

Monoculture on the intellectual landscape: research performance evaluation

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The metaphor of 'monoculture on the intellectual landscape' is used to analyse the effects of large-scale research management regimes. The metaphor of 'monoculture on the intellectual landscape', derived from Shiva's 'monocultures of the mind', is developed and illustrated with respect to gender and ethnicity. The paper then discusses the production of knowledge in the context of monocultures of the mind, and concludes that large-scale research management regimes are inimical to healthy and diverse intellectual habitats.

Keywords: research assessment; academic culture; research performance; audit culture

Introduction

This article proposes the metaphor of 'monoculture on the intellectual landscape' to analyse the effects of large-scale research assessment schemes on our epistemologies. It may be true that 'there is no ideal model for the allocation of research funding' (Codd 2006, 226), nor is there any escaping of unintended consequences, but that is all the more reason for critiquing not only the models, but the principles from which such models emerge.

There are many such regimes: The Performance Based Research Fund (PBRF) in New Zealand; the Research Assessment Exercise (RAE) in the UK; and the Excellence in Research for Australia (ERA), formerly the Research Quality Framework (RQF). All are currently under some kind of review. Research assessment exercises may be seen from various points of view (Bakker, Boston, and Campbell 2006). They have been linked to knowledge production and performativity, and their impact on the very nature of knowledge, academic identity, the destruction of the research-teaching nexus, on practices of research itself, on how they encourages competition and destroy morale, has been described (Codd 2006). The issue of the appropriate unit of assessment (department in RAE, the individual in PBRF) has been examined (Dalziel 2005). The problems of scope and measure have been addressed by Clegg and Ross-Smith (2003) and Monastersky (2005). There is no doubt that these regimes have resulted in an increase in the quantity of publications, but there is serious doubt that this reflects an increase in quality. This paper is not concerned with the efficiency of one or other model per se, and neither does it attempt to offer a balanced assessment of such regimes. Analyses of their positive impacts are in any event increasingly hard to find. This paper is concerned with the impact that large-scale performance-based research administrations have on conceptions of knowledge, and argues that they are inimical to a healthy, diverse, knowledge-based society.

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The metaphor of 'monoculture on the intellectual landscape'

The use of metaphor as a means of enquiry is especially suited to a social object such as a large-scale research assessment regime. Metaphor is not a sign of imprecision. Rather, 'metaphoric precision is the central vehicle for revealing the qualitative aspects of life' (Eisner 1997, 227). 'Landscape' conveys the idea of entities in relationship, harmonious or otherwise, to one another, and also incorporates the idea of the viewer, who must necessarily have a viewpoint. This suggests the notion of both 'seeing' and 'not seeing'. 'Monocultures' (of, for example, trees or grains of a common species) are elements of landscape, and convey ideas about diversity contrasted with uniformity. Monocultures are products of technology rather than natural processes. Prichard (2006) points out that academic knowledge is but one form of knowledge, and 'perhaps unique in that it amounts to a kind of geo-academic grid or network' (293) which contain relations of dominance and subordination, and ought to direct our attention to 'the very epistemological ground' (294) from which our work is produced. We ought to avoid 'simply growing empirical produce for European and North American theoretical kitchens or larders' (294).

Large scale research management regimes emerge from a particular framework or paradigm woven from various strands, such as: all depends on the economy and the economy must grow; life and the world and all economies in it are in a state of competition; the competitive edge now depends on intellectual capital and investment in knowledge creation must be competitively managed. Like all effective ideologies, this story obscures or 'naturalises' its assumptions. In fact, what counts as valid knowledge is *the* contest in any society and the extent to which this question is settled is a reflection of political power more than 'facts'. Knowledge is not found; it is recognised as such. The content and contours of a society's knowledge economy depend on who makes the decisions about what is worth examining and what the criteria are for validating knowledge (Bernstein 1971). This has critical implications for women in most societies and for marginalised groups in multi-cultural societies.

A close look at gender and ethnicity illuminates how large-scale research assessments may not only reflect and reveal inequities, as might be expected, but how in and of themselves they may contribute to the maintenance of these inequities and even constitute them. The discussion of gender and ethnicity will inform the later argument, which is that, by virtue of being part of a gendered and ethnicised technology, the tendency of large scale research management regimes to aggregate, standardise and rank exacerbates inequities and distorts processes of knowledge creation.

Gender on the intellectual landscape

In some respects large-scale performance evaluations can be useful insofar as they provide evidence of inequity, and formal criteria can sometimes work in the interests of women (Luke 1997) and others who suffer inequity. However, the considerable evidence of gender inequity gathered over the years has made little difference to practice. Bailyn (2003, 138) cites eight of the many pieces of work on the issue of women *qua* women facing inequities in the academy, but points out they have had little impact on universities and their procedures. In some cases the situation worsens, as with the pay gap in the UK (AUT 2001). Figures worldwide indicate senior levels in universities are dominated by males (Asmar 1999; Castleman et al. 1995; Moore and Sagaria 1991; Kyvik 1995; Brooks 1997). There is sufficient research indicating that appointment committees, funding committees, research agendas and other organisational apparatus are dominated by males (Morley 1994; Glazer, Bensimon, and Townsend 1993; Dines 1993; Lie and Malik 1994), even in more egalitarian Scandinavian countries (Elg and Jonnergard 2003).

There are demonstrated patterns of difference in academic work associated with gender. Davis and Astin (1990) and Poole, Bornholt and Summers (1997) report that women spend more time on teaching and administration than men, and Baldwin (1985) reports that women are shut out of networks that promote professional development. The prohibition of explicit discrimination does not affect indirect discrimination (see the MIT Report; Bailyn 2003). Sometimes such indirect discrimination is via a conceptual construction, for example of scientific quality, that is itself gendered (Benschop and Brouns 2003). Sometimes women suffer discrimination by disproportionately occupying a position that is marginal, for example, holding temporary contracts (Knights and Richards 2003). The disadvantages of gender may be refracted through other conditions, such as location and mobility (Kulis and Sicotte 2002).

The aspect of academic work relevant to this paper, research, is the construction of knowledge. There are cogent arguments that the vaunted objectivity of science is illusory (Harding 1993) and that science is a very male affair (Haraway 1989; Merchant 1990; Schiebinger 1993). It has been argued there is a male epistemology and a male way of thinking, and that structures of knowledge are formed by male interests (Knights and Richards 2003; Leonard 1998). Barr (1999) has argued for a feminist epistemology (Barr 1999). We can expect that what is deemed worthy of investigation, how research agendas are constructed, and how results are validated or scientific worth acknowledged will be gendered (Benschop and Brouns 2003; Etzkowitz et al. 1994). With Spender (1981) and Smith (1978), Stanley (1984, 191) has argued that women are discriminated against throughout the entire social science process, from gate-keeping to acknowledgement. When research expenditure is used as an indicator of research productivity or quality in expensive disciplines like physics and engineering which are largely male domains, such indicators favour males. This can mean that what appears to be an overall slender research productivity of females actually obscures the high productivity of females at liberal arts institutions (Gander 1999). There is also the phenomenon of splitting research practice into two realms, so that within research the 'soft', 'emotional' work of, for example, interviewing, is feminised, and the 'hard' science is a male preserve, producing a double marginalisation of women (Scott and Porter 1984).

Harris, Thiele, and Currie (1998, 146) have argued that knowledge creation is masculinised and production (research) valued over reproduction (teaching and administration), which is feminised, thus gendering both activities relative to each other. Rowland (1994) and Ruth (2001) have identified gendered stereotypes of researchers versus those of teachers. Bronstein and Farnsworth (1998, 574), commenting on the role of perceptions in research productivity and gender, have noted 'a substantial body of research pointing to a tendency to devalue women's competence in comparison with men's, especially in traditionally masculine domains'.

Fifty per cent of women academics in Australia are the main carers for their children, compared with 4.5% of men (cited in Currie, Harris, and Thiele 2000, 288). That there are different expectations of men and women when it comes to service, that women are under greater pressure to serve, both at home and at work, and that this can translate into very different academic experiences, is illustrated in Etzkowitz (1989). A single male professor in his study reported that:

A lab, in a sense, it's a little bit like a country club. You have your friends here... I don't stay here because it's competitive. I stay here because who wants to go home? It's what I see most of the people here doing, too. They get the newspapers, they talk to their friends, this is the place. It's a club.

Indeed.

There is research that does not support a purely gendered understanding of differences in academia and conflicting evidence on the precise impacts of gender, but this does not put into

question that there are impacts. Even if women did, for example, achieve parity of pay, it would not alter the nature of the knowledge prevalent in the academy. According to Evans (1995, 73), students coming into universities should be reminded that:

... what they are about to study is not 'natural' knowledge, but constructed knowledge. Moreover, because what is studied in universities has been constructed by long years of male domination of academic life, the very assumptions of the academy – its claim to universal and generally applicable knowledge – have to be challenged.

This challenge can be discipline-specific. Nelson (1996, 22) makes the case that there is a significant association between gender and the perceptions and practices of research in economics. Her analysis intersects with that of Lee and Harley (1998), according to whom mainstream journals form a virtually closed self-referencing system and non-mainstream journals are more open. The UK RAE has reflected a bias towards mainstream economics and by 1989 there was the so-called Diamond List of mainstream journals. Lee and Harley conclude that, due to RAE, 'non-mainstream economics will be eliminated from British economic departments within ten years'. In this way a gendered understanding of economics and an analysis of the gendered nature of mainstream economics will be eliminated from the academy.

Ethnicity on the intellectual landscape

The claim to 'universal and generally applicable knowledge' that Evans (1995) challenges on gender grounds can also be challenged on ethnic grounds. In much the same way as knowledge is gendered, it is marked by ethnicity. Academic disciplines, far from being a matter of objective science (cf. Harding above) have been put into the service of empire. Colonial administration has been aided by anthropology, political science, and the administrative sciences, and in some ways, has shaped these disciplines. As with gender, the problem is to 'see ethnicity' in research theory and practice which are embedded in deep ontological and epistemological assumptions that are culturally specific. Universities are prime sites for the reproduction of these assumptions. This leads to situations such as in New Zealand where out of three Maori 'universities' or wananga only one elects to partake in the PBRF and that participation is problematic. It must be accepted that institutional patterns, pedagogical techniques and the basic structure of knowledge in universities are of western origin (Chideya et al. 1982, 47). Eze (1997) extends the point as follows: 'When Western philosophy speaks of "reason", it is not just speaking of "science" and "knowledge" and "method", and "critique", or even "thought"'. In line with Bernstein (1971) quoted above, Eze points out that 'In and through these codes it is more fundamentally the question of the "anthropos" of the human, that is at stake, for questions of knowledge and identity, logos and anthropos, always hang together'.

The problem can be illustrated with reference to Pakeha (European settlers) and Maori (indigenous people) in New Zealand. The PBRF clashes in several ways with the ethics of Maori culture (Winiati 2003; Waiti 2004) as it would with the culture of other indigenous people where the intrusiveness of the research act is abhorrent and protocols of inquiry are elaborate. This is sometimes so to the extent that:

... either kaupapa Maori [Maori knowledge] researchers will need to develop new data collection processes if they wish to submit PBRF portfolios, or the PBRF will need to be more flexible in what it counts as satisfactory evidence. (Tawhai, Pihera, and Bruce-Ferguson 2004, 336)

The concept of evidence is central to the scientific method and where there is a conflict of interest between two groups with one being dominant, it is the dominant group that sets the agenda and criteria of evidence, and this way controls the knowledge production process.

There is a parallel between ethnicity and gender which seems to arise in conditions of social disparity, where the dominant identity remains unexamined and unproblematised, as if ethnicity or gender is a 'property inherent in, conferred upon, or claimed by peoples who have been subjugated to colonialism and/or diasporas' (Williams and Chrisman 1994, 17). An important phenomenon of privilege is that the conditions of privilege are often opaque, if not invisible, to those occupying the privileged position. This may extend to the privileged people being unable to 'see' themselves. Whitehead (2001, 77) reports that when he asked men in educational management about the effect of being a man, 'it was as [if] I had spoken in an incomprehensible language'. Men are the norm, and 'men, apparently, have no gender' (Benschop and Brouns 2003, 206). Another effect of bias is that structural inequalities and institutionalised oppression get reduced to personalised distress, and a pathologised image of the oppressed is constructed, 'with the emphasis of getting them into better shape in order to engage more effectively with existing structures' (Morley 1994, 195). This situation is barely affected by moves such as the 2008 Research Assessment Exercise (RAE) requirement that all HEIs submitting for assessment produce and implement an Equality Code of Practice which addresses all relevant equal opportunity legislation in force as well as addressing issues in relation to selection and inclusion of staff in the RAE 2008 submission.

Monocultures of the mind; technology and the intellectual landscape

In this paper management is viewed as a technology. This is not particularly controversial or a novel idea, but it is important for the following argument. Marcuse (1941, 138) defined technology as:

... a mode of production, as the totality of instruments, devices and contrivances which characterise the machine age [which] is thus at the same time a mode of organizing and perpetuating (or changing) social relationships, a manifestation of prevalent thought and behaviour patterns, an instrument for control and domination.

In this state:

... the efficient individual is the one whose performance is an action only insofar as it is the proper reaction to the objective requirements of the apparatus, and his liberty is confined to the selection of the most adequate means for reaching goals which he did not set. (142)

Rationality is transformed from being a critical force into one of adjustment and compliance. The point was made again by Lyotard (1984, 11). His concept of 'performativity' describes that functionalist rule of social and institutional systems that requires 'the optimization of the global relationship between input and output' (cf. Duncan 2004, above). Evaluations of technology cannot be confined to machines themselves (Ellull 1973). Ellull's term *technique* grasps the fact that in a technological society the structure of all human life and its systems of organisation reflect the logic of the machine, or, as Marcuse would say, the technology. Feenberg too, in *Questioning technology* (1999), indicates the shortcomings of traditional theories of technology which characterise it as neutral or essentialise it as some kind of autonomous, deterministic, and homogenising force acting on society. Veak (2000, 226) is more precise; 'Technological design is inherently political. Consequently, the observed constraint on design choice is not some "essence" of technology but can be explained by the hegemonic control of the design process by privileged actors'. As indicated above, such privileged actors, even within the privilege of the academy, are constructed in terms of gender and ethnicity.

To illuminate how technologies are applied in the university and impose or create monocultures on the intellectual landscape, we will draw an explicit analogy. Scott (1998) has explained why forestry plantations were developed and were a mistake. When Prussia and Saxony viewed

forests through the restricting lens of fiscal need, they saw board feet of timber. Actual trees with a vast number of uses – fodder, thatch, fruit for animals and people, roots for medicines and tanning, and so on – were replaced by an abstract tree representing saleable lumber. From the naturalist's perspective, the majority of flora, insects, and fauna were missing from the state's frame of reference. From the anthropologist's perspective, nearly everything touching on human interaction with the forest was missing: hunting, gathering, pasturage, refuge and so on. From the point of view of landowners, the simplification to a single commodity was a huge success. But the second crop of Norwegian spruce grew 20 to 30% more slowly than the first. It became clear that single-species forests depleted capacity for soil regeneration, and were more susceptible to pests and storm damage. The 'hegemonic control of the design process by privileged actors' (Veak, above) that we are seeking to illuminate is explained in the context of mental and actual landscape by Vandana Shiva (1993) when she writes of 'monocultures of the mind' (1993, 7):

Uniformity and diversity are not just patterns of land use, they are ways of thinking and ways of living... Monocultures of the mind generate models of production which destroy diversity and legitimise that destruction as progress, growth and improvement. ... They are impoverished systems, both qualitatively and quantitatively. They are also highly unstable and non-sustainable systems. Monocultures spread, not because they produce more, but because they control more.

The result is 'disappeared' knowledge systems, consequent on the failure to recognise the dominant system as a local and then globalised western tradition.

The core of this masculine and Eurocentric tradition of knowledge follows a trajectory from Francis Bacon through the Enlightenment to contemporary catastrophes traced by other writers besides Marcuse (Bauman 1989; Horkheimer and Adorno 1973; Merchant 1990). Alvesson and Willmott (1996, 75) argue that 'modern civilisation has become progressively mesmerised by the power of a one-sided, instrumental conception of reason... trapped in a scientific nexus'. Burrell (1996, 391) points out that science, which is central to our ways of looking at administration and organisational behaviour, 'begins by placing the perpetual dynamic into a field of stasis... [by] stabilizing the real world's perpetual flow'.

The essential processes in this kind of knowledge construction are standardisation, aggregation and ranking. These may now seem common sense and unremarkable procedures – a feature they share with other features of management. But as the more critical histories of management are revealing, modern business did not invent management, management invented modern business (Hoskin and Macve 1988) and it did so via the creation of what Foucault (1972) calls 'a calculable person' and through an emphasis on written reports, what Hoskin and Macve call 'the grammatocentric principle'. In other words, one manages by numbers and by being removed from the everyday realities of production (Postman 1993, 141). To the extent that the problems of large-scale assessments are reduced to the technical (e.g., score calculations) these deeper issues are obscured. In the process of standardising knowledge-creating processes and through an increasingly narrow view of knowledge itself, a certain view of 'good science' and 'good scholarship' is imposed on the academy. In the announcement of The First International Congress of Qualitative Inquiry (<http://qsw.sagepub.com/cgi/content/abstract/4/1/105>) the organisers claim that federal legislation is threatening advances in critical qualitative inquiry, with legislation that 'marginalizes indigenous, border, feminist, race, queer, and ethnic studies'.

One has to detect 'the wider epistemological politics of knowledge', where 'the danger is that knowledge might soon be rewritten to suit the paradigm' (Visvanathan 2001, 40) and so avoid what Shiva quoted above calls 'a monoculture of the mind'. Gamble and Blackwell (2001, 3) illustrate this rewriting of knowledge to suit the paradigm. In the knowledge economy, they assert, 'Basically what we are after is the management of organizational knowledge for creating business value and generating a competitive advantage... competition depends... on the ability

to deploy and exploit knowledge' (6). This notion of knowledge does not include the kind of knowledge-as-wisdom that human beings need in order to live in humane societies. The latter kind of knowledge is what Jackson (1987, 11–2) refers to when he questions the accuracy of America being treated as a high information society when it has reduced its varieties of apples from 160 to 5. It is in this context that Visvanathan writes: 'To define knowledge as formal, abstractable knowledge is to impoverish knowledge and to deny the existence of tacit knowledges, embodied knowledges, alternative knowledges... The danger is that knowledge might soon be rewritten to suit the paradigm' (40). The argument of this paper is that this is exactly what large scale research paradigms do. Our attention would be better directed towards the analysing the paradigm rather than pursuing trivial successes within it. A persuasive description of this larger context has been recently presented by Boulton and Lucas (2008).

A knowledge economy?

The increasing role of managerialism in higher education has been scrutinised for some time in the US (Martin 1998; Aronowitz 2000), in the UK (Trow 1994), and in Australia (Coady 2000). The impact on academic life in general (Winter et al. 2000) and more specifically on research practice (Marginson 2000; Willmott 2003), has also been examined. Large scale research regimes are a technology of management applied in the interests of a particular notion of efficiency. The larger paradigm may be referred to as technical rationality. It includes assumptions such as all depends on the economy or even that the society is the economy; that a particular model of efficiency is of utmost importance; that competition is productive; and that particular models of accountability are more encompassing than they actually are and that such models can secure quality. The values of technical rationality are linked to a neoliberal discourse which leads to further assumptions such as private enterprise being more efficient and effective than public service.

Mainstream economics remains wedded to the notion of individual rationality and competition and is inevitably reductionist. It often expresses the one-dimensional single-mindedness associated with techno-rationality. Academic work, by contrast, depends on a particular human subjectivity and, as Brett (2000, 144) points out, 'the enhancement of the mechanisms of competition in fact threatens the psychological and social conditions necessary for certain aspects of academic work. In particular it threatens our ability to work cooperatively, to think creatively and to teach generously'. Marginson too (2000, 192) points out that:

The systems used in research management do not understand the classical economy of knowledges in its own terms, and cannot systematically manipulate its workings so as to enhance the conditions in which knowledges are created, except in that one, crucial respect: the use of economic necessity as the driver of knowledge production.

This may eventually even undermine the aims of managing research.

The production of knowledge is a creative and social act. It is widely accepted that anxiety, stress, insecurity, loss of self-esteem, and fear are inimical to creativity. One effect of appraisal systems is that they seem to create such states in people. As Deming (1986) pointed out long ago, evaluation of performance 'nourishes short-term performance, annihilates long-term planning, builds fear, demolishes teamwork, nourishes rivalry and politics. It leaves people bitter, crushed, bruised, battered, desolate, despondent, dejected, feeling inferior, even depressed'. Another feature of appraisal is that it 'illustrates a technology active in the constitution of managing... it articulates the managerial role as a directional activity' (Townley 1993, 235–6). It becomes one of the means by which management reassures itself that it is productive and assuages its anxiety that 'in the absence of direction and control, little or nothing would be produced' (Willmott 1984, 354).

Universities can play a valuable role in keeping in public view that fact that the techno-rational assumptions informing mainstream economics are challengeable. This role is vitiated when the university itself becomes imbued with the values of technical rationality, a process that the regimes such as the PBRF, the RAE and ERA are likely to advance. Willmott (2003, 130) points out that the definition of research used in the 1996 RAE has the phrase 'work of direct relevance to the needs of commerce and industry' added to it, and that even the more incisive critiques of the changes in higher education in the UK where RAE has had its way for years 'do not give sustained attention to the linkages between capitalist values and priorities, mediated by political ideologies and programme, and the role of peer review in legitimising the increasingly centralised and selective funding and control of higher education'.

Conclusion

The likening of technocratic large-scale research management systems to the development and fostering of monoculture in this paper has shown there is a substantial problem that does not lie with the particular design features of any specific research management technology. It is necessary to have a larger context against which we may distinguish the techno-rational problems of distributing research funding from the substantive humanistic problems of knowledge creation and distribution. It is a matter of concern that at the moment the latter is subsumed into the former, which is presented as the 'ground' position.

There is a need to reassess persistently and fundamentally the nature of the knowledge we desire and the purposes for which we seek it. That would change our means of developing and claiming it. Large scale research management regimes may well end up having a deleterious effect on appropriate knowledge creation because they are to the intellectual landscape what plantation forestry is to natural forests. Rather than restrict our attention to visible, calculable outcomes, we need to ask: What is there to know? What are we seeing and not seeing? What is being destroyed? How can we expand our horizons? What is worth cultivating? These are the ground questions for societies, cultures, and institutions as well as individuals. Such questions imply a view of education as sustainable cultivation to nurture the exploration of meaning and suggest that the role of educational institutions is to ensure diversity in healthy intellectual habitats.

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References

- Alvesson, M., and H. Willmott. 1996. *Making sense of management: A critical introduction*. London: Sage.
- Aronowitz, S. 2000. *The knowledge factory: Dismantling the corporate university and creating true higher learning*. Boston: Beacon Press.
- Asmar, C. 1999. Is there a gendered agenda in academia? The research experience of female and male PhD graduates in Australian universities. *Higher Education* 38: 255–73.
- Association of University Teachers. 2001. *The gender pay gap widens 1995–2000*. London: Association of University Teachers.
- Bailyn, L. 2003. Academic careers and gender equity: Lessons learned from MIT. *Gender, Work and Organization* 10, no. 2: 137–53.
- Bakker, L., J. Boston, and L. Campbell. 2006. *Evaluating the performance-based research fund: Framing the debate*. Wellington: Institute of Policy Studies, Victoria University Wellington.

- Baldwin, G. 1985. *Women at Monash University*. Monash, Australia: Monash University.
- Barr, J. 1999. *Liberating knowledge: Research, feminism and adult education*. Leicester: National Institute of Adult Continuing Education.
- Bauman, Z. 1989. *Modernity and the holocaust*. Cambridge: Polity Press.
- Benschop, Y., and M. Brouns. 2003. Crumbling ivory tower: Academic organizing and its gender effects. *Gender, Work and Organization* 10, no. 2: 194–212.
- Bernstein, B. 1971. On the classification and framing of educational knowledge. In *Knowledge and control: new directions for the sociology of education*, ed. M.F.D. Young, 47–69. London: Collier-MacMillan.
- Boulton, G., and C. Lucas. 2008. *What are universities for?* Leuven: European League of Research Universities. www.leru.org.
- Brett, J. 2000. Competition and collegiality. In *Why universities matter*, ed. T. Coady, 144–55. Australia: Allen and Unwin.
- Bronstein, P., and L. Farnsworth. 1998. Gender differences in faculty experiences of interpersonal climate and processes for advancement. *Research in Higher Education* 39, no. 5: 557–85.
- Brooks, A. 1997. *Academic women*. Buckingham: The Society for Research into Higher Education.
- Burrell, G. 1996. Normal science, paradigms, metaphors, discourses and genealogies of analysis. In *Handbook of organizational studies*, ed. S.R. Clegg, C. Hardy, and W. Nord, 642–58. London: Sage.
- Castleman, T., M. Allen, W. Bastalich, and P. Wright. 1995. *Limited access: Women's disadvantage in higher education employment*. Melbourne: National Tertiary Education Union (NTEU).
- Chideya, N.T., C.E.M. Choikomba, A.J.C. Ogweni, and L.C. Tsikirayi. 1982. *The role of the university and its future in Zimbabwe international conference papers*. Harare: Harare Publishing House.
- Clegg, S.R., and A. Ross-Smith. 2003. Revising the boundaries: Management education and learning in a postpositivist world. *Academy of Management Learning and Education* 2, no. 1: 85–98.
- Coady, T. 2000. *Why universities matter: A conversation about values, means and directions*. St Leonards, NSW: Allen and Unwin.
- Codd, J.A. 2006. The performance-based research fund and the production and commodification of knowledge. In *Evaluating the performance-based research fund*, ed. L. Bakker, J. Boston, L. Campbell, and R. Smyth, 215–30. Wellington: Institute of Policy Studies, Victoria University of Wellington.
- Currie, J., P. Harris, and B. Thiele. 2000. Sacrifices in greedy universities: Are they gendered? *Gender and Education* 12, no. 3: 268–91.
- Dalziel, P. 2005. Rewarding individual research excellence in the PBRF. *New Zealand Journal of Tertiary Education Policy* 1, no. 2: 1–9.
- Davis, D.E., and H.S. Astin. 1990. Life cycle, career patterns and gender stratification in academe: Breaking myths and exposing truths. In *Storming the tower: Women in the academic world*, ed. S. Stiver Lie, and V.E. O'Leary, 89–107. London: Kogan Page.
- Deming, W.E. 1986. *Out of the crisis*. Cambridge: Massachusetts Institute of Technology.
- Dines, E. 1993. *Women in higher education management*. Paris: UNESCO.
- Duncan, G. 2004. Pouvoir et savoir: The tertiary education strategy and the will to know. *New Zealand Journal of Tertiary Education Policy* 1, June: 1–9. <http://www.aus.ac.nz/publications/Ejournal/Vol1No1/Vol1No1.htm>.
- Eisner, E.W. 1997. The new frontier in qualitative research methodology. *Qualitative Inquiry* 3, no. 3: 259–73.
- Elg, U., and K. Jonnergard. 2003. The inclusion of female PhD students in Academia: A case study of a Swedish university department. *Gender, Work and Organization* 10, no. 2: 154–74.
- Ellul, J. 1973. *Propaganda: The formation of men's attitudes*. New York: Vintage.
- Etzkowitz, H. 1989. Entrepreneurial science in the Academy: A case of the transformation of norms. *Social Problems* 36, no. 1: 14–29.
- Etzkowitz, H., C. Kemelgor, M. Neuschatz, and B. Uzzi. 1992. Athena unbound: Barriers to women in academic science and engineering. *Science and Public Policy* 19: 157–79.
- Etzkowitz, H., C. Kemelgor, M. Neuschatz, and B. Uzzi. 1994. Barriers to women in academic science and engineering. In *Who will do science? Educating the next generation*, ed. W.J. Pearson, and I. Fechter, 68–80. Baltimore: John Hopkins University Press.
- Evans, M. 1995. Ivory towers: Life in the mind. In *Feminist academics: Creative agents for change*, ed. L. Morley, and V. Walsh, 73–85. London: Taylor and Francis.
- Eze, E.C. 1997a. Introduction: Philosophy and the (post)colonial. In *Postcolonial African philosophy: A critical reader*, ed. E.C. Eze, 1–22. Oxford: Blackwell.
- Feenberg, A. 1999. *Questioning technology*. London: Routledge Kegan Paul.
- Foucault, M. 1972. *Power/knowledges: Selected interviews and other writings*. New York: Pantheon Books.

- Gamble, P., and J. Blackwell. 2001. *Knowledge management: A state of the art guide*. London: Kogan Page.
- Gander, J.P. 1999. Faculty gender effects on academic research and teaching. *Research in Higher Education* 40, no. 2: 171–84.
- Glazer, J.S., E.M. Bensimon, and B. Townsend. 1993. *Women in higher education: A feminist perspective*. Needham Heights, MA: Ginn Press.
- Haraway, D. 1989. *Primate visions: Gender, race and nature in the world of modern science*. New York: Routledge.
- Harding, S. 1993. *The racial economy of science: Towards a democratic future*. Bloomington: Indiana University Press.
- Harris, P., B. Thiele, and J. Currie. 1998. Success, gender and academic voices. Consuming passion or selling the soul. *Gender and Education* 10, no. 2: 133–48.
- Horkheimer, M., and T.W. Adorno. 1973. *Dialectic of enlightenment*. London: Allen Lane.
- Hoskin, K.W., and R.H. Macve. 1988. The genesis of accountability: The West Point connections. *Accounting Organizations and Society* 13, no. 1: 37–73.
- Jackson, W. 1987. *Altars of unhewn stone*. New York: North Point Press.
- Knights, D., and W. Richards. 2003. Sex discrimination in UK academia. *Gender, Work and Organization* 10, no. 2: 137–53.
- Kulis, S., and D. Sicotte. 2002. Women scientists in academia: Geographically constrained to big cities, college clusters, or the coasts? *Research in Higher Education* 43, no. 1: 1–30.
- Kyvik, S. 1995. Productivity differences in scientific publishing. Paper presented at the IMHE Seminar on Human Resources and Staff Development, Technical University of Vienna, 10–12 May, in Vienna.
- Lee, F.S., and S. Harley. 1998. Peer review: The research assessment exercise and the demise of non-mainstream economics. *Capital and Class* 66: 23–52.
- Leonard, P. 1998. Gendering change? Management, masculinity and dynamics of incorporation. *Gender and education* 10, no. 1: 71–84.
- Lie, S., and L. Malik. 1994. *The gender gap in higher education: World yearbook of education*. London: Kogan Page.
- Luke, C. 1997. Quality assurance and women in higher education. *Higher Education* 33: 433–51.
- Lyotard, J.F. 1984. *The postmodern condition: A report on knowledge*. Trans. G. Bennington and B. Massumi, Vol. 10. Minneapolis: University of Minnesota.
- Marcuse, H. 1941. Some social implications of modern technology. In *The essential Frankfurt school reader*, ed. A. Arato and E. Gebhardt, 138–62. Oxford: Basil Blackwell.
- Marginson, S. 2000. Research as a managed economy: The costs. In *Why universities matter*, ed. T. Coady, 186–213. Australia: Allen and Unwin.
- Martin, R. 1998. *Chalk lines: The politics of work in the managed university*. London: Duke University.
- Merchant, C. 1990. *The death of nature: Women, ecology, and the scientific revolution*. New York: Harper.
- Monastersky, R. 2005. The number that's devouring science. *The Chronicle of Higher Education*, 14 October.
- Moore, K.M., and M.A.D. Sagaria. 1991. The situation of women in research universities in the United States: Within the inner circles of academic power. In *Women's higher education in comparative perspective*, ed. G.P. Kelly, and S. Slaughter, 185–200. Dordrecht: Kluwer Academic Publishers.
- Morley, L. 1994. Glass ceiling or iron cage? Women in UK academia. *Gender, work and organization* 10, no. 2: 137–53.
- Nelson, J. 1996. *Feminism, objectivity and economics*. London: Routledge.
- Poole, M., L. Bornholt, and F. Summers. 1997. An international study of the gendered nature of academic work: Some cross-cultural explorations. *Higher Education* 34: 373–96.
- Postman, N. 1993. *Technopoly: The surrender of culture to technology*. New York: Vintage.
- Prichard, C. 2006. A warm embrace? New Zealand, universities and the 'Knowledge-based economy'. *Social Epistemology* 20, no. 3–4: 283–97.
- Rowland, S. 1994. Perspectives on teaching and research. In *Learning in difficult times: Issues for teaching in higher education*, ed. P. Carotte, and M. Hammond, 55–65. Sheffield: Universities and Colleges' Staff Development Unit.
- Ruth, D.W. 2001. Staff perceptions of teaching and research at the University of the North. *South African Journal of Higher Education* 15, no. 1: 154–70.
- Schiebinger, L. 1993. *Nature's body: Gender in the making of modern science*. Boston: Beacon Press.
- Scott, J. 1998. *Seeing like a state*. New Haven: Yale University Press.
- Scott, S., and M. Porter. 1984. The double marginalisation of women in research. In *Is higher education fair to women?*, ed. S. Acker, and D.W. Piper, 180–6. Guildford: SRHE-NFER-Nelson.

- Shiva, V. 1993. *Monocultures of the mind: Perspectives on biodiversity and biotechnology*. London: Zed Books.
- Smith, D. 1978. A peculiar eclipsing. *Women's Studies International Quarterly* 1: 1–17.
- Spender, D. 1981. The gatekeepers: A feminist critique of academic publishing. In *Doing feminist research*, ed. H. Roberts, 186–202. London: Routledge and Kegan Paul.
- Stanley, L. 1984. How the social science research process discriminates against women. In *Is higher education fair to women?*, ed. S. Acker, and D.W. Piper, 189–209. Guildford: SRHE-NFER-Nelson.
- Tawhai, V., K. Pihera, and P. Bruce-Ferguson. 2004. Does the PBRF need reshaping? A new Maori educational institution's perspective. Paper presented at the HERDSA Conference, Miri, Malaysia.
- Townley, B. 1993. Performance appraisal and the emergence of management. *Journal of Management Studies* 30, no. 2: 221–38.
- Trow, M. 1994. Managerialism and the academic profession: The case of England. *Higher Education Policy* 7, no. 2: 11–8.
- Veak, T. 2000. Whose technology? Whose modernity? Questioning Feenberg's 'Questioning Technology'. *Science, Technology and Human Values* 25, no. 2: 226–37.
- Visvanathan, S. 2001. The grand sociology of Manuel Castells. In *Challenges of globalisation: South African debates with Manuel Castells*, ed. J. Muller, N. Cloete, and S. Badat, 3–49. Pinelands, Cape Town: Maskew Miller Longman.
- Waiti, D. 2004. Publish or perish: Negotiating research territories within Ng_W_nanga. Paper presented at the HERDSA Conference, July 4–7, in Miri, Malaysia.
- Whitehead, S. 2001. The invisible gendered subject: Men in education management. *Journal of Gender Studies* 10, no. 1: 67–82.
- Williams, W., and L. Chrisman. 1994. *Colonial discourse and post-colonial theory*. New York: Columbia University Press.
- Willmott, H. 1984. Images and ideals of managerial work: A critical examination of conceptual and empirical accounts. *Journal of Management Studies* 24: 249–70.
- Willmott, H. 2003. Commercialising higher education in the UK: The state, industry and peer review. *Studies in Higher Education* 28, no. 2: 129–41.
- Winiati, W. 2003. The performance-based research fund: Incompatibility. Unpublished manuscript.
- Winter, R., T. Taylor, and J. Sarros. 2000. Trouble at the Mill: Quality of academic worklife issues within a comprehensive Australian university. *Studies in Higher Education* 25, no. 3: 279–95.