some facts of the matter require acknowledgment, though more in the interests of common sense than peace of mind. Throughout the developed world higher education funding is under increasing scrutiny. Administrations have responded by examining models of reform and transformation to preserve their institutions. These models are giving rise to a 'change agenda' promoting greater efficiency (reform) and novel configurations of disciplines (transform). Changes across the sector are deconstructing ancient academic divisions. There is uncertainty about what will be different in the aftermath of change. Merely arguing against change, in the expectation that it will be convincingly deflected, is a Sisyphean task. The range of interests with attachments to the sector makes pursuing such arguments a tantalizing undertaking. Presumably, a subset of the interest groups, *de facto* a power elite, would prefer any debate to remain superficial. This concern is an irrelevancy philosophically speaking. The business of philosophical analysis is not propaganda.

The assumptions *grounding* change are philosophically pertinent as any analysis must be pinned to discernible objects. Opinions supporting reform and transformation frequently present themselves as Hobson's choice—change or wither away. The warrant of these positions contains an assortment of assumptions. Many of these are quite knotty, drawn from a forest of economic, educational, political, social and technological sources. While it is not possible, in this paper, to address all points of interest, a number of reviews of contemporary institutions have identified and recommended principles of change. These are usually presented as normative principles for the sector. Their assumptions are of interest here. The proponents of change frequently use interchangeably the terms 'change', 'diversify', 'expand', 'reform', and 'transform'. This creates a semantic muddle. Even a cursory lexical analysis reveals that the terms are certainly not synonymous, and far from interchangeable in ordinary discourse. An institution may reform some of its practices in the interests of justice or efficiency. Few higher education institutions reform, however, to cast off a dissolute or immoral lifestyle. Transformation implies a clearly identifiable change in the form and nature of an object, but presumably the proponents of change shy away from recommending neutron bombardment of campuses as a means for transforming work practices. In what follows, transformation is implicitly understood as a radical process of alteration, more akin to metamorphosis. The entity is different in kind after the process, not simply reformed in efficiency. Diversification and expansion could be related through the creation of a wider variety of activities within an institution and it is reasonable to accept this as a mode of development. Despite the seeming neutrality of change, it implies a modification to the state of an object, including its replacement by another object with similar if not superior properties. Subsuming talk of institutional reforms and transformations under

the general rubric of change seems linguistically reasonable, and it is the approach adopted here on occasion.

Before outlining contemporary challenges and several responses, a brief overview of historical models of institutional development within higher education is offered. Solutions to the perceived current funding 'crisis' emphasise radical institutional change. An increased role for technology in education is recommended largely uncritically (possibly best understood as the *technocratisation* of education). One corollary of this principle is the attempted commoditisation of knowledge—based on the assumption that learning and knowledge can be moulded appropriately to technology. These two processes are considered and their implications for the cultivation of a culture of learning are teased out. The paper concludes with a discussion about the future of knowledge and virtue in the universities.

Yesterday's Forecasts about Higher Education

The space occupied by higher education is filled by various categories of institution offering a plethora of post-compulsory secondary education accreditations. Due to historical serendipity, universities have dominated and defined the criteria for assessing membership and performance within the sector, i.e. they have been in existence longer than the other types of institution. Universities are the gatekeepers of higher education. This *primus inter pares* role is important to bear in mind when considering any likely ripple effect arising from their reform and transformation. This is not to denigrate other tertiary-level institutions. It just acknowledges that the models of accreditation, teaching and research adopted in the universities have been propagated throughout most of the global higher education sector. Over the past eight centuries, the medieval *universitas*, with its community of masters and scholars, has evolved into a template for the whole higher education sector. Changes that occur within the university *system* will, based on custom and precedent, produce changes within the university family and other areas of higher education.

Any scan of the history of university development reveals that close family resemblances are highly prized. Humboldt's model of the research university, for example, quickly influenced American university planning in the nineteenth century.[1] The iconic cloistered environments of Oxford and Cambridge, over the centuries, have influenced thinking about the ideal university of scholars with special regard for the Humanities.[2] One exegesis of the latter is found in Newman's idea of a university as a place for allowing the exploration of contemplative knowledge, specifically Christian in outlook.[3] Newman in his own cast of the university valued contemplative scholarship so highly that he considered the pursuit of practical knowledge incompatible with the pursuit of an 'intellectual culture that is its own end'. His university scheme was unsympathetic to Humboldt's model. It rejected the principle that education should be honed to commercial needs, and was hostile to the instrumentalist principle that knowledge was a means to an end. The targets of Newman's disdain were primarily (a) Locke's belief that Liberal Education was an exercise in stuffing children's heads 'with a deal of trash' and (b) Francis Bacon's insistence that knowledge should benefit the wider community, not merely the scholar.[4] Both the latter thinkers, living at the cusp of the transition between the old Aristotelian scholasticism and the emerging Enlightenment in astronomy, mathematics and science, reasoned that knowledge should be acquired to assist mankind. Education should have a utility value beyond the self-edification of the

scholar. Bacon's reasoning has a marked technological bias. The purpose of the scholar's investigations is to turn up knowledge that has application in the world.[5] Newman's aspiration that a contemplative scholarly community would promote the required intellectual virtues for the good of all was influenced by medieval neo-Aristotelian thought. His university was explicitly religious in complexion. The 'scientific inquirer' for 'fear of giving scandal' would be required to avoid precipitously disseminating any 'speculations' that might be in conflict with ecclesiastical authority.[6] Notionally the sciences could define their own sphere of inquiry, but in actuality the need to avoid encounters with ecclesiastical authority would be a constraint on inquiry. It is not our purpose here to critique Newman's ideas in depth, but it is worth noting that the distinguished philosopher and polymath, Bertrand Russell, contended somewhat polemically that, historically, progress in science had been achieved in the teeth of opposition from Aristotle's disciples.[7] The persecution of Galileo by the Inquisition for his breach of the doctrines of scholastic Aristotelian cosmology is but one example. Indeed religious universities' defence of their dogma continues to this day.[8]

As fate would have it, even as Newman committed his model to paper, it was largely still-born in most industrial democracies. German and American universities were engaged in exploiting their research output and producing unprecedented numbers of industrial scientists. The American pragmatist philosopher, John Dewey, argued that an elitist model of university education would not meet the needs of America's democracy. Meeting the needs of society included meeting the needs of industry. Dewey, a committed Darwinist, believed that scientific knowledge should be invited into all areas of people's lives, not just to improve their intellectual culture, but to increase prosperity. Education had to serve democracy, industrialisation and the spread of science.[9] Towards the end of the nineteenth century, by coincidence, Harvard had became one of the first modern universities organised around professional schools with graduate education targeted at specific sectors of the economy—a model rapidly disseminated across the continent.[10]

Both Humboldt's and Newman's models of the university have many commendable features. Both were conditioned by the prevailing cultural, economic and political conditions of their time. Humboldt's model was primarily secular and scientific. Most importantly, it established that a core activity of a university was research. This legacy was to have lasting importance and arguably was Humboldt's finest contribution to higher education theory. However, a Classical backwash was still present. The principle of *Lehrfreiheit* (a professor's freedom to teach) and *Lernfreiheit* (a student's freedom to learn) only partially suited the industrial expansion of Germany at that time. Germany was experiencing a resurgent nationalism. Education was a path to cultural regeneration and prosperity. To provide practical courses—*Realen*—for enterprise and industry, German states, following French example, set up the *Technische Hochschulen*. These also had to provide chairs in either philosophy or history. As German university 'pure research' began to produce results (especially in organic chemistry) with industrial value, the battle between the pure studies in sciences (the *Wissenschaften*, including philosophy) and practical studies began to subside.[11]

Tensions between the sciences and the humanities were resolvable in Germany because both were accepted as making significant contributions to the re-emergence

of the nation.[12] Economic success ensured that the balance remained tilted in favour of the sciences. Due to its success, the Humboldtian model could be perceived as an academic paragon. A recent critique of the academic and political ideology of the Humboldtian model, nevertheless, argues that it pursued 'truth' and 'truth seeking' at the expense of social and political responsibility.[13] The German university system became divorced from the greater political and social life of the state and avoided critiques of political ideologies which may, had they been effective, have averted some of the worst human catastrophes of the past century. The argument is moot, but it raises several thorny moral issues for consideration.

In contrast to the German system, Newman's model was decidedly ecclesiastical and Humanities focused.[14] Any commonality lay in the role of philosophy (and *inter alia* history) to guide the sciences.[15] Newman's model permitted science, but it was *fenced off* from industry. Even if in principle the religious bias in his model was removable, what remains is the quintessential cloistered community of scholars. The transmission of knowledge for the prosperity of society is an indeterminate end. Yet, Newman's valuing of education for its own sake is still revered in higher education pedagogy. He rejected education for profit and defended liberal knowledge against 'technical skill' education. Contemporary institutions echo similar tensions between the worth of liberal knowledge relative to science and technical education, and the worth of both relative to the governmental expectations of higher education.[16] Nowadays, universities contain different proportions of both models, depending on country, culture and economy. The blended model has served the Anglophone and European higher education sectors well (as measured by their prosperity among OECD countries) but within the past two decades the blended model has come under pressure from a variety of sources. Why it is under pressure to change and what forces are arrayed in favour of change are for consideration next.

Welfare Ideology, Radical Transformation and Academic Capitalism

University reform has always attracted its share of opponents and proponents. There is nothing new in the Humanities and Sciences hectoring one another.[17] Tensions between tradition and change within the sector have deep historical roots.[18] In the past, the problems posed by these disputes were largely internal to the universities themselves and resolvable within available resources—for example, mass access issues did not influence the outcome of debate.

The scales on which the universities operated and their intersection with society were slimmer than experienced today. Since the end of the Second World War, the interface that a university has with the economy and society is complex, multifaceted and dominated by accountability anxieties. Subject areas have broadened immensely. Student populations are drawn from a wider variety of socio-economic and cultural backgrounds. The increase in commerce, law and media courses have created greater awareness of what universities 'do', and created expectations of what they 'could do' and 'should do'.[19] The escalation in diversity of interests and outputs, which is largely less than two generations old, has stimulated and strained established models. So many different communities of scholars with such a wide array of interests, economic contact points and output objectives inhabit a campus that the term 'multiversity' is probably a more fitting rubric for the site of their activities.[20] The problem of keeping the multiversity fuelled with resources, both human and technical, is at the heart of the current university reform debate.

Once mention of wider economic and social priorities enters into discussions about the sustainability of the universities, problematic questions about relevance and value for money surface. Economic globalisation, greater ease of access to higher education, volatile student demographics and dwindling state funding are creating strains within the university sector. The transfer of autonomy to universities, favoured throughout the OECD regions, has proven to be a poisoned chalice. The universities 'receive' autonomy, but the price has been a reduction in state sponsorship. Higher education in general has been subject to a shift away from the post-war state welfare network (interpreted broadly) and into what might be called a 'market-place'. Criticisms of the welfare state have focused on its 'wastage' of resources and its alleged unaccountability. The state's about-turn on university funding is partly due to 'the state having lost legitimacy as a result of the fiscal crisis... [the state] is trying to renovate that legitimacy by repudiating the public service and shaking hands with the invisible hand of the market'.[21] The 'crisis' facing the universities is how to define their missions and goals in a manner compatible with the state's altered view of the university as a tool for pre-competitive, techno-scientific research.

Presently, the fundamental issue for consideration should not be whether universities change, reform or transform. Sheep do not continue to graze bare hills but move on to new ones. The requirement for reflective adjustment to the prevailing culture and political environment is essential to the survival of any institution. The anxiety is less about transformation in principle, but more about the sufficiency of any proposed transformation. Re-organisational problems facing the universities arise only in a minor way from an internal resistance to change, as demonstrated by numerous historical examples of reform. The problems left to confront are largely due to the universities' own failures to promote internal processes of change. For decades the institutions have been satisfied with internal feudal power relations. Now when change comes, it comes from outside. The dynamic for reform has been taken out of the hands of the sector by the state. Many in authority, in response, profess a growing interest in, and support for, sweeping changes to traditional norms, practices and rules.[22]

Legitimation of the changed university is dependent upon the eradication of elitist practices in scholarship and inquiry, or so the argument runs. Nothing short of a process of radical transformation of the universities is sufficient.[23] The assumption is arguably not based on logical reasoning or scientific investigation, but on persuasive comparisons between international institutions, government policies, and demographic trends glued together by a business process re-engineering commentary. This new *ideology of transformation* (a 'change ideology') relies on a theory of corporatism for sustaining the universities in the future. Essentially, the universities must adopt business models and learn to market their activities for profit. By way of illustration, higher education institutions will be expected to 'generate financial surpluses' and 'market themselves more energetically internationally'.[24] The universities combine their interests with other economic, social, industrial and professional groups to form enterprises. The corporate goals and influences of these latter groups are then fused to greater or lesser degrees with those of the state. Corporatism is particularly attractive to economies where hierarchical structures dominate the development of economic policies and the organization of industry, labour and professional groupings. In order for it to be effective, corporatism requires a subscription to a neo-feudal organisational philosophy. In its practical

manifestations it replaces consent, sought from larger populations, with consultation processes among hierarchies.[25] Despite a history plagued by despots ranging from Mussolini to Peron, corporatism is fundamentally a mixed economy ideology (in conventional political parlance, a *Third Way*). Superficially, it is a compromise between private capital and state subsidy interests which avoids the 'wastage' of welfarism. In this way, it beneficially raises the legitimacy of both state and universities. Many recommendations for change within the university sector are consistent with corporatism, if not indeed motivated by it. National wage agreements involving social partnership arrangements are relatively common examples of corporatism in smaller EU states.[26]

Inter-institutional and transnational comparisons have influenced the change agenda and determined the putative conditions for 'entrepreneurial' universities.[27] These inductive exercises rely on relatively small sample sizes. Conditions for one fortunate 'entrepreneurial' outcome may be difficult if not impossible to replicate in other settings. The generalisability of the results is debatable. For example, if corporation X sponsors work at University Y to the value of N million Euros, it is improbable that the same corporation will offer similar sponsorship to other universities on a scale sufficient to make a difference to their revenues.

These exercises result in general principles being divided between admonitions, exhortations and vagueness. For example, in Burton Clark's work, the general principles of university innovation ('entrepreneurship') involve a 'shift in organisational character' leading to a 'more promising posture' and the development of a '"stand up" university' where 'institutional entrepreneurship can be seen both as a process and an outcome'. These insights are in turn collected into 'five transformation pathways', the guiding principles for change. The first pathway recommends 'strengthening the steering core' of individuals that have chosen to lead the transformation. This core must embrace central management groups in order to reconcile 'new' managerial values with traditional academic ones. The second pathway recommends an 'expanded developmental periphery' to enhance the university's trade with the external world. The periphery would be populated by research centres. The third pathway calls for a diversified financial base through closer corporate cooperation, increased service provision and student attraction. The idea of a 'stimulated academic heartland', the fourth pathway, is conditioned by the 'need' to add value to the university's mission. It should feed into the final pathway, and support 'an integrated entrepreneurial culture'. While superficially comforting, the problem with vague general principles is that they are too easily subject to counterexample and can suffer fatally from a multitude of qualifications.[28]

The avowed aim is to boost the capacity of the university by identifying and supporting activities that build resources and improve infrastructure while at the same time rewarding entrepreneurial excellence. Detailing these mappings is a seminal transformative step for the entrepreneurial university. Inevitably this entails looking for the best corporate fit between the university and industry, with government being called upon occasionally to aid match-making.[29] While most of the initiatives recognise that transformations are not facile undertakings, few question the assumption that they will succeed.[30] Despite the generalities of many of the recommendations put forward, the rise of 'academic capitalism' is inexorably forcing universities into market-place thinking and planning. Irrespective of whether one

wholly or partially rejects the entrepreneurial drive, traditional academic work practices are being impinged upon by external factors largely, but not entirely, outside one's control.[31] The impact of these changes on scholarship and research is commented upon in official reviews only in so far as they can be shoehorned into appropriate service sector categories, i.e. saleable products and services. A striking feature of the change theorising is how little is said about the relationship between knowledge and understanding—an oversight with troubling connotations.

Modern universities have become places of greater apprehension than was imaginable a generation ago. The purpose and role of university education is more explicitly fixed to economic utility than has been witnessed before. Anxiety is experienced more keenly in the Humanities than elsewhere, due to state policies favouring technology and the dominance of product relevance in discourse about university values. One noted critic argued that philosophy's failure to 'take command of the crisis in the universities' has placed many traditional disciplines within liberal education in line for extinction.[32] Within this arena, the 'democratisation' and 'popularisation' of higher education, both of which are at the top of the change agenda, maintain their detractors and supporters. Not everyone accepts that the introduction of the 'trash of popular culture' has undermined academic regard for freedom and the cultivation of reason.[33] Likewise, there are good arguments for maintaining the 'old' academic allegiance to the idea of a university as the producer of rational and compassionate 'world citizens'.[34] These debates, contested vigorously by all parties, demonstrate the vitality of reasoned disputation within the university environment. They are also at odds with all the jargon of the market-place and product relevance, and because of their perspectives on the value of higher education, they pose the greatest adjustment challenge to the university as a community of scholars. On reflection, and unsurprisingly, the primary agitators are *not* organically linked to higher education. They are *external* to the sector. Their persuasion is articulated differently through the power of their economic influence over the continuing existence of the universities. Here the debate is not whether Plato should be pursued or feminist theories of literature facilitated. Rather it is about whether there *should* be institutions at all willing to support any shade of inquiry that is not in strict conformity with the macro-economic agenda of the state.

Throughout the OECD countries, universities are often cited as the source of their own misfortune. In Ireland, for example, a recent report presses that 'reform and modernization of the university' is in the interest of national economic development.[35] The report recommends that the university sector monitor the 'relevance of its products'. Another review questions whether the university 'has a future' unless it embraces the 'opportunity' afforded by 'the American corporate university movement'.[36] Universities are no longer to prioritise contemplative higher learning, or contributions to society's cultural life. They are charged with subtending the economic development of the nation. Not only is there a moral duty on them to accept this role, but there is also an imposed economic onus.

The Liberal Arts are vulnerable to extinction in this climate, as they become 'uneconomic' to maintain. Many universities with traditional liberal education curricula have explored the marketing of their Humanities offerings as a result.[37] These universities are 'brand' conscious and aware of 'customer' (student) requirements. Academic departments operate as 'business units' and 'revenue

centres'. Courses become 'marketable products' whose relevance must be kept current. Does this imply that a price can be put on everything within a university? Or to put it another way, what are the implications for those disciplines that do not fit within a university's pricing policy? Any answer is bound to be contentious, but in the absence of other sources of external funding, what is those disciplines' future?

A less deferential analysis of campus commercialisation—which includes everything from track athletics to medical research—concludes that the for-profit campus risks compromising its objectivity in the eyes of the public.[38] If the public perceives the universities as too enthralled to corporate sponsorship, legitimate academic work could be devalued. One could argue therefore that contrary to transformative assumptions, the more legitimation is sought through the market-place, the less value attaches to it. Human health research, for example, must reach the highest ethical and scientific standards to sustain public confidence. The ethical implications of ever-increasing corporate sponsorship of medical and pharmacological research are particularly disquieting. The possibility that researchers are tempted to skew results favourably towards their sponsors is not at all fantastical.[39] The neutrality of university research and teaching is the university's finest and most respected quality. This quality lends the university moral authority, social standing and scientific respect. Any major subversion of this value, arising from commercial pressures, would irreparably damage the whole sector. In a similar vein, the tailoring of educational programmes to match corporate needs, and the reduction in academic standards to support greater mass access, are debated as regrettable developments due to their impact on pedagogy and scholarship. One effect of mass intake policies has been a greater shift in emphasis on to the graduate school and its commercialisation.

Martha Nussbaum uses different lenses to study the value of traditional humanities learning.[40] She argues that traditional liberal education curricula can be reformed to accommodate 'diversity thinking' and produce 'world citizens' with critical thinking skills. Rooted deep in respect for Socratic reasoning, Nussbaum articulates the idea that higher learning is inseparably both a moral and rational exercise. The rational agent is also influenced by empathy. Critical rational education is not an exercise in drilling students in conformity, but provides a sound basis for both inquiry and moral reasoning. The aspiration that a university's finest end is the production of better citizens is an unbroken thread through the entire history of higher education. Yet, it barely receives acknowledgement in current higher education reviews where emphasis is placed on serving the economy first and foremost. In the transformation literature, learning is reduced to 'specialisation' and 'mastery of the content of modularised courses'.[41] This is unsurprising in a climate where student needs are not led by the requirements of higher learning, but higher learning is led by them, viz. the need to cater for the 'graduate labour market'.

Nussbaum's views on the moral relevance of higher education also resonate with recent comment on the 'social relevance' of the universities.[42] The main concern in Breton and Lambert's commentary is whether the universities *as a whole* can develop a 'global logic' to account for their relevance. The yardstick for assessing the contributions of universities will be the role they assign themselves in developing *international* civil society. Measuring their future relevance will be based on how they help overcome socio-economic divisions between North and South. Comparatively speaking, Nussbaum's measure of higher education relevance can be

understood as primarily micro-focused at the level of citizenship, while Breton and Lambert's measure is rooted in success with macro- and global societal problems. Both measures are compatible and unmistakably interdependent. The logical primacy is with Nussbaum's production of world citizens, however, and this is the nub of the problem. In practice, the 'world citizen' is an ideal to measure everyday performance against. The extent to which modern higher education attains traditional university goals of rational and moral development, or even should aspire to them is, and has been, a divisive issue for some time. As an aspiration it may become entirely unrealistic, since nonconformity around 'product relevance' is almost certainly anathema to the ideological goals of change.

The proposition that corporatism (Clark's entrepreneurial university) is remanufacturing the universities as factories to produce knowledge using pseudo-industrial planning policies has led to concerns about the type of thinking fostered in higher education.[43] In this analysis, the universities' proximity to, and respect for, corporate thinking (and funding) has ensured that no forms of critical thinking are presented to students that might jar with corporate ideology. Higher learning in the universities is being 'dismantled' by promoting an ideology of corporate conformism. Questions about the internal dynamics of corporate thinking (in terms of organisational efficiency and performance) are permitted, but more fundamental questions about ethical and philosophical effects are, by consensus, off the learning agenda. Based on cross-institutional comparisons, another analysis makes a supporting case that the development of 'academic capitalism' is pushing universities in a direction leading to conformity in thinking and research agendas.[44] The rewards for conformity outweigh possible career risks associated with nonconformity. Whatever connection there is between relevance and truth discovery is even more difficult to unpack in these cases. Provided it attracts funding, dressing up research in a thin veil of 'truth-seeking' may ensure that almost any ideological and scientific bias will pass muster. The focus is on the funds attracted, not the work itself. Research nonconformity is a challenge to this corporate reward policy. Nonconformity as a challenge to transformational thinking is at least awkward, and at worst heretical. It is awkward when a 'commitment to reason' does not allow a policy to move forward because of its demonstrated incoherence, and heretical when it seeks to subvert change by demonstrating contradictions in the logic of reform and transformation.

The Doctrine of Change and Changing Teaching

Being doctrinaire—ideologically sound—on the necessity for change has assumed critical political importance for organisations promoting change. Trivial changes are indeed unlikely to unseat traditional scholarly ideals, but that determination is a function of the scale of any proposed changes. It rests also on the naive assumption that value neutrality is restricted to the identification of trivia. What one sector in the university system considers a trivial reform may not be seen as such by others. Deliberative scholarly assemblies do not effect rapid alterations—but it is not their mission, and never has been, to rapidly alter their configuration.

The primary theatre of change is not a set of minor adjustments to the organisational mechanics of the university. Change promotion at a system-wide level implies a significant alteration to the means by which the universities meet their purposes. This influences a redefinition of these same purposes. The philosophical task is to assess whether inquiry and learning are being subverted rather than enhanced by the

attendant change agendas. If reformation and transformation are necessary, then what are the least destructive changes required? Facing up to this question compels one to acknowledge that the change ideology has marshalled elite forces in its favour. These range from state organs through to multinational companies. Appraising rational counterarguments against it seems practically futile, and theoretically vacuous. The state-sponsored nature of the commissioning process of many reviews of higher education, irrespective of country, ensures that their recommendations are raised to the status of political doctrine. A defining characteristic of contemporary reviews is their emphasis on transformation. The insistence that transformation will produce a marvellous good is so pervasive that it almost defies rational counterblows. This is one of the pinching strengths of ideologies spawned by corporatism. The widespread dissemination and endorsement of the view among elites erodes the political grounds for challenge. Yet, much of the reasoning in support of 'change' is based on polar interpretations of activities within the universities. 'Good' activities are those that attract funding. 'Bad' activities are those that fail to attract funding. The transformation imperative is that universities must act as market-driven organisations, constantly alert to novel opportunities to attract 'new' students. Mechanisms must be found to implement this thinking. Not all of these mechanisms have laudable moral ends, however. Coupling the relief of financial pressure with an increased emphasis on attracting international students to universities may have little to do with fostering multi-cultural understanding.

Moral implications flow from the implementation of change, but these are overlooked in the welter of approving books, commentaries and reports. Subservience to fiscal targets is the governing modality for 'correctly' approaching the debate. Unfortunately, there is an absence of society-wide debate at this level of detail. There are reasons for this lacuna. In the global economy, the connection between economic performance and knowledge is presented as a master-slave, subordination relationship. The persuasion applied to the universities to develop a culture of product relevance has implications for many other human activities. Society may be rapidly moving to a phase when knowledge that lacks commercial potential may become non-categorisable as knowledge *per se*. Partly, this is explained by the dominant ideology of corporatism within which the human element is mere input, raw material for immersion in organisational processes which exist to service industrial activities. Lost in these processes are the social and personal realities of human lives. A deeply troubling quality of all the transformational studies is the thin role allowed for human expression and creativity outside the servicing of university-corporate partnerships. This is hardly consonant with the promotion of traditional virtues such as altruism, respect for others and tolerance.

The status of teaching in this culture of change is equally problematical. An alluring attraction of 'change reasoning' and 'radical transformation' is that they conveniently decouple teaching from the evaluation of an institution's worth, let alone an individual's. The physical location of learning environments is seen as an obstacle to change because geographical fixity is not compatible with ideological principles that group knowledge with other saleable commodities. Teaching by itself alone cannot attract revenue, and what cannot attract revenue is suspect. In the solution scenario, radical transformation, teaching is reduced to a component in a Knowledge Management (KM) system. This re-organisation of teaching has the economic side-effect of providing a niche for technology to assist with managing the teaching

component. Wherever teaching is undertaken, technology can render it accessible to the masses. This process will be handled by Knowledge Transfer (KT) mechanisms. KM will make sure that the knowledge is collated, stored and accessible, and KT will make sure to transmit it efficiently to the customer in whatever medium is deemed progressive—and marketable. At least, this is the theory. Teaching is made amenable to a marketing agenda using the new media technologies. In turn this ensures 'closer cooperation' with corporate values. Institutionalised deference to market forces then makes it possible to deliver teaching (presumed to be 'knowledge') to the masses without anyone ever having to move beyond their living rooms.

While notionally this idea is pursued in the name of widening access to education, a value intrinsic to the university ideal, there are at least three concerns. In the first place, there is more to tertiary education than is found in books, computer displays and DVDs. The hidden curriculum of social networks, relationships and milieu novelty cannot be captured in technology. Distance learning programmes, such as those offered by the Open University, learnt this in their infancy and ensured student contacts and networks were in place. However, unlike traditional universities, the Open University was designed at the outset to support distance learning. In traditional universities, distance learning has been added as an afterthought, largely relying on the untested assumption that the internet was an ideal vehicle for effecting learning. Secondly, there is an increased likelihood that curricula will be tailored to meet corporate needs. This tailoring could become so specific as to deny the universality of teaching, which for centuries has formed a core university canon (at least in secular settings). There is a fundamental distinction between delivering courses to meet a company's needs for its workforce, and delivering a company's specific needs in courses for general access. Whether on campus or off campus, introducing students to competing materials is not always achievable—possibly less achievable in technology courses than others. However, in a sponsored learning setting the choices may be even more restricted. This raises a third concern about the fitting of material to the delivery medium. The difficulty with all media technology is that humans have to use it. Invariably, the human user must mould his or her material to fit the restrictions of the delivery technology. Not all users will mould their material to the same standard, or even use the same features. Some level of uniformity in format and delivery is desirable from the perspective of teacher and student, but at what point does uniformity in format shade into conformity in content?

Some proponents of the knowledge economy admit that there is more to distance learning than mere delivery of information.[45] While emphasising the importance of 'people' and the 'collective memory' of organisations, they argue that the 'devolved university' (the transformed university) is fast becoming a reality with new technologies pulling apart the 'seams' of the traditional university. They speculate that the new university system will move towards maximum course flexibility and a geographical dispersion underpinned by technology. Students could mix stay-at-home courses with on-campus courses. Faculty staff would organise their own resources. They go so far as to suggest that staff might be paid a fee by the students they attract—instead of a salary. Admittedly some of this is speculation, but certain themes resonate strongly with the change ideology. In this model, the fortunes of an institution are shackled to market forces.

A recurrent theme in the change ideologies is that salvation can be found by embracing technology. This faith in technology to cure the sick and economically debilitated is another outgrowth from the hegemony of scientism—the idea that the only mode of knowing worth its salt is that practised by science. The deference shown to technology, especially in distance learning, is at least on a par with that shown to science in the past half-century. Perhaps more so, as science was at least seen as having an authority derived from elite learning, whereas technology's authority is diffused between elite and technologically literate users, with the added endorsement of entertainment artefacts by popular culture. Within the court of 'techno-scientism', relativistic theories of knowledge, with their implicit appeal for tolerance and plural interpretations, are distinctly at odds with a new imperialising empiricism. The only datum is what is measurable, and, preferably, digital, i.e. observable and quantifiable with the aid of technology. There is no room here for rationalist doubts over unwarranted extrapolation from purely quantitative assessment methods. The redemptive power of technology with its corporate theology in tow has become the new dogma of the entrepreneurial university.

The complex nature of the social reality within higher education pre-existing the impetus for change is rarely mentioned, let alone analysed in official policy reviews.[46] Such is the charismatic 'pull' of the technocratisation of the universities that the inversion of humans into raw materials to serve a science-technology juggernaut passes unremarked. To oil the wheels of its motion, a useful myth in the ideology of change is that technologies are impartial artefacts—they do not generate incongruous influences on human behaviours. However, even something as ubiquitous as the computer interface has a range of embedded cultural, political and social biases. Technology is far from value-free, and change initiatives lauding its greater deployment are promoting values that are rarely dredged to the surface for critical evaluation.

One of the striking paradoxes of the change ideology is its promotion of the dissemination of even more information electronically, without encouraging an increased scepticism about the value of such exercises, since information *per se* is not knowledge. Pedagogy rooted in traditional media is, by implication, stagnant, and cannot propitiate the change ideology. The jargon of the change ideology requires an accommodating pedagogy exercising the products of media technology. Support for this position assumes that technology-supported teaching is *de facto* qualitatively better teaching. In practice, qualitatively better teaching may be subverted by overdependence on media technologies. The emphasis on producing materials for transmission in teaching may reduce a lecture to little more than a textual experience. The teacher-class intersubjectivity that is intrinsic to the traditional imparting of scholarship, method and principle is diluted, if not abandoned. There are cultural, personal and social dimensions which have always formed part of the core experience of higher learning. To reduce this exposure to technology encounters is akin to reducing cookery to recipe comprehension.

University Restructuring: The New Alchemy?

There are many untested assumptions in the ideology of change, not least of which is the major premise that change itself will produce the desired transformation. Similar to the proponents of radical transformation, the central quest of the alchemists was to produce a transformation ('transmutation') by bringing opposites together. In their

paradigm transformation involved reconciling substances of different status to generate a third entity. Through fusing substances that were sympathetic to opposing forces, the alchemical magus hoped to produce a unique transformation. Usually this was an attempt to produce gold, a pure element, from baser elements. The latter were inferior in purpose and value. The experimental quest for the Philosopher's Stone can be broadly understood as the search for a universal catalyst that would 'guarantee' the results of any transformation.[47] Once the process of transformation had been mastered with gold as its outcome, the next challenge for the alchemist was the multiplication of the result. Given one kilogram of gold, how does one produce two, three or more kilograms? The key to giving alchemists their due respect (within their historical context) is their belief that transformation was a process of perfection. Transforming baser elements into nobler ones was a demonstration of the potential for perfection inherent in the environment. Centuries of failure in gold production taught them one valuable lesson: *transformation in appearance is not equivalent to transformation in essence*. It remains to be seen whether similar lessons will be learnt during any radical transformation in higher education.

This combination of faith and persistence in alchemical experimentation is strikingly familiar in a world where universities themselves talk about the value of hybrid research and teaching models, entrepreneurial institutions and the need for replication of successes. The goal in alchemy was to strip metals of their properties down to prime matter, and then to produce gold from the resulting undifferentiated mass. Radical transformation adopts many similar assumptions. The universities must have their traditional roles and structures pared down, reducing them to primarily techno-scientific structures. Once reduced to 'scaffolding', they are then better conditioned to accept industrial-corporatism, product relevance and market-place alignment. Transformation will make perfect the university mission (make it a 'stand up' university in Clark's words). It will inject vitality into it and secure it a future, just like the alchemical panacea. The transformed university will be a different kind of place than the traditional element which has been worked over. The old 'base' properties will have been 'exchanged' for new corporate gold. In the process, the university will have become 'innovative', 'devolved' and 'entrepreneurial'.

Extraordinary deference to technology is a linchpin in the change ideology's arguments that transformation will succeed. Modern information and communication technology (ICT) has become the new Philosopher's Stone not just in administration and teaching, but in all research areas. It is next to impossible to conceive of any scientific research that does not require the use of computer technology. The closing of the gap between science and its 'technologisation' is a key influence on the deference shown to techno-scientism. Proper application of ICT will transform the universities into market-driven centres of innovation. This is not to imply that all those in agreement with radical transformation believe that lead can be turned into gold, that admixtures of air, earth, fire and water can account for all transforming processes, or that a smattering of numerology and the Kabbalah fortifies scientific inquiry, but radical transformation theory encourages polar thinking by promoting 'product relevance' in the 'market-place' without necessarily understanding the preconditions for successful reconciliation of opposites or even appearing interested in such a process.

Laying the charge of alchemy against the change ideology is polemical but some lessons result nevertheless. The problem in effecting change in a university setting is that the primary elements (the base elements arguably) are highly educated. While this latter quality may qualify them to critique change, in terms of identifying conditions that 'change' must meet, it is not coextensive with initiating a model of change or seeing it through to completion. The vast lexicon of aspirational vagueness drawn upon in radical transformation analyses cannot inspire confidence in communities accustomed to reasoned analysis and rigour. Thus, it is precisely the more abstract formal disciplines in mathematics, philosophy, linguistics, sociology and even some areas of economics (and this list is not exhaustive) that may feel less reassured about the validity of the change procedures than disciplines with a more experimental and mechanical outlook. Within higher education, several institutions are both enormously rich and celebrate lively learning and research environments. It is less well established, if established at all, that transformation policies, rather than evolution and happenstance, have played a major role in their success. Arguably, like the old alchemists, the purveyors of modernisation confuse consistency with consequence. The success of the few may be entirely consistent with putative modernisation policies, but that does not prove that their success is a consequence of such policies. This is at least one fallacy running through the modernisation programme for higher education. There is always room for luck.

A final point for consideration is the alchemists' seduction by the technology of their day. This was no bad thing, since it is unlikely that modern chemistry could have developed without alchemical inventiveness. Much of what the alchemists attempted to develop came to nought, however. Were their efforts worthwhile? There is always the possibility that the creativity of today may fail in the short term but succeed in the long term. No one suspected that the non-Euclidean geometries of the nineteenth century were more than curiosities until Einstein developed Relativity. What type of knowledge is required to make a judgment in the entrepreneurial university that is not unreasonably short-sighted? This is an important question where the industrial 'lag' between research, prototype and product is becoming shorter. As time moves on, the judgment may be unreasonably influenced by the demands of a technocratic ideology. For as long as the research effort does not jar with or challenge a dominant or favourably emerging technology, the work can be supported in the short term. The net effect of binding the institutionalisation of research to a socio-economic agenda is arguably a covert means for shifting scarce resources into the hands of vested corporate interests.

Technology and the Problem of Knowledge

Among the motives for pursuing transformation, none has been more persuasive than technological hubris. Prior to the development of consumer ICT, the authority of knowledge rested very much in Big Science. It had brought everything from heart transplants to moon landings into the lives of citizens, and in the process settled dozens of historical questions in everything from astronomy to zoology. People were deferential to Science. In the past two decades, the spread of technology, and the embedding of computers in everything from alarm clocks to washing machines has created a 'new deferentialism', to borrow a phrase.[48] Within the theorising about university transformation, ICT is identified as contributing to the substantive teaching and research missions of the sector. Its potential as an educational technology is

considered significant to the likely success of any transformation—e-learning or learning through electronic aids.

The use of technology in education, from wax tablets to the modern computer, is as old as education itself. What distinguishes e-learning technology from other developments is its promotion as a revolutionary *learning* technology uniquely suited to modern mass access higher education. It would be surprising, given these claims, if universities ignored e-learning. There are many differences between traditional distance learning and e-learning. Many of these were blurred in early e-learning initiatives. Distance learning is a combination of correspondence courses, audio-visual materials and campus outreach initiatives. On the other hand, e-learning was largely intended as 'computer desk learning', with little requirement for campus outreach. It was assumed that a reduction in outreach could be compensated for by use of electronic mail, bulletin boards and websites. Several high-profile and well resourced colleges developed e-learning programmes. Many of these initiatives have failed completely and been wound up, or else have been much reduced in ambition, content, format and scale. Those that have survived have either adapted the traditional distance educational model (such as the University of Phoenix) or are offering focused short-term courses. The Open University, notably, offers a bare handful of its courses online.

In the light of the change ideology's faith in educational technology, a recent review of the paradoxes affecting e-learning deployment in higher education makes interesting reading.[49] Among the conclusions reached is that those institutions that might benefit most (through increased student numbers) from offering online courses are least able to do so due to staff and infrastructural resource constraints. Paradoxically, the institutions who could most afford to offer such courses are those least interested in doing so—they simply have no need to move beyond their traditional campus-residency setting. This is just one of eight conflicts identified in the review. Additional problems refer to the lack of uniformity in standards and terminology, the ill-preparedness of 'second chance learners' to use ICT, and the increased burden placed on staff attempting to fit course materials into specific formats. The ambiguity and misperceptions in the provision of information, learning and knowledge are highlighted in several additional reviews.[50]

Society's perceptions of the interconnections between knowledge and technology are complex and intriguing. The relationship between science and technology influences perceptions of knowing. Legitimate modes of knowing employ the instrumentality and modes of discourse associated with techno-scientism. Consequently, products of the exercise of reason outside these parameters are epistemologically dubious. The only legitimate knowledge is that arising out of techno-scientific endeavours. Citing again the new deferentialism, this places the liberal education agenda in an unsustainable condition. The supposed neutrality of science, in terms of its methods and substance, is itself conditioned by a nexus of funding supports derived from cultural, economic and political judgments about the worth of certain research efforts. Hence the neutrality is illusory, but in terms of promoting certain curricula within higher education it may be ideologically essential. One analysis pulling together strands from Weber and the Frankfurt school argues that the net result of the marriage of technology with science is the manufacturing of the illusion of an objective rationality which is presented as having the force of an autonomous historical

process.[51] Extending this to higher education transformation, one can argue that a process of acculturation has evolved within the sector leading academics to perceive themselves as subject to a technological rationality that has the force of political dominion over their activities.

The importation of this 'rationality' into areas outside science glues a veneer of legitimacy to their methodologies, e.g. organisational theory, management theory, knowledge management, etc. By passing off processes as grounded in techno-scientism's rationality, vested interests (power elites) can both disguise their political interests and simultaneously legitimate their intentions. Legitimate knowledge is presented as a logical outcome of this rationality, because of demonstrable scientific and technological achievements. Whatever is not a logical outgrowth is deprived of legitimacy. The question for the universities is whether they are content to attribute rational legitimacy to only those areas that remain concordant with techno-scientism, or at least not discordant with it. This is quite a fundamental concern. It may be the case that the debate is so biased towards technological modes of investigation that speculative inquiry will disappear from higher learning over time.

The attitudes that a society cultivates towards science and technology make possible a whole series of transformations in behaviour, civil liberties and judgments about the value of human activities. The pressure on the universities to produce techno-scientific knowledge as a commodity inevitably trickles down into the cultural value system of a society. Technology has enabled the rapid transformation of scientific results into profit-making streams. Whatever does not in quick time lend itself to instrumental utility, by definition, has little value. An understandable response of those in research is to commodify more of their work by either stepping up its quantity (in terms of publications) or enhancing its cultural legitimacy through techno-scientific sponsorship or industrial collaboration. Certain disciplines have an easier path through these mazes. However, in this competition, the Humanities must first and foremost define themselves as commodities in the transformed institution, if they are to survive.

Awareness of the dangers in, and inherent unreliability of, many scientific endeavours and technologies receives no attention in transformation ideology. The existence of outright chicanery in science is rarely debated, yet it exists.[52] The ubiquity of computers as stand-alone devices and embedded systems means that technological problems and computer bugs may have widespread implications. One security expert estimated that the demand for computer software patches exceeded 4000 in 2003 alone.[53] Apart from the labour costs in producing and installing the patches, the effect on an organisation's daily business is not insubstantial. Even these difficulties become insignificant when one reflects on a study by the US military's Chiefs of Staff that identified problems with automated target identification systems as the main cause of 75% of 'friendly-fire' casualties.[54] In practice, computer technology has been affected with considerable unreliability—admittedly malicious security attacks on the systems play their role—with many problems due to carelessness.[55] The so-called Millennium Bug, or Y2K Problem, was hysterically heralded as a likely digital Armageddon. In the end, its impact was unnoticeable, though the funds spent by government and industry on 'precautionary' measures were enough to eliminate third world debt.[56] Companies that responded to its 'threat' did so due to financial benefits arising from upgrades, or fear of never-ending litigation by clients.[57] More extraordinary, given

official corporate enthusiasm for computer based 'everything', has been the reluctance of suppliers to accept responsibility for defective systems. Only very recently has the balance begun to shift slightly in favour of the purchaser.[58] Even where governments have thrown their considerable resources behind national e-learning initiatives, the results can be economically abysmal. A recent House of Commons report on the failure of the UK e-University project, determined that approximately £50 million had recruited merely 900 students.[59] A myriad of technology and planning problems contributed to the collapse of the project.

The above are not arguments against technology, nor would similar examples herded together from medical and pharmaceutical interests serve as arguments against science, but they are evidence of the fallibility inherent in many methods of experimentation and discovery in science and technology. The rationality of *means* does not warrant acceptance of the rationality of *ends*. There are moral implications to the way science goes about its business and defines its agenda. Does this pose difficulties for the universities, post transformation? In fact it could, if transformation is largely about getting 'relevant products' to the market-place. There is no ethical 'row back' space factored into the transformation process.

Conclusions

The introduction of the concept of 'product' into the universities own self-commentary has created a division between the traditional culture and mission of the university as a seat of education and learning, and the emerging multifaceted university—the multiversity. The language of industrial production precludes the reintroduction of historical practices and subjects with minimal 'product relevance' to the agenda. There is a fundamental incommensurability between the categories of experience, knowledge and value that apply to the universities as centres of learning and industries which are centres of product production and profit. However, the implications of this incommensurability lie largely unexamined. If left unexamined they will have a detrimental effect on the future development of higher learning.

Throughout this paper, it has been argued that the transformation currents flowing at present are dyed through and through with instrumentalist thinking. That means that the criteria for judging the value of inquiry and teaching are instrumental criteria which are themselves related to vested interests. The processes entail a major re-creation of traditional university positions on pedagogy and inquiry. Not that one should be too precious about these values. The past twenty years have witnessed a steady, if somewhat erratic, series of attempts to commodify higher education. The contradiction touching the universities' embrace of transformation hinges on understanding the importance the sector has historically attached to reasoned inquiry. Reasoned inquiry in higher education both as a discipline and an aspirational value is intrinsic of the self-identity of the sector. To preserve historical canons and sectoral esteem, the universities in general wish to present any major transformation as consonant with reason. For this argument to have any plausibility, however, some degree of self-deception is required about the role afforded to market interests in shaping the image of the transformed enterprise university.

A developed society must sustain centres of higher learning, since the connection between techno-scientific outputs of research and the general condition of an economy is not arbitrary or remote. If the mission of higher education is to serve the

economy, then let the conditions be specified clearly and the implications for the production and critique of knowledge be subjected to reasoned investigation. Society is bigger than the economy. Humboldt and Newman's models of learning still contain useful heuristics, but learning has to fit the age the knower lives in and not an academic reverie. Current perspectives on the role of the universities cannot be contained within conventional thinking. Conventional wisdom has brought about the current problems.[60] There is a risk that the change ideology could become, or already is, part of conventional wisdom if it fails to take on board the value of critical thinking. Very simply put, the transformation proposed via the 'entrepreneurial university' may become the only tool for assessing solutions and attributing value. The alchemical reactions between higher education, the constitution of knowledge and the experienced political economy are currently understood in terms of utility outcomes. It is appropriate to refer to these relations as alchemical given their focus on polarities, sympathetic magic (imitate industry and the hex will be lifted) and the central reagent role of transformation.

Worryingly, the change ideology's emphasis is solely placed on transforming 'knowledge production' processes with scant regard for, or understanding of, the implications of these processes for the institutions as social organisations. The marshalling of techno-scientific rationality as an unavoidable historical process which must be run across the universities, like a ruler across the fingers of an errant child, contains many contentious assumptions about legitimate modes of learning and knowing. Regressively, it contains a strand of verificationist thinking that had shifted out of philosophy but clearly not out of technology-influenced thinking. Techno-scientific research is a necessary condition for sustainable higher education, but few would assert its total sufficiency in cultivating 'rounded' citizens.

These observations and reflections in themselves are not sufficient to reverse the juggernaut of transformation. Nor should they. The combination of theory, practice and ideological fervour within the transformation camp may turn out to be wrong—in the sense that the predicted results may not transpire—but unassailable reasons for not pursuing the course are difficult to gather together. They will always be blunted by promises of appropriate monitoring of standards. More disconcertingly, in the longer run, the impetus may turn out to be irreparably damaging to the very universities it was designed to sustain. At least in the case of alchemy, when its major thrust proved plainly wrongheaded, modern chemistry was already underway.

Higher learning is not conveniently reducible to industrial product development. The idea of a university in its broadest and most established sense is of a place where higher needs and noble human values are at least acknowledged, if not definitively teased out. Over-emphasis on techno-scientism entails diminished attention to such banalities as moral values. These are the eternal banalities which make up the stuff of life and define the everyday quandaries of citizens. Nonetheless the response of 'advanced' industrial nations, predictably, is to push ethical debate into Law Faculties. Once there, these debates can be made subservient to the rationality required by the economy. This is not a healthy development. Only humans can effect and honour obligations to one another—not science or technology. By constantly squeezing the space available for reflection and speculation, and by creating ever more specialty techno-scientific centres, the universities are sowing the seeds of internal disorder through competition and a lack of dialogue between the periphery

and the centre. There has to be space for good citizens to thrive, reason and debate. That space may be supported by techno-scientific processes, but it cannot be validated by them. This is the nub of the problem for the universities embracing transformation. Product relevance does not exhaust human needs.

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[1] Noted by many commentators: D. Bok, *Universities in the Marketplace: The Commercialization of Higher Education*. (Princeton: Princeton University Press, 2003); B. R. Clark, *Places of Inquiry: Research and Advanced Education in Modern Universities*. (Berkeley: University of California Press, 1995); J. Dewey, *Democracy and Education*. (New York: Macmillan, 1916); C. Kerr, *The Uses of a University*. (Harvard: Harvard University Press, 2001); T. Nybom, 'The Humboldt Legacy. Reflections on the Past, Present and Future of European Higher Education', *Higher Education Policy* 16, no. 2 (2003); L. Pyenson and S. Sheets-Pyenson, *Servants of Nature: A History of Scientific Institutions, Enterprises, and Sensibilities*. (New York: W. W. Norton & Company, 1999); F. H. T. Rhodes, *The Creation of the Future: The Role of the American University*. (Cornell: Cornell University Press, 2001).

[2] For comment, a collection of some fifty interviews with Oxbridge 'stakeholders' is quite telling; D. Palfreyman and T. Tapper, *Oxford and the Decline of the Collegiate Tradition. Woburn Education Series*. (London: Routledge Farmer, 2000).

[3] It is difficult to divorce Newman's ideal from its considerable sectarianism, since the spiritual formation of students was intrinsic to its Catholic mission; John Henry Cardinal Newman, *The Idea of a University*. (London: Longman, Green and Co, 1907); available from http://www.newmanreader.org/works/idea/index.htm.

[4] Nevertheless, Newman praised Bacon as 'intellectually great' and the 'most orthodox of Protestant philosophers', p. 321. Locke's contempt for abstractions and classical education is addressed in Newman's Discourse 7, 'Knowledge Viewed in Relation to Professional Skill'. Newman quotes other critics of his *Idea* extensively, such as the Edinburgh Reviewers, e.g. their comment that education in the arts and literature was producing men of 'elegant imbecility'.

[5] Overlooked by Newman is the struggle at that point in time between hermeticism, alchemy and the new 'chymistry' exemplified by Boyle. A brief insight into Bacon's often tortuous reasoning is found in A. Gottlieb, *The Dream of Reason: A History of Philosophy from the Greeks to the Renaissance*. (London: Penguin Press, 2000).

[6] Cf. Discourse 8, 'Christianity and Scientific Investigation'. Newman op. cit.

[7] Cf. B. Russell, *History of Western Philosophy*. Reprint ed., (London: Routledge, 2000).

[8] The Mormon-oriented Brigham Young University is cited as an example in M. C. Nussbaum, *Cultivating Humanity: A Classical Defence of Reform in Liberal Education*. (Harvard: Harvard University Press, 1998).

[9] Dewey was an influential populist but not at the expense of reason; J. Dewey, *The School and Society*. (Chicago: University of Chicago Press, 1907).

[10] For accounts cf. Bok, op. cit., and P. Watson, *A Terrible Beauty: The People and Ideas That Shaped the Modern World*. (London: Phoenix Press, 2001).

[11] For detail cf. Nybom, op. cit., and Pyenson and Sheets-Pyenson, op. cit.

[12] The emergence of the Frankfurt School of critical social theory and philosophy after World War II showed that the tension had not disappeared, however. A particularly influential critique of technological society is H. Marcuse and D. Kellner, *One Dimensional Man: Studies in the Ideology of Advanced Industrial Society*. (London: Routledge, 2002).

[13] The argument is speculative but runs along the lines that the university mandarins were sufficiently enthralled by their autonomy not to be tempted to examine the social relevance of the university. Nybom, op. cit.

[14] The terms 'Humanities' and 'Liberal Education' are used throughout the paper as if they share the same extension—a slight definitional liberty, admittedly.

[15] Nybom describes this as a triumph for Kantian epistemology, wherein only philosophy was concerned with 'truth', the other disciplines being merely interested in 'usefulness'. Nybom, op. cit.

[16] For a through account of changes in expectations with regard to the UK system, cf. M. Henkel and B. Little, *Changing Relations between Higher Education and the State*. (London: Jessica Kingsley Publishers, 1998). A statement of changes likely to come is found in, Secretary of State for Education and Skills, 'The Future of Higher Education', (HMSO London: House of Parliament, 2003).

[17] A polemical insight into the abstruse reasoning of some areas of hermeneutical literary criticism is given in Alan D. Sokal, *The Sokal Hoax : The Sham That Shook the Academy*. (Lincoln: University of Nebraska Press, 2000).

[18] For a thorough account of conflicting early university management models, see Pyenson and Sheets-Pyenson, op. cit.

[19] These themes recur frequently in work centred on arguing the merits and demerits of knowledge as a commodity for managing, sharing and transferring, e.g., E. Bou and A. Sauquet, 'Reflecting on Quality Practices through Knowledge Management Theory: Uncovering Grey Zones and New Possibilities of Process Manuals, Flowcharts and Procedures', *Knowledge Management & Practice* 2 (2004); T. H. Davenport and J. C. Beck, *The Attention Economy: Understanding the New Currency of Business*. (Boston: Harvard Business School Press, 2001); J. Seely Brown and P. Duguid, *The Social Life of Information*. (Harvard: Harvard Business School Press, 2000).

[20] For a detailed account of the university as a multiversity, cf. Kerr, *The Uses of a University*.

[21] Cf. A. Amaral and A. Magalhaes, 'The Triple Crisis of the University and Its Reinvention', *Higher Education Policy* 16, no. 2 (2003).

[22] For an argument favouring the future university as a business, cf. Rhodes, *The Creation of the Future: The Role of the American University*.

[23] Many examples could be assembled, e.g. B. R. Clark, *Sustaining Change in Universities*. (Open University Press, 2004); M. Skilbeck, *The University Challenged: A Review of International Trends and Issues with Particular Relevance to Ireland*. (Dublin: Higher Education Authority, 2001); Secretary of State for Education and Skills, 'The Future of Higher Education'.

[24] Cf. Recommendations 9 and 49, Directorate for Education OECD, 'Review of National Policies for Education: Review of Higher Education in Ireland', (Brussels: Organisation for Economic Co-operation and Development, 2004).

[25] An argument advanced within the European context by, for example, P. Katzenstein, *Small States in World Markets: Industrial Policy in Europe*. (Cornell: Cornell University Press, 1985).

[26] For examples in Ireland, Department of the Taoiseach, 'Sustaining Progress: Social Partnership Agreement 2003-2005', (Dublin: Government Publications Sales Office, 2003).

[27] For examples, B. R. Clark, *Creating Entrepreneurial Universities: Organisational Pathways of Transformation*. (Pergammon Press, 1998); Clark, *Places of Inquiry: Research and Advanced Education in Modern Universities*; Clark, *Sustaining Change in Universities*; OECD, 'Review of National Policies for Education: Review of Higher Education in Ireland'; Skilbeck, *The University Challenged*.

[28] In a recent publication Clark reflects on his earlier influential five pathways and has concluded, after studying another set of universities, that 'one size fits all' models are not useful: '...complex universities operating in complex environments require complex, differentiated solutions. In other words, each university requires its own unique solution'. B. R. Clark, 'Delineating the Character of the Entrepreneurial University', *Higher Education Policy* 17 (2004), p. 367.

[29] A somewhat similar set of principles emphasises 'capitalising knowledge' by 'mapping' the linkages between government, industry and university; H. Ezkowitz, A.Webster and P Healey, eds, *Capitalising Knowledge: New Intersections of Industry and Academia*. (New York: SUNY Press, 1998).

[30] At least one major study raised the possibility that the organisational thinking that favours programmatic change paradoxically condemns it to failure; cf. M. Beer, R. A. Eisenstat and B. Spector, 'Why Change Programs Don't Produce Change', *Harvard Business Review*, November-December (1990).

[31] For a review of academic and knowledge capitalism, cf. S. Slaughter and L. L. Leslie, *Academic Capitalism: Politics, Policies and the Entrepreneurial University*. (Baltimore: The Johns Hopkins University Press, 1999).

[32] The critique in question was extensively influenced by Plato's *Republic*. The University of Scholars was there to provide an *exemplary community*. For the cited quotation see p. 378, A. Bloom, *The Closing of the American Mind*. (New York: Simon and Schuster, 1988).

[33] For a counterblast, cf. L. Levine, *The Opening of the American Mind: Canons, Culture and History*. (Beacon Press, 1997).

[34] Less polemical than Bloom but not less passionate or sincere, the argument in favour of the university as the place to develop Socratic thinkers is articulated in Nussbaum, *Cultivating Humanity: A Classical Defence of Reform in Liberal Education*.

[35] Cf. p. 61, OECD, 'Review of National Policies for Education: Review of Higher Education in Ireland.'

[36] Cf. Skilbeck, pp. 26-27.

[37] D. L. Kirp, *Shakespeare, Einstein and the Bottom Line: The Marketing of Higher Education.* (Harvard: Harvard University Press, 2003). Kirp is in practice a marketing professor.
[38] Bok, *Universities in the Marketplace: The Commercialization of Higher Education.*
[39] A range of medical research sleights of hand are mentioned on pp. 319-322, S. Haack, *Defending Science Within Reason—Between Scientism and Cynicism.* (Amherst, NY: Prometheus Books, 2003).
[40] Cf. Nussbaum, *Cultivating Humanity: A Classical Defence of Reform in Liberal Education.*
[41] Cf. Skilbeck, p. 75.
[42] Cf. G. Breton and M. Lambert, 'Higher Education: Social Relevance and Collective Action', *Higher Education Policy* 17 (2004).
[43] For a provocative exploration of the metaphors and politics, see S. Aronowitz, *The Knowledge Factory: Dismantling the Corporate University and Creating True Higher Learning.* (Beacon Press, 2000).
[44] Cf. Slaughter and Leslie, *Academic Capitalism: Politics, Policies and the Entrepreneurial University.*
[45] Cf. Seely Brown and Duguid, *The Social Life of Information*; E. Wenger, R. McDermott, and W. M. Snyder, *Cultivating Communities of Practice: A Guide to Managing Knowledge.* (Harvard: Harvard Business School Press, 2002).
[46] For example, both Skilbeck (2001) and the OECD review of 2004 did not include official academic trade union representatives as a committee requirement. This omission is in contrast to the composition of the Scottish Executive's (2003) Steering Committee, which included a wide range of 'stakeholders' that would be directly affected by change.
[47] T. Levere, *Transforming Matter: A History of Chemistry from Alchemy to the Buckyball.* (Baltimore: The Johns Hopkins University Press, 2001).
[48] Cf. Haack, *Defending Science Within Reason—Between Scientism and Cynicism.*
[49] Cf. S Guri-Rosenblit, 'Eight Paradoxes in the Implementation Process of E-Learning in Higher Education', *Higher Education Policy* 18 (2005).
[50] Cf., for an account of staff-related problems, B. Collis and M. van der Wende, eds, *Models of Technology and Change in Higher Education: An International Comparative Survey on the Current and Future Use of ICT in Higher Education.* (Twente: Centre for Higher Education Policies, University of Twente, 2002). While not an e-learning platform, this report highlights the small percentage of users that return again to online materials: S. Carson, 'Mitopencourseware 2004 Program Evaluation Findings Report', (Cambridge, MA: MIT, 2005). In a campus-wide study of the use of instructional aids, this study found that almost 35% of students shunned interpersonal contacts around class work: R. Flacks et al., 'Learning and Academic Engagement in the Multiversity. Student Experience in the Research University—21st Century (Seru21) Project', (Berkeley: Center for Studies in Higher Education, UC Berkeley, 2004).
[51] S. J. Tambiah, *Magic, Science, Religion, and the Scope of Rationality. Lewis Henry Morgan Lectures.* (Harvard: Cambridge University Press, 1990).
[52] For some examples cf. Stephen Lock, F. O. Wells, and M. J. G. Farthing, eds, *Fraud and Misconduct in Biomedical Research.* 3rd edition, (London: BMJ Books, 2001); E. Samuel, 'Rising Star of Electronics Found to Have Fabricated His Ground-Breaking Results', *New Scientist* 176, no. 2363 (2002).
[53] Cf. J. Heiser, 'The Perils of Security Patch Management', *Network Security*, no. 7 (2003).
[54] Referenced in Ian Grant, 'The Rocky Road to Reliable Software', *Infosecurity Today* 1, no. 3 (2004).
[55] Cf. J. Hecht, 'Did the Polar Lander Forget to Put Its Brakes On?', *New Scientist* 2000; J. Hecht, 'Schoolkid Blunder Brought Down Mars Probe', *New Scientist* 1999; J Mullins, 'Fate of Beagle Will Remain a Mystery', *New Scientist* 2004.
[56] Cf. John Phillimore and Aidan Davison, 'A Precautionary Tale', *Futures* 34, no. 2 (2002); Shockwave Writer, 'Hello? Is Anybody Out There?', *Computer Fraud & Security* no. 1 (2000).
[57] Cf. D. N. Chorafas, 'How Long into the 21st Century Will the Aftermath of the Millennium Bug Last?', *Information and Software Technology* 41, no. 14 (1999).
[58] For the relevant UK legal judgments, see Dominic Callaghan and Carol O'Sullivan, 'Who Should Bear the Cost of Software Bugs?', *Computer Law & Security Report* 21, no. 1 (2005); Katie Landeryou, 'Interpretation of Software Contracts—Sam Business Systems Limited *v* Hedley and Company', *Computer Law & Security Report* 19, no. 4 (2003).
[59] Cf. House of Commons Education and Skills Committee, 'UK E-University: Third Report of Session 2004-05', (London: House of Commons, 2005).

[60] Einstein is reported as saying, 'You cannot solve current problems with current thinking. Current problems are the result of current thinking'. Quoted on p. 119 of H. N. Pollack, *Uncertain Science...Uncertain World.* (Cambridge: Cambridge University Press, 2003).