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Working Paper 24:

Research Assessment Systems and their Impacts on Academic Work in New Zealand, the UK and Denmark

- Summative Working Paper for URGE Work Package 5

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This working papers series is published by the research programme 'Education, Policy and Organisation in the Knowledge Economy' (EPOKE) at The Department of Education, Aarhus University. The series brings together work in progress in Denmark and among an international network of scholars involved in research on universities and higher education. This includes collaboration between EPOKE, Aarhus University, the European Institute, University of Auckland and the Graduate School of Education, Bristol University in the FP7 PEOPLE IRSES project called URGE 'University Reform, Regionalisation and Europeanisation'.

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Introduction

This working paper arises from the project 'Universities in the Knowledge Economy' (URGE) and specifically from its 5th work package, which examined how reform agendas, which aimed to steer university research towards the 'needs of a knowledge economy', affected academic research and the activities and conduct of researchers. The URGE project was funded by the EU FP7 PEOPLE Marie Curie IRSES programme, which meant that academics in three partner universities, Aarhus University, University of Auckland and University of Bristol, engaged in extended research visits to 'exchange knowledge'. In this case ethnographic studies had been conducted at the three universities on the impacts of research assessment systems on academic work and the researchers compared their results. The visits were organised to overlap, so that all the academics contributing to the work package were in the same place for the symposium, 'Measuring Academic Performance: National Research Assessment Exercises and their impact', held at Auckland on 22 April 2013.

Three of the researchers had already written extensively on the subject of what is known generically as Performance-Based Research Assessment Systems (PBRAs). Lisa Lucas (2006) has made detailed studies of the British Research Assessment Exercise (RAE) and its later manifestation as the Research Excellence Framework (REF). She had also recently completed a comparative analysis of PBRAs for *Oxford Bibliographies* (Lucas forthcoming). Susan Wright has traced policy debates about the future of the RAE in England (Wright 2009) and in Denmark she conducted an ethnographic study of the policy processes to develop a method for measuring research and the contrasting reactions to it in a natural sciences and a humanities faculty (Wright 2011, forthcoming). Bruce Curtis has written about New Zealand's Performance-Based Research Framework (PBRF) (Curtis 2007 and under review). Two other participants contributed not only research, but their experience as practitioners: Cris Shore as a panel member in New Zealand's PBRF, whose results were announced just before the symposium; and Susan Robertson as a member of her

British university's committee to develop the new 'impact' statements required by the REF.

At the symposium, several participants referred to the way countries had borrowed each other's research assessment systems and we start this working paper by briefly sketching out this policy travel, to indicate the connections and contrasts between the systems in New Zealand, the UK and Denmark. There are then three sections on PBRAs, by Lisa Lucas on the UK's RAE/REF, by Bruce Curtis on New Zealand's PBRF and by Susan Wright on Denmark's bibliometric points system. Each of these sections explores how the systems influence the work and identity of academics. A fourth section by Susan Robertson focuses especially on the way 'impact' assessments in the UK's new REF system are shifting ideas of research value. The final section draws on the lively debate at the URGE symposium to identify comparisons and differences in the way these research assessment systems are re-shaping universities and the nature of academic work.

How Assessment Systems Have Travelled Globally

Governments in Europe, Australia, New Zealand and many other parts of the world, but not, importantly, the USA, have borrowed from each other and tried to develop methods to assess and rank universities' research performance. Both academics and consultancies have been engaged in making comparative studies of assessment systems (Smith 2008, Besley 2009, Key Perspectives Ltd 2009, European Commission 2010, LERU 2012). Running through policy debates are questions about whether the aim is to measure output, quality or impact – as the indicators and systems would be quite different for each. In many cases at the start the aim was to measure output, but later this morphed into proxies for quality or attempts to provide evidence for the social relevance or 'impact' of research. The purposes for which governments have used the results have also shifted. Often PBRAs are dressed up as a form of accountability – providing evidence that government spending on universities

has not been wasted. They have also become tools for allocating funding competitively between universities, as if that would improve efficiency or quality. Governments have used PBRA results to concentrate research funding on the 'best' universities and differentiate the sector. When, from 2004 onwards, world rankings of universities were produced (notably by *Times Higher Education* and Shanghai Jiao Tong University) governments further focused funding on their 'top' universities to try and ensure they featured in the top 50 or top 100 in the world. As the publication pattern of Science, Technology, Engineering and Maths (STEM subjects) differs markedly from that of the Humanities, governments have also used PBRAs to concentrate research funding on 'useful' STEM subjects, and, in the words of one British minister of higher education, move money away from irrelevant, 'medieval' and purely 'ornamental' humanities subjects (Clarke 2003).

Various attempts have been made to establish frameworks for comparing national PBRA systems. Hicks' (2012) work is useful in providing a broad means of comparing fourteen different national systems and their historical development. Each system is briefly described alongside the year it was applied and the agency responsible for implementing the system. An amended version of this is given in Table 1 below. Hicks (2012) compares the unit of evaluation used as well as the method of evaluation and the frequency of each census period. The unit of evaluation ranges from institution, department or field and groups or individuals. The method of evaluation usually involves either bibliometric indicators or peer review or both.

An interesting table also provided by Hicks (2012) shows that the amount of funding to universities from these evaluation systems ranges from around 25 per cent of total research support in the case of the UK RAE to 10 per cent of the total block grant in New Zealand and 2 per cent in Norway. In Denmark, initially 3.9 per cent of the government's block grant for research was allocated competitively on the basis of its bibliometric points system, but this had risen 8.9 per cent by 2012 (Sivertsen and Schneider 2012: 23 Table 2.5). Despite the complexity of calculating these amounts accurately, it is certainly interesting to note the relatively small financial return to

Table 1: National Performance-Based Research Funding Systems for Universities

Country	System	Year
UK	RAE/REF	1986, current
Spain	Sexenio	1989
Hong Kong	RAE	1993
Australia	Compsite, RQF, ERA	1995
Poland	Parametric Evaluation	1991/1998-99
Portugal	Research Unit Eval	1996
Italy	VTR, VQR	2001-03, 2004-08
New Zealand	PBRF	2003, current
Belgium (Flemish)	BOF-key	2003, 2008
Norway	Norwegian Model	2006
Sweden	New Model	2009
Denmark	Norwegian Model	Current
Finland	Funding Formula	1998, 2010

Source: Lucas 2013, drawing on Hicks 2012.

institutions from participating in these exercises. However, the national league tables informed by these assessment exercises are crucial in terms of protecting the status and therefore the overall income of institutions.

A study by Coryn et al. (2007) attempts both to classify different PBRA systems into typologies and to provide an overall evaluation of these diverse systems. The classifications are Type I (large scale performance based exercise), Type II (bulk funding models, e.g. block grants) and Type III (indicator driven models within institutions or research programs). These are further classified into Type A – an approach that is systematic and consistent (e.g. UK) and Type B – pluralised approaches that are more situation-specific (e.g. Germany). These typologies are shown in full in Table 2 below for 16 countries. These systems were then evaluated

by a panel of judges from a range of countries and disciplines. The panels classified 75 per cent of the systems as 'F' indicating 'absence of merit, clearly inadequate, fatal deficiencies' (Coryn et al. 2007: 446). New Zealand's PBRF system was rated most highly because of its transparency, comprehensiveness, combination of bibliometrics and peer review, the fact that consideration is given to new and emerging researchers, and because the system was meta-evaluated. Though it was also argued that it was expensive and overly complex.

Table 2: Classification of International Research-funding Models and Mechanisms

	AU	BE	CZ	DE	FI	FR	HK	HU	ΙE	JP	NL	NZ	PL	SE	UK	US
Type 1							X				X	X			X	X
Type 11		X	X			X		X	X	X				X		
Type 111	X			X	X								X			
Type A	X						X				X	X			X	X
Type B		X	X	X	X	X		X	X	X			X	X		

AU = Australia; BE = Belgium; CZ = Czech Republic; FI = Finland; FR = France; DE = Germany; HK = Hong Kong; HU = Hungary; IE = Ireland; JP = Japan; NL = Netherlands; NZ = New Zealand; PL = Poland; SE = Sweden; UK = United Kingdom; US = United States.

Source: Coryn et al. 2007.

An OECD report (2010) drawing on the work of specialist researchers in this area from a number of different countries focuses on key questions of how best to arrange the governance and funding of research in universities and to develop an understanding of the positive and negative impacts of different funding systems. One of the overall conclusions is that 'there is no ideal methodology' (OECD 2010: 169): peer review is seen as having credibility but also has a potential for bias; and quantitative indicators are seen as more robust but are also less effective in

understanding work in the social sciences and humanities. Similarly, all systems have the potential for unintended negative consequences such as making researchers more risk averse and perhaps less likely to engage in collaboration. Whilst these comparisons are interesting, and there is much to be learned from how these different systems operate in different contexts, there is no overall consensus on the best way to ensure high quality research – if indeed this is the intention, as in many cases these exercises operate primarily to ensure efficient allocation of scarce resources. There is much research that argues that the negative consequences of such systems far outweigh the benefits, as is discussed in various sections of this report. However, for better or worse these systems of evaluation seem to be a longstanding and perhaps permanent fixture and it is important to understand their varied means of operation and impact on university research and the research work of academics.

A report for the OECD documented numerous models for 'steering by numbers' (Frølich 2008) and our cases represent two of them: the British model, which has travelled to associated countries, such as Hong Kong and New Zealand; and the Leuven or Scandinavian model, which is moving between countries in northern Europe and has been adopted in Denmark.

The UK's Research Assessment Exercise (RAE) was the first of these PBRAs, starting in 1986. In the first round of the RAE, disciplinary panels of academics read the publications of their colleagues and allocated a mark to each department (not each individual). Further RAEs have been held every 3-7 years (1986, 1989, 1992, 1996, 2001, 2008) and the results of the latest will be published in 2014. The first five RAEs graded each department on a 5 point scale. This was extended to a 7 point scale in 1996 but in practice only the top four grades were used. Universities decided how many of their staff to submit to the RAE, and the results also included an alphabetical ranking from A (95-100 per cent academic staff submitted) to F (below 20 per cent of academic staff submitted). Because there were 'cliff edges' between grades, from 2008 the RAE produced a 'graded profile' for each department based on research outputs (primarily the 4 best publications per person), research environment, and

indicators of esteem. The new grading scale defined research that was world leading (grade 4), internationally excellent (grade 3), internationally recognised (grade 2) and nationally recognised (grade 1). This system was designed to highlight pockets of excellence within a department, but by the same token, it also identified the presence and size of a department's 'tail'.

The Higher Education Funding Councils used the RAE grades to allocate the annual research funding for each university for the period until the next RAE (in the UK's 'dual funding' system, the Funding Councils allocated just over half of the research budget and academics also competed for project funding from the Research Councils). In 1986, only 14 per cent of the Funding Councils' budget for research was allocated according to the results. This increased to 30 per cent in 1989, and 100 per cent from 1992 onwards (Welch 2009). In the same period student numbers expanded whilst funding per student declined by 40 per cent in the 20 years to 1997 (Dearing 1997). Research funding and the RAE result could make or break the economy of a department. For example, the status achieved as an outcome of the RAE result affected the possibility of attracting students, particularly international and high feepaying ones. The RAE status also affects the perception of the department within the university. This was most noticeable in RAE1992 when the cultural studies panel marked the whole discipline low and Birmingham University used this to close the internationally foundational and famous department of cultural studies.

When other countries 'borrowed' the RAE methodology, key features were changed. In 1993, Hong Kong adapted the RAE's peer review model to its smaller sector (8 universities) by using the individual academic, rather than the department, as the unit of assessment. The Australian government's initial system of assessing performance to allocate research funding calculated each university's share of total research output (rather than grading departments as in the RAE) and used performance indicators rather than peer review (Hicks 2009). This Research Quantum, which was absorbed into the Institutional Grants Scheme (IGS) in 1999, used a combination of performance indicators – success in attracting research income from diverse sources

(60 per cent) and research students (30 per cent), and a measure for the quality and output of research publications (10 per cent) (Wood and Meek 2002: 17). Universities were soon able to put a dollar value on each paper and book (Hicks 2009). The system was efficient and had low compliance costs, but had a number of flaws. The system incentivised output, which increased 8 per cent annually between 1992 and 1996, but Australia's citation impact dropped from 6th to 11th among OECD countries in the same period (Hicks 2009). The IGS system suffered from heavy flaws in available data and the unreliability of some indicators and the weighting it placed on external research income also had undesired skewing effects on research activity and its quality. After much academic debate (Butler 2003, 2008, 2010) and repeated reviews, a new method for allocating government's research funding to universities was devised, the Research Quality Framework (RQF), which resembled the RAE in some respects. Instead of using metrics to rank universities, 13 subject area panels were established to assess each research group (even smaller than the RAE's departments) in the country every six years. Each research group submitted statistics and metrics, citation rates and other bibliometric indicators, combined with an Evidence Portfolio, a record of the research group's entire output, and the 'four best' publications from each member (similar to the RAE). However, in a move that preceded the RAE, the panels, which included 'users', were also to assess four case studies of the 'impact' and social, economic, environmental and/or cultural outcomes of the research group's work (Butler 2008). This system proved to be too complex and was replaced in 2008 by a streamlined combination of metrics and expert review in the Excellence in Research for Australia (ERA). The ERA moved away from the RAE's peer review and incorporated a system of ranking journals in each discipline as a way of assessing publications, which resembled the Nordic model discussed below and was also hotly debated (Anderson and Tressler 2009, Haslam and Koval 2010).

In 2003 New Zealand's Performance-Based Research Fund (PBRF) avoided the weaknesses of relying purely on external performance indicators. Rather, it combined ratings of individual research outputs for all eligible academics with institutional measures. The ratings of individual research outputs were based on peer review and

expert panels. As a result every eligible academic in New Zealand received a numeric score from 0 to 700 and a rating of A, B, C or R (R = research inactive). The average Quality Scores for staff provided the institutional Quality Score for universities and other institutions which accounted for 60 per cent of the funding metric. This institutional score was supplemented by two proxies for quality: research degree completions (25 per cent of the funding metric) and external research income (15 per cent) (Bakker et al. 2006). The assessment of individual staff was undertaken by evaluation exercises in 2003, 2006 and 2012; data on research degree completions and external research income is provided by universities and other tertiary education organisation to the Tertiary Education Commission on an annual basis.

Meanwhile, in Britain the RAE has also been repeatedly adjusted in the light of academic studies (Adams and Smith 2006, Elton 2000, McNay 1996, 1999, Velody 1999, Whittington 1997) and a string of official reports (British Academy 2007, House of Commons 2004, Roberts 2003). In 2007 a consultation was held on proposals initiated by the Chancellor of the Exchequer Gordon Brown to move to a system of using bibliometrics instead of peer review in the retitled Research Excellence Framework (Sastry and Bekhradnia 2006). It was hoped to develop a method that was less demanding of academic staff time and that would shift the focus of the RAE from quality to impact. One way to reduce costs would be to adopt the bibliometric data collected by Thomson Scientific. This commercial firm measures 'impact' by counting how much each of the articles on its database have been accessed and cited by the research community within two years of publication. This fits many STEM subjects well, which publish mainly in journals and where data is 'old' after two years. A British Academy (2007) report argued that there is a very different publishing dynamic in the humanities and social sciences, where the focus is on the development of an in-depth argument, rather than 'results'. This makes books (which are not counted by Thomson Scientific) as important as journals. Evidence from Nobel Prize winners also shows it takes much longer for publications to have an impact. The British Academy argued that these factors made citation indexes extremely faulty for the humanities and social sciences and for a time there was an idea of developing a citation-based evaluation for STEM subjects and a peer-review based evaluation for humanities and social sciences, but then worries grew that if there were two assessment systems, there might be two funding systems, and it would be harder for humanities to keep a check on government shifting funding towards STEM subjects. Meanwhile, leading scientists compared the proposed system for counting citations and calculating 'impact' based on Thomson's database, with their own disciplines' open source repositories. Scientists worldwide place their articles in these repositories and they constitute a near-comprehensive source of publications in their subject. The most highly cited astronomy and space scientist in the UK, Carlos Frenk, found that the Thomson database recorded 5,000 fewer citations for his articles than the open source Astrophysics Data System – a loss of 18 per cent. His colleague, Nigel Glover, found 37 per cent fewer citations for his articles in Thomson's than in the particle physics database (Corbyn 2008a). Scientists questioned the validity of the bibliometrics and called for a 'light touch' peer review informed by metrics, similar to that for the humanities and social sciences. As if this did not upset the planned changes enough, at the last moment the Secretary of State himself announced that he had 'thrown a rock into the pond' because he wanted a fourth measure to be included in the new model - a reward for academics who provided policy advice to government (Corbyn 2008b). The RAE had always prioritised 'pure' over 'applied' research and if the new system counted citations in the 'core' journals on the Thomson database that would narrow the definition of 'excellent' research even further. There were no available measures for applied work, public engagement or policy reports. The civil servants had to go back to the drawing board. The resulting REF system, whose results will be announced in 2014, was a unified framework for all subjects, which evaluated the outputs of individuals using expert peer review (now including non-academic experts) with supporting bibliometric data where this was deemed appropriate and asked for narrative accounts of the collective 'impact' of a department's work. The REF thus adopted some of the features of the Australian ERA, with the difference that the panels of peer reviewers are at the centre of the assessment system and can decide appropriate ways to use metrics for their discipline.

Meanwhile, another methodology had been developed in Leuven and in the Nordic countries. The Leuven model created an assessment of quality based on a number of indicators – PhD completions, external funding, and citation rates for publications. In 2006 the Danish government was seeking a method for allocating research funding competitively between its eight universities, and preferred Leuven's indicator-based approach to the more labour-intensive peer reviews of the British model. The Leuven model depended on commercial citation indexes and impact factors, notably the Thomson ISI citation index, but all the major publishing firms are benefitting financially from government policies to publish in 'top' journals and count citations and journal impact (Ciancanelli 2007). Leuven's focus on citation indexes introduced the same problem as mentioned above in the British debates: these commercial indicators put humanities at a distinct disadvantage, as academics in the humanities published very little in the international journals covered by those firms (Faurbæk 2007). It was agreed that there should be one measure for all disciplines. Therefore, the Danish working party turned to the 'bibliometric indicator' developed in Norway (Schneider 2009). This allocated differential points to journal articles, chapters in edited volumes, and monographs depending on whether they were 'top level' or not and peer reviewed or not. In this model, 'quality' is not assessed directly but relied on the journal's or publisher's peer-reviewing and 'international' status. For journals, the latter was defined as in an international language and with under two-thirds of contributors from the same country.

To develop this bibliometric indicator, in 2007, the Danish ministry set up 68 disciplinary groups involving 360 academics and gave them the task of listing all the journals and publishing outlets in their discipline and defining which published the top 20 per cent of the 'world production' of articles in their field. It took two years to establish these lists. Each year, the Ministry then requires all academics to enter their publications into a database. Civil servants allocate points to each publication, awarding more for publishing in 'level 2' outlets, and fewer for publications in 'level 1' outlets. They then add up all the points earned by each person, department and university. This bibliometric indicator is one of four elements (along with student and

PhD completions and external funding) used to allocate state funding competitively. Such a system creates a 'treadmill effect': all universities have to press their staff continually to produce more 'level 2' publications each year in order to maintain their same relative share of the fixed amount of funding. It is a very simple way to intensify work without it costing any more. After two years, the Norwegian promoters of this system were invited to evaluate its operation in Denmark, as a result of which, the government decided to continue its use (Sivertsen and Schneider 2012).

Within our European cases, there are therefore two very different methodologies – the British and the Scandinavian - for assessing the quality of university research. New Zealand adopted the British method but made important changes in its operations. The next sections will therefore explore the operations of these PBRA systems. We will ask:

- 1. How are national (and international) systems of research assessment and ranking influencing academic work in different countries?
 - O Do these PBRAs have comparable effects on the operations of the university, despite differences in their features? Do differences in detail yield important differences in their effects?
 - What is measurable and what counts as proper 'research' within the new regimes of academic accountability?
 - o How are these funding and measuring instruments being used, not just by governments, but adopted and adapted by university managers?
- 2. How do academics engage with these systems and what effects do they have on academic work and on the conduct and identities of researchers?
 - o How do researchers respond to and *reconcile* different concepts of academic research? Do they try and ignore these incentives, subvert them, realign their activities, or seek to 'game' the system?
 - O Do these PBRAs have systematic effects (e.g. by gender) advantaging some categories of academics and disadvantaging others?
 - o Are PBRAs changing the balance between 'free' inquiry, fundamental research to support knowledge industries, commissioned research,

other forms of knowledge transfer and contributions to informed public debate?

The UK's RAE/REF: What Does It Mean for University Researchers and Research Work?

Over its 28 year history, there has been a continuous increase in the number of university departments or 'units of assessment' (UOAs) that have achieved the top grade. For example, in RAE1996 20 per cent gained the top rated 5 or 5* compared to almost 40 per cent in RAE2001 (Lucas 2006a) and this upward trajectory has continued through successive RAEs. Various reasons have been put forward to account for this. King (2004) argues that it is because of the relatively strong standing of the UK, at least in terms of scientific output. The UK government has claimed that the mechanisms for funding university research have resulted in a major increase in the UK's share of publications and citations worldwide, though the extent of this claim has been challenged as having a rather 'flimsy evidential base' (Hicks 2009). Whatever is claimed, there is a perception that the UK's RAE has enabled the global standing and reach of UK research to increase and successive RAEs have shown the growth in highly-rated university departments and centres. The question, however, if this is accepted, is how it has been achieved and the ways in which university research environments and academic work and identity have been impacted and transformed in the process.

Lucas (2006a) has shown how there has been an intensification of the management and organisation of research activities within universities in response to successive RAEs. Her empirical analysis of universities in the UK showed how all aspects of the research environment, research leadership, research strategy and research culture, including the socialisation of academic staff were formed in order to meet the mission of departments to increase research activities, and predominantly research that would be highly ranked in the RAE (Lucas 2009). These forms of 'new managerialism'

involved manipulating staff workloads and also auditing staff outputs and achievements to determine whether they were eligible for submission to the RAE and hence considered 'research active' or 'research inactive'. Being ineligible for submission to the RAE and hence labelled 'research inactive' can have extremely negative consequences for academic staff and their careers either in terms of redundancy or being moved to a 'teaching only' contract (Lucas 2006a). A fictional ethnography produced by Sparkes (2007) based on real life experiences, gives an account of one Director of Research's (Jim) struggles with the demands of managerial processes and the audit culture and the imperative of producing suitably 'research active' academic staff.

My suggestion is that we go back now and discuss each of these (members of staff) in detail. Let's begin with Alan Jarvis who at the moment only has two papers published. One a 2 star, the other a 3 star. Tell us about him'. ...[Jim begins to explain Alan Jarvis' situation] ... 'That's encouraging to hear,' intervened Professor Thompson. 'However, I must say that despite what you have told us, I find two papers produced in over 3 years to be a weak profile. I'd expect a junior member of my staff to produce much more than that. When you give him feedback on his profile, you will certainly have to include the words 'vulnerable' and 'at risk'. And, given this weak profile, I have to ask whether or not you can guarantee Dr Jarvis will have two more publications by the RAE submission date?' Jim steadied himself and said slowly but surely. 'Yes, I can guarantee it.' The VC looked him directly in the eyes as he repeated what Jim had heard him say in other meetings. 'I hope you can Jim, as any member of your School who is not submitted to the RAE will either have their contract terminated or be put on a teaching-only contract.' Jim stared back and stated flatly. 'Thank you for reminding me of that fact Vice Chancellor' (Sparkes 2007: 527).

Much of the research produced has been rather scathing of the impact on academic work and sense of identity in the new managerialist and audit cultures engendered by the RAE and REF2014 (Harley 2002, Loftus 2006). As Harley (2002) argues,

In this sense, universities have become sites of contested identity, where, for example, research professors and the 'research-active' become the other in relation to whom the less research-active defend their previously constituted selves in terms of now devalued criteria (Harley 2002).

The issue of non-submission of staff has become an important question in the current REF2014 as there has been a perception that the number of staff submitted has dropped. This is partly influenced by the decision to further concentrate resources and remove funding for 2* (classified as nationally excellent) and fund only 3* and 4* research (classified as internationally excellent and world leading). There have also been high profile statements made on social media and in the Times Higher Education (THE) where academics have protested their non-inclusion in REF2014. Figures from the Higher Education Funding Council for England (HEFCE) show that there was a small drop in submission numbers with 52,077 academic staff submitted to REF2014 compared to 52,401 submitted to RAE2008. The largest drop in submission numbers (5 per cent) was found in the humanities (THE 2014). However, this raw data does not give any explanation as to who was actually included in submissions and how these decisions were made. The headline of the THE article relates to the greater inclusion of early career researchers now that special provision has been made to allow their inclusion based on fewer outputs. Such initiatives have been introduced into the process in order to allow for more equity not just for early career researchers but also women. A recent study by Leathwood and Read (2013) found that gender differences of workload pressures and time constraints were still evident, with women participants in their study reporting less time for research due to increased workloads in relation to teaching and administration. Some respondents were considering leaving academia or considering volunteering to move to teaching only contracts. However, not all women or men saw the RAE/REF as wholly negative and some reported that they could now have their research efforts taken seriously and valued within their departments and that the RAE/REF allowed them to have a more successful research career (Lucas 2006a, 2009, Leathwood and Read 2013). This could perhaps reflect the different experiences of those who are considered 'research active' and whose research is valued and those who are not. The overwhelming argument from Leathwood and Read's (2013) study is that despite gains for some, there remains substantial inequity in the system.

Loftus (2006) has argued that there has been a process of 'RAE-ification' and that the consciousness of the academic has been changed such that 'we have built ourselves into the body-walls of the system that now encloses us' (Loftus 2006: 111). What this means is that academic researchers and the production of research knowledge has been moulded in order to fit the demands of audit regimes such as the RAE/REF. One of the main concerns is that researchers, in their endeavour to meet the requirements of the evaluation exercise, might change their research areas, focus or approach to those they perceive to be valued by an assessment panel. It is also argued by some that researchers may be more likely to work within mainstream areas of research as these are perceived to be safer options than working at the margins which may or may not be viewed positively by a panel and/or may result in them being unable to publish in what are perceived to be the most prestigious journals (Lee 2007). It is argued that there is a potential rush to mediocrity as researchers may choose to do less risky research, which they hope will guarantee them timely results that can be published in prestigious outlets. There is also an argument that applied research is less valued than 'blue skies' or basic research and this is particularly important in professional subjects such as education (McNay 2003). The potential for distortion of research is argued by some to be high.

New Zealand's PBRF: in Search of World Class Excellence, at What Costs?

The PBRF was established with the rationale of assessing and improving the quality of academic research, and to allocate funding across the tertiary sector. Through the first Quality Evaluation in 2003, a partial round (new staff and those nominated by their institution) in 2006, and another full round in 2012, the methodology has remained constant (Curtis 2007, 2008). The Quality Evaluation deploys a mixed model (Lewis 2013: 32-34, Peters 2001) whereby an individual Quality Score is given for each eligible member of academic staff and an institutional score for each Tertiary Education Organisation. The institutional Quality Score is based on the fulltime equivalent weighted average of their eligible staff (Curtis 2008). Academic staff are initially rated as A, B, C and R, and then counted as 5, 3, 1 and 0 respectively in the calculation of an institutional Quality Score. Hence: '(t)o be assigned an "A" ... it would normally be expected that the staff member has, during the assessment period in question, produced research outputs of a world-class standard, established a high level of peer recognition and esteem within the relevant subject area of his/her research, and made a significant contribution to the New Zealand and/or international research environment' (Tertiary Education Commission 2006: 12-13). In 2006 the categories C(NE) = 1 and R(NE) = 0 were introduced for staff (new employees) with less than six years employment. These categories were intended to raise the morale of lowly-rated new staff.

PBRF evaluations are compulsory and individualised. All academic staff in Tertiary Education Organisations who are considered eligible by the Tertiary Education Commission are required (by their employers) to submit an evidence portfolio showing their research activity in the preceding six years. Eligibility centres on academic staff contributing to degree-level teaching and being expected to be research active. The evidence portfolios of eligible staff are then rated through a process of peer review, organised through twelve expert panels and forty-two subject areas. The PBRF funding for Tertiary Education Organisations is allocated on the basis of their

institutional Quality Scores worth 60 per cent of the fund (Crothers 2006), a count of numbers and types of Research Degree Completions, worth 25 per cent of the fund, and a measure of External Research Income, worth 15 per cent of the fund (Tertiary Education Commission 2004, 2007, 2013). The fund was about \$250 million in 2012. This is approximately 11.4 per cent of government funding of the tertiary sector (Tertiary Education Commission 2013) although the funds go almost exclusively to the universities within that sector. The funds allocated in terms of the PBRF metric are therefore relatively minor, especially given the limited amount of funding that is truly in play and given the evaluation methodology. For example, a significant proportion of the PBRF is allocated to institutions on the basis of the number of research-active academics (i.e. they have a Quality Score rated C or better). The C rating reflects a relatively low threshold for university-based staff to achieve and, as a result, the size of an institution is a strong predictor of its share of the competitive fund. Size is also a good predictor of the share of the Research Degree Completions and External Research Income components (Curtis 2007, 2008, Phibbs and Curtis 2006).

Despite the relative paucity of PBRF funds, in the context of a cash-strapped university sector, with declining inflation-adjusted funding, the PBRF has secured the commitment of senior management and, consequently, the participation of university-based academics (Curtis and Matthewman 2005, Curtis 2007, 2008). For senior academic management the PBRF may also have been attractive as a means of intensifying academic work. However such a straightforward, 'neo-liberal' reading (Roberts 2009) is complicated by the complex metric associated with the PBRF, including its peer review component. The results are, on the one hand, a series of mixed messages to managers; and on the other, the reification of academics, and academic identity, as the arbiters of contesting claims to academic quality (Curtis 2008, under review). The second aspect was undoubtedly an unintended consequence of the peer review aspect of the PBRF and was also unexpected by academics (Curtis and Matthewman 2005).

World Class: Disciplines and Gender

The most unproblematic aspect of the PBRF is its fascination with academic research being 'world class' and academic staff members being assigned "A" and making 'a significant contribution to the New Zealand and/or international research environment' (Tertiary Education Commission 2006: 12-13). This focus on being world-class and its definition aligns with government policy and rhetoric. The emphasis on being world class is also reinforced by the professoriate in New Zealand, who partly designed the PBRF metric, and who are predominantly foreign-trained, internationally focused and male. Analysis of the PBRF results for 2003 and 2006 shows that this enthusiasm for 'world class' privileges certain disciplines (not those that research about New Zealand) and systematically results in lower scores for academics who trained in New Zealand, and women.

Table 3 lists all the disciplines and their scores in 2006. Only the top two subject areas, 'Philosophy' and 'Religious Studies and Theology' achieved a bare passing grade (that is, 5.00 out of a possible 10.00; a C grade in most other university contexts). The key point is that these subject areas are among the least engaged with or contextualized in New Zealand life (including New Zealand's issues and problems, engaging with communities, or the training of locals). While 'Religious Studies and Theology' includes bible studies and training for some Christian Ministries, it excludes the analysis of Maori spirituality (this activity is incorporated in the subject area 'Maori Knowledge and Development' which fared poorly). 'Philosophy' is unambiguously decontextualized from New Zealand. There are no local philosophy journals or local philosophising. 'Philosophy's' high score also shows the benefits of other factors including relatively high rates of professors, overseas trained academics, and men in its ranks (I discuss these features below).

The inverse relationship between Quality Score and engagement with life in New Zealand is also evident at the other end of the scale. 'Education' (Smith and Jesson 2005) and 'Nursing' (Phibbs and Curtis 2006) received very poor scores. Yet these

Table 3: Subject Area by Quality Score: for 2006 evaluation.

	Quality
Subject Area	<u>Score</u>
Philosophy	5.80
Religious Studies and Theology	5.41
Biomedical	4.89
Earth Sciences	4.88
Physics	4.77
Ecology, Evolution and Behaviour	4.62
Pure and Applied Mathematics	4.58
Engineering and Technology	4.56
Anthropology and Archaeology	4.42
Psychology	4.40
Human Geography	4.38
Chemistry	4.35
Music, Literary Arts and Other Arts	4.27
History, History of Art, Classics and Curatorial Studies	4.26
Political Science, International Relations and Public Policy	4.24
English Language and Literature	4.03
Law	4.01
Pharmacy	3.98
Economics	3.93
Molecular, Cellular and Whole Organism Biology	3.92
Computer Science, Information Technology, Information Sciences	3.83
Dentistry	3.81
Statistics	3.81
Public Health	3.66
Clinical Medicine	3.63
Agriculture and Other Applied Biological Sciences	3.62
Marketing and Tourism	3.52
Architecture, Design, Planning, Surveying	3.48
Visual Arts and Crafts	3.44
Veterinary Studies and Large Animal Science	3.40
Management, Human Resources, Industrial Relations and Other	
Businesses	3.24
Sociology, Social Policy, Social Work, Criminology & Gender Studies	3.16
Foreign Languages and Linguistics	3.03
Accounting and Finance	2.69
Maori Knowledge and Development	2.67
Communications, Journalism and Media Studies	2.49

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Theatre and Dance, Film, Television and Multimedia	2.48
Other Health Studies (including Rehabilitation Therapies)	2.43
Sport and Exercise Science	2.21
Design	2.04
Education	2.03
Nursing	1.58

Source: Tertiary Education Commission 2007: 101-184, recalculated for university-based staff only by Curtis.

disciplines are putatively in the forefront of addressing and responding to local and New Zealand issues. Similarly the amalgams 'Management, Human Resources, Industrial Relations and Other Businesses', 'Sociology, Social Policy, Social Work, Criminology and Gender Studies', 'Maori Knowledge and Development', and 'Communications, Journalism and Media Studies' all have ostensible engagements with New Zealand issues and communities but that seems to be to their detriment in terms of the PBRF. To reiterate, Table 3 is suggestive and not conclusive. The middle and upper reaches of this league table are somewhat confusing in terms of a straight international bias/cultural cringe argument. The notion of a cultural cringe is an Antipodean concept; the much critiqued belief that 'intellectual standards are set and innovations occur elsewhere' (Head and Walter 1988: viii, see also Phillips 1950). The key feature of cultural cringe in the PBRF is that research about New Zealand and by New Zealand-trained academics is undervalued in comparison to supposed international work. Regardless, it does seem reasonable to expect New Zealand to be world-class in the area of 'Maori Knowledge and Development', if only because indigenous researchers/researchers of indigeneity in New Zealand enjoy something of a global monopoly in this subject. However the subject area did poorly, arguably because of its New Zealand focus.

Significant gender differences also exist among academics in the Quality Scores arising from the 2003 and 2006 PBRF rounds (unfortunately a dramatic re-jigging of reporting criteria means the 2012 data cannot be used for comparison) (Tertiary Education Commission 2004, 2007). In 2007, the Association of University Staff (a

precursor to the Tertiary Education Union) released a commentary showing that while average Quality Scores had increased between rounds, a significant difference remained between female and male academics: 'In 2003, women had an average [Quality] score of 1.85 out of 10 and men 3.24. In 2006, women received an average score of 2.23 and men 3.62' (Ransley 2007). The gap had narrowed only slightly. In 2003, female academics secured 57 per cent of their male counterparts' Quality Score; in 2006, they secured 62 per cent. The significant gender difference is also captured in the distribution of A, B, C and R rankings from the 2003 and 2006 PBRF rounds (see Table 4).

Table 4: Distribution of A, B, C and R rankings by Gender: for 2003 and 2006 evaluations.

	Male acado	emics	Female aca	demics
	2003	2006	2003	2006
A and B ranking	37.6%	40%	19.0%	23%
C ranking	24.5%	37%	30.5%	37%
R ranking	37.9%	23%	50.5%	40%

Source: Phibbs and Curtis 2006, Ransley 2007.

The main elements of difference are found in the top and bottom rankings. In 2006 the results produced a neat symmetry: 40 per cent of males gained an A or B (top grades) compared to only 23 per cent of females; 40 per cent of females gained an R (research inactive) grade while only 23 per cent of males were so designated. These gendered averages express a range of structural disadvantages faced by female academics, including not having studied abroad, lacking international networks and being underrepresented in the professoriate. To this we can add an over-representation of women in subjects and disciplines that are rated poorly in the PBRF (Boston, Mischewski and Smyth 2005, Crothers 2006, Phibbs and Curtis 2006, Smith and Jesson 2005).

Insofar as the PBRF generates a lower rating for female academics then the relationship between gender and the Quality Score (QS) for academic subjects is

predictable. Table 5 shows the inverse relationship between the percentage of female academics in a subject and its Quality Score.

Each subject area has two results, the QS and Percentage Female. The subject areas are ranked by QS (highest QS first, lowest last). Simply looking at the table should show a negative relationship between QS and Percentage Female. The subject areas with high QS tend to have low Percentage Female; the subject areas with low QS tend to have high Percentage Female. This negative relationship between QS and Percentage Female is the primary expression of gender impacts by the PBRF. That is, female academics tend to rate lower than their male counterparts and consequently 'feminised' subject areas have lower QS than those in which male academics still dominate. This negative relationship can be quantified in a number of ways, the simplest of which is the Pearson correlation. The Pearson correlation runs from negative 1 (-1.0), meaning the relationship is perfectly negative; to positive 1 (1.0), meaning the relationship is perfectly positive. A perfect correlation would mean that QS would be perfectly or absolutely determined by Percentage Female, either positively or negatively. In Table 5 the Pearson correlation is negative, -0.603. This is a moderate to strong negative correlation. Further, it is significant at the 0.01 level (2tailed test), so is very unlikely to be the result of chance.

A more detailed discussion of Quality Scores is useful to unpack further the relations between PBRF and gender. The forty-two subjects assessed in the PBRF were amalgamated into twelve review panels in each of the three rounds of the PBRF. These panels provided the basis for peer review and they generated the individual Quality Scores for academics. Exploring the results for review panels from the 2006 PBRF round allows further testing of the thesis that female academics receive lower Quality Scores. The averaged Quality Score for each panel is shown in Table 6 alongside the percentage of academics (university-based staff only) who were New Zealand-trained, Female, and both New Zealand-trained and Female.

Table 5: Quality Scores by Subject Area by Percentage Female Academics: for 2006 evaluation.

Subject Area	QS	Percentage
	ļ <u></u>	Female
Philosophy	5.80	0.33
Religious Studies and Theology	5.41	0.25
Biomedical	4.89	0.37
Earth Sciences	4.88	0.20
Physics	4.77	0.09
Ecology, Evolution and Behaviour	4.62	0.27
Pure and Applied Mathematics	4.58	0.11
Engineering and Technology	4.56	0.10
Anthropology and Archaeology	4.42	0.56
Psychology	4.40	0.45
Human Geography	4.38	0.31
Chemistry	4.35	0.23
Music, Literary Arts and Other Arts	4.27	0.37
History, History of Art, Classics and Curatorial Studies	4.26	0.40
Political Science, International Relations and Public Policy	4.24	0.30
English Language and Literature	4.03	0.53
Law	4.01	0.38
Pharmacy	3.98	0.48
Economics	3.93	0.19
Molecular, Cellular and Whole Organism Biology	3.92	0.35
Computer Science, Information Technology, Information Sciences	3.83	0.20
Dentistry	3.81	0.28
Statistics	3.81	0.28
Public Health	3.66	0.24
Clinical Medicine	3.63	0.33
Agriculture and Other Applied Biological Sciences	3.62	0.37
Marketing and Tourism	3.52	0.21
Architecture, Design, Planning, Surveying	3.48	0.34
Visual Arts and Crafts	3.44	0.27
Veterinary Studies and Large Animal Science	3.40	0.43
Management, Human Resources, Industrial Relations and	3.40	0.33
Other Businesses	J.4-	0.54
Sociology, Social Policy, Social Work, Criminology & Gender	3.16	0.61
Studies		
Foreign Languages and Linguistics	3.03	0.51
		•

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Accounting and Finance	2.69	0.31
Maori Knowledge and Development	2.67	0.52
Communications, Journalism and Media Studies	2.49	0.47
Theatre and Dance, Film, Television and Multimedia	2.48	0.47
Other Health Studies (including Rehabilitation Therapies)	2.43	0.64
Sport and Exercise Science	2.21	0.35
Design	2.04	0.43
Education	2.03	0.68
Nursing	1.58	0.87

Source: Tertiary Education Commission 2007: 101-184, recalculated for university-base staff only by Curtis.

Table 6 demonstrates a negative correlation between the Quality Score for PBRF review panels and the percentages of three subsets of academics: New Zealand-trained, Female, and both New Zealand-trained and Female. Clearly the negative relationships are not perfect (that is, the decline in Quality Score as the percentages of New Zealand-trained, Female, and both New Zealand-trained and Female increases are not negative 1.0, or 100 per cent negative), but in each case when assessed using the Pearson correlation it is strongly negative, and is significant at the 0.01 level (2-tailed test), so not the result of chance. Thus the correlation between the Quality Score of panels and the percentage of New Zealand-Trained academics assessed is negative 0.774. For Quality Score and percentage Female academics it is negative 0.849. For Quality Score and percentage academics who are both New Zealand-trained and Female it is a staggering negative 0.925. These are increasingly strongly negative correlations.

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Table 6: Panels by Quality Scores by Percentage of New Zealand-Trained, Female, and New Zealand-Trained and Female academics: for 2006 evaluation.

Panel	Quality	New Zealand-	Female	New Zealand-
	Score	Trained		Trained and
				Female
Physical Sciences	4.63	35%	14%	4%
Engineering,	4.30	37%	14%	4%
Technology and				
Architecture				
Medicine and Public	4.07	53%	29%	16%
Health				
Biological Sciences	4.05	38%	17%	8%
Humanities and Law	4.02	29%	42%	14%
Mathematical and	4.01	26%	14%	3%
Information Sciences				
and Technology				
Social Sciences and	3.82	40%	42%	18%
Other Cultural /				
Social Studies				
Creative and	3.45	40%	32%	11%
Performing Arts				
Business and	3.29	34%	29%	14%
Economics				
Maori Knowledge	2.67	80%	43%	34%
and Development				
Health	2.60	54%	55%	35%
Education	2.03	68%	65%	47%

Source: Tertiary Education Commission 2007: 101-184; Haines, pers. com., recalculated for university-based staff only by Curtis.

Some Implications

The PBRF has operated for three rounds but seems unlikely to be repeated as scheduled in 2018. This reflects the successes and failures of the new funding arrangements. From the perspective of policy-makers, who must in some sense be regarded as neo-liberal in their orientation, the PBRF, that is the Performance-Based Research Fund, has had the desired effect of making academic research output, both individual and institutional, transparent from the top-down. The extent to which it

captures academic work in its entirety is debatable. Apart from the elimination of funding beyond the university sector (i.e., to polytechnics, etc.) the competitive allocation of funding in the PBRF has had no obvious effect on university capacities. The PBRF and the publication of Quality Scores (prior to 2012), had very dramatic effects on managerial rhetoric and on advertising aimed at potential students, but the fluctuations in PBRF funding between 2003, 2006 and 2012 have not impacted much on academic subject areas or individual academics. At base this is because the PBRF only accounts for a small percentage of university funding and because the size of the university (number of eligible staff) remains a good predictor for its share of the competitive funding.

However the PBRF and the rhetoric and practices of surveillance that go with it have probably impacted academic self-image (Roberts 2009, Cupples and Pawson 2012). The focus here is on institutional drivers rather than individual accommodations to the PBRF. Certainly, research and the particular research outputs that have an international orientation have, anecdotally and experientially, become more soughtafter by academics seeking promotion, grants or simply recognition. The extent to which an increased emphasis on this aspect of research and writing has resulted in a re-prioritisation of the teaching and service components of academic work is unclear, but such a shift is encouraged by all the official markers. The focus on 'world-class' has introduced systematic biases in the Quality Scoring system that privilege subject areas that eschew the local for the international; and advantage those academics (mainly men) who have a doctorate from abroad. At the same time, the PBRF's emphasis on research quality has allowed academics who do not seek or accrue external funding to flourish by gaining high Quality Scores. That is, the Quality Scores do not include research funding as part of the metric for individuals, subjects or even institutions. Thus, Philosophy was the top ranked subject area in the first two rounds of the PBRF (and was probably so again in the third round, but the full results were not made public). This sort of excellence has created something of a problem for both politicians and policymakers who favour STEM subjects as the way forward and for the Vice Chancellors of the largest universities who have a similar perspective.

The dilemma is that the best subject areas under the PBRF are 'Philosophy', and 'Religious Studies and Theology', which are about as far away from the now favoured STEM subjects as it is possible to be. In this respect the PBRF has muddied the waters for policy-makers wanting to argue a link between world-class academic endeavour and the need for STEM subjects. This was largely resolved following the 2012 round of the PBRF by not fully consistently reporting Quality Scores. The extent to which being world class or promoting STEM subjects advances New Zealand and at what cost has not been the topic of much discussion. One obvious 'cost' is the extent to which the bias in the PBRF metric undercuts equity, in particular affirmative action around hiring and promoting female academics and Maori academics. The results of the PBRF suggest that it is not a good idea in terms of maximising Quality Scores to hire either.

Instruments for Measuring and Funding Danish University Research and Their Impacts on the Conduct of University Researchers

The Danish government's system for allocating a scale of 'bibliometric points' for different kinds of research publications (described above) was devised as a tool to bring three scales of governance into alignment. This one performance indicator was intended to work with superlative efficiency to re-orientate the sector as a whole, the management of individual institutions and the self-management of academics towards the government's aims. An evaluation after two years (Sivertsen and Schneider 2012, only available in Norwegian) looked for changes in publication patterns, but did not address the questions raised in this working paper about systematic effects on gender, discipline or background; about researchers' responses to incentives to focus on publications that 'count'; and whether such PBRAs change the concept of academic work and the balance between 'free' inquiry, applied research and contributions to informed public debate. This section draws on research on university budgeting and

accounting systems (Boden and Wright 2010, 2011, 2013) and on interviews about the bibliometric points system in a science faculty and a humanities faculty (Wright 2011, forthcoming).

The government aimed for at least one Danish university to feature among the world's top 100 in global rankings. To this end, the government instilled competition within the sector. As described above, the bibliometric points system rewarded publications in 'top journals' and when all the points for every academic in each university were totted up, this acted as one of four indicators for allocating a relatively small amount of government funding on a competitive basis. As Lucas mentions above, it takes very little money to achieve big changes in the university sector. The points system was incorporated into the internal management of universities through the 'development contracts' which the government agreed with each university, and which set performance targets against which the university was audited. One of the targets in the development contracts was for universities to develop methods of distributing their funding internally on a competitive basis. Each university did this differently. In one university, government funding was distributed to faculties and departments on the basis of their bibliometric points and their income from external sources, giving these two indicators much greater weight than in the national funding algorithm. Research by Boden and Wright (2013) in that university revealed that all the academics interviewed knew about the bibliometric points system, and some knew exactly how many points their publications had earned in the last year and how many kroner they had brought into the department. In another university, the development contract's obligation to establish competitive funding was translated into further contracts between the rector and the deans of faculty. One of the science faculties already had a system for allocating funding to departments based on publication output, citations and journal impact. For them the bibliometric points system matched both their publication pattern and their experience and it slid into place in the steering arrangement with barely a murmur. In the same university, the contract between the rector and the dean of the humanities faculty threatened to reduce the faculty's funding by 6.3 million kroner if they did not establish a system of allocating funding to departments on a competitive basis. The pro dean for research had expended considerable energy collaborating with the other humanities faculties in Danish universities and lobbying the ministry to take cognisance of the very different publication pattern in the humanities, where books and monographs were as important as journal articles, and the audience was both local as well as international. The faculty leadership responded to their contractual obligation to establish a competitive allocation system by identifying the full range of publication and dissemination activities in which members of the faculty were engaged. These were ranked on a continuous scale, which extended from 90 points for a habilitation thesis at the top end and descended through 59 items including peer-reviewed monographs, anthologies, school text books, dictionaries, translations, computer games, theatre and radio productions, conferences, museum exhibits, newspaper feature articles, consultancies, courses for firms, public lectures and debates, to interviews with journalists at the bottom of the scale, earning \(\frac{1}{3} \) point. The aim was to avoid privileging articles in 'top' journals' and to reward all academic activities. But this system provoked uproar in the faculty. A petition, signed by 128 people, argued that the points system reduced research to arbitrary measures of output, not 'quality', as claimed, and rewarded speculation in publication strategies rather than better research. A book published to generate public debate explored the logic of the system: chase points not knowledge; be a good citizen by producing large quantities of low quality publications and earning more income for your department; do not start a new research area as it takes too long to begin publishing – a path-breaking researcher is a loss-maker. Managers and academics communicated with each other through open letters and feature articles in the national newspapers in what the press called 'Humanities' cry for help'. When a new dean was appointed, one of his first acts was to abolish the points system for allocating funding. Thence followed a process of devising a new budgeting model for the faculty. The new system is based on funding departments in terms of the overheads associated with their external funding and the income from their teaching. Both of these activities generate new income and one department's success is not to the detriment of another. In contrast, if departments or

universities compete with each other to score more bibliometric points, this only increases one unit's income at the expense of another as the government fund over which they are competing is fixed; no more resources are generated overall; and the more the number of points increase, the more they are each reduced in value.

Gender and Level Playing Fields?

In the humanities faculty, two of the women interviewed supported the points system as a means of creating a more level playing field. One was an adjunct who was seeking a lectureship. She took an avowedly pragmatic approach by adopting the points system and the government's funding model as guides to her behaviour. She vowed to devote all her time and energy to publishing in top journals to earn maximum points and to getting large externally-funded grants. If this was what the leaders wanted she would reduce her focus on teaching and her 'good citizenship' in the department and just do what was required. In her view, this system made it clear to everyone exactly what 'counts' and it provided a transparent way of evaluating people in which women would be able to compete equally. She would ensure that the head of department had no excuse but to advertise a lectureship for which she could apply, and she would send in a CV which had every chance of succeeding. It would now be clear if lesser qualified men were promoted over her. Two years later she was no longer at the university.

The other woman was a professor who had won the minister's prize as a 'star researcher', and had gained competitive funding to establish a research centre and several other substantial research grants. In her experience, before the major reforms to the steering and management of universities in Denmark, elected leaders, always men, protected their own gender and research agendas. The competitive system opened up opportunities to develop areas of scholarship closed off under the previous system. She did so by establishing an externally funded centre as a self-contained oasis with the kind of collaborative, mutually supportive and 'flat' organisation that was not previously possible – and that was also insulated from the new leadership structure. To sustain the centre's funding they had to adopt a publication strategy

similar to that of their competitors in scientific fields. They had to get research quickly into the public domain and produce a high number of multi-authored articles aimed at 'top' journals. This strategy mirrored the ministry's points system and scored well in the faculty's points system. They found this level of output extremely hard for a humanities subject, but paid the price of this competitive strategy in order to gain the freedom to pursue their previously marginalised and excluded research area.

In contrast, in the science faculty, the points system was not described in overtly gendered terms. In one department, all the academic interviewees explained that they had to focus on journal articles and external funding to gain or retain their job, and that nothing else 'counted' or mattered. The levels of stress were extremely high. Both men and women put in for one externally funded project after another and worked hard to publish results by deadlines. They had no time to reflect on how this project work was making overall contributions to their field; two men said they had learnt to 'limit their ambition' to make break-through science, and one woman did not know what was meant by 'free research' time. Time was a crucial concept in this department. Some men managed to concentrate on what I termed 'performance time', just focusing on writing articles and keeping up a flow of external funding. Tasks like dealing with difficult PhD students were passed on to others. It was especially women who described their work as facilitating groups, making sure project teams worked well, and developing PhD students' research and writing skills. This, however, was what I called 'invisible time' that did not count in terms of performance and one woman, after describing such work, said she didn't know 'where her time went' as she never had time to produce the things that counted. In this faculty, where funding had been allocated according to publication and other performance indicators since the late 1990s, many women and some men did not experience a level playing field, yet they did not have a language for analysing the systematic inequalities.

Existential Threat

The science faculty showed how a mature system of steering through bibliometric indicators impregnated academics' concepts of work and value. In the humanities

faculty, the leaders said that they wanted the bibliometric points system to 'regulate behaviour' and affect academics' 'upbringing' (a word usually applied to children). Yet the leaders also argued that academics should not behave entirely according to the steering system's incentives. When critical academics pointed out they could earn more points by writing newspaper articles than writing books – and indeed gained half a point every time they criticised their own leaders in the press – the pro dean responded that highly trained and intelligent academics would not respond to the system's incentives in this way. This is a greedy stance: the leaders expected academics both to regulate their behaviour according to the points system, and simultaneously resist the system and sustain professional standards and academic values that were forged in a previous era of governance.

There was also a third, cynical stance, where leaders chided protesters for taking the points system too seriously: it was only a way to demonstrate to the minister and others who attacked humanities for being an irrelevance in a global knowledge economy that they got something for their money. Some of the interviewees in the humanities faculty tried to take this third route and publish enough that 'counted' towards a respectable points score, so as to give themselves a shield under which they could focus on the research and the forms of publication and public interaction that 'mattered'. However, many in the faculty took a fourth stance: an approach of principled opposition. For them, the points system made a travesty of the university. Its focus on high prestige academic publishing contradicted the obligation, written into the University Law, that they must interact more strongly with 'surrounding society'. Rather than a system that invited cynicism or academic gamesmanship, like salami-slicing research into multiple articles to gain maximum points, they wanted to inhabit a figure of academic integrity. One professor said that he had been 'put outside the door of his own house'. Another said that researchers had felt themselves 'hit existentially' as 'the question of self-value had been separated from the question of points'. If they were to follow the incentives of the points system wholeheartedly, be good departmental citizens, and do what it took to earn maximum points, this would change their relationship to their work, threaten their sense of professional identity

and self-worth, and undermine their ideas of academic quality. This argument was ultimately successful in the humanities faculty when the system of allocating funding according to points was abolished. In contrast, in the science faculty the systems for self-managing the behaviour of academics, for managing the university and for steering the whole university sector have been brought very closely into alignment and embedded for more than two decades. The high levels of stress in the science faculty were clear evidence of the effects feared by the humanities faculty when there is a divorce between motivation and incentive, passion and points.

Making and Materialising Research 'Impact' in a UK University

In Britain the review of the RAE, which had started in 2006 with the aim of using bibliometrics to reduce the costs of the operation, concluded in 2009 with a system for a re-named REF that was far from 'light touch'. It continued to use disciplinary panels that peer reviewed each department and the 'four best' publications of each academic submitted for assessment. Each panel could also use bibliometrics as appropriate for their discipline. However, the result of the Minister's 'rock in the pool' (see above) was to increase the size and cost of the operation by adding an entirely new element: evidence that the department's research has had 'impact' on some aspect of the economy or society. The new system was published by the UK's four higher education funding bodies in November 2009 as a consultation document: 'Research Excellence Framework: Second Consultation on the Assessment and Funding of Research' (HEFCE 2009). After the consultation, the new system would be introduced, with a submission deadline of 12 December 2013.

The Consultation set out proposals for all key aspects of the Research Excellence Framework's (REF) assessment, but here we will focus on the element to assess the *impact* of research. This reflected a shift in the policy aims across the four UK Funding bodies in order '... to maintain and improve the achievements of the higher

education sector, both in undertaking excellent research and in building on this research to achieve demonstrable benefits to the wider economy and society' (HEFCE 2011: 3).

The introduction of 'impact' into the research assessment processes represents a dramatically different way for UK academics to think about the significance and value of their academic research. But what does it mean? In broad terms, impact was to signal not just that academic research had to be of high quality (internationally excellent) and thus had the potential to make a contribution to knowledge, but that now it had to have a demonstrable societal outcome - and thus an evident public benefit. In essence, outputs and outcomes were being separated. As was to become increasingly clear, this meant not just that academics had to disseminate their research findings to the wider community, but that the burden of proof lay with the researchers who had to show that their research was making a demonstrable difference to the specific communities it was intended to inform. In other words, what was being called for was more than public engagement - which can be viewed as largely outwardfacing activity. Impact was to be accompanied by evidence from those 'stakeholders', 'beneficiaries' and 'users' that there had been visible changes to their ideas, activities and circumstances as a direct result of this research. Impact thus can be seen as a radical new policy in UK universities.

However, to put it so clearly – as if 'REF impact' arrived intact with a fully articulated meaning that was ready to be implemented – would be to overstate what the policy makers (in this case HEFCE, the regulatory agency for higher education in the UK), the institutions and their academics interpreted impact to be. Yet over much of the period from the launch of REF in 2009 until the end of 2012, in the three key spaces of 'impact' policymaking, interpretation and practice, that is, in HEFCE, the university, and the 'unit of assessment' in which groups of academics were housed, there was a great deal of mutual incomprehension as to what impact would look like, and thus what it meant as a practice.

The Game Gets Going

Over the period 2009-2011, HEFCE commissioned a series of pilots around the UK – including two from the university in this case study – to determine how to frame the requests to universities for accounts of 'impact', what pathways to impact might mean, how to weight the relationship between research outputs and their impacts, and what account of the unit of assessment's environment would reveal the conditions more likely to lead to impactful research. These were then reviewed by the trial panels (e.g. social policy, clinical medicine) which included 'users' on them. These outcomes were then fed into the production of a more detailed set of rules for engagement, including confirmation of the weighting of impact, which was set at 20 per cent of the overall REF framework weightings.

It was only in 2011, following the above pilots of 'impact', that a stronger definition emerged:

Impact is defined as an effect on, change or benefit to the economy, society, culture, public policy or services, health, the environment or quality of life, beyond academia (HEFCE 2011).

The report also confirmed what the rules would be for all the units of assessment, though it was widely reported that the different REF panels would be interpreting impact in somewhat different ways and that institutions should read the guidance for the appropriate panels. These rules were:

- 20 per cent of the assessment is allocated to 'impact'; made up of cases and an impact environment statement which is worth 15 per cent of the overall 20 per cent allocated to impact
- Each unit of assessment must send in 1 case per 10 staff submitted for assessment, plus 1 extra case
- The originating research could go back 20 years but the outputs and outcomes which are the basis of the 'impact' claim must be from January 2008 to July 2013.

 All the research used in the 'impact' claim should meet the threshold of 2*, in other words, national excellence.

But what is excellent impact? 'Reach' and 'significance' emerged as two key code words and they became crucial terms in discussions amongst university administrators and the teams set up to write the 'impact cases' in the units of assessment. It was on the basis of reach and significance that they were being asked to decide in favour of one potential impact case as opposed to another. Even so, the guidance provided by HEFCE stated that the final decision about the meanings of these terms lay with the REF panels, once the REF evaluations started.

The Players and Rules for Engagement

In early 2009, the case study university being reported here established a University Impact Committee. On the committee were several academics, but in the main it was dominated by the university's public engagement officers, its in-house journalists, and REF administrators. The public engagement office and journalists, of course, had considerable expertise in *translating* academic research into publicly available science on the university website and its various publications. In the regular meetings which were scheduled, there was considerable talk about this new aspect of REF, the potential challenges in getting academics to understand what it involved and then getting them on board, and what structures and incentives might be put into place to bring the various Schools and their academics along.

An early message was decided: that impact was simply making visible what academics already did (and well). Several faculties – particularly those regarded as potentially at risk – were encouraged to run audits of public engagement. Over the course of 2009 a university impact strategy was developed, and there were workshops in all of the Faculties guided by the following objectives:

1. To communicate about the 'impact' agenda, especially in relation to the REF and the production of case studies

- 2. To identify areas of impactful research within the Faculty ideally to include some areas of research that are currently less well known
- 3. To develop outlines of narratives that describe impactful research
- 4. To create a community of people who will cascade information about the impact agenda to their colleagues, and to advise on how best to prepare for the REF in this regard.

A central portal was established with documents, resources, and designated contact points. The University Impact Committee also managed the two impact pilots and used its connections to HEFCE to gather any intelligence that might filter back into the institution.

By 2010, the University Impact Committee deemed it was important for all Schools within the University to have a designated Impact Director. This person would be the person responsible for presenting the case to all academics in the 'Unit of Assessment' – in this case the Schools within the University for taking 'impact' seriously in their School, for the initial trawl of potential cases, for the identification of actual cases and for helping to work these up with the academic(s) concerned. In organisational change parlance, these were termed Impact Champions.

In early 2012, units of assessment were asked to submit both outline REF narratives, and indicative REF cases. These were read by the administrative unit managing REF and REF impact, as well as one Impact Director from another School. And it is in this very moment that learning about what other Schools were doing in a Faculty began to play a seriously important role in the shaping of the texts that described each of the Impact Cases. Meetings, exchanges of different practices, the development of exemplars – and so on – began to play an increasingly important role. However in this process too, the learning began to converge around practices and take on the form of a common language.

Back in the University Impact Committee, however, as the results of this first round of assessment were reflected upon, there was visible disappointment from the REF 'impact' administrators. One major concern was that academics had confused impact with public engagement. This was hardly surprising, given that academics had been sold 'business as usual, only make it more visible'. It was clear that there was a major bridge that needed to be built to bring academics closer to what was required.

The Impact Directors had a great deal of work before them. This meant considerable amounts of rewriting of cases by the Directors to communicate back to the academics what impact really meant, and how best to fill in the template, including the sections where the pathways to impact and the evidence trail needed to be made very explicit. This rewriting was complemented by detailed notes from the central administration as to how to decode each section.

Impact also became the new game to be played within the university. There were now annual impact awards, money available to develop the audit trails for cases, and a greater range of exemplars on the portal. Workshops, template practice ... and repractice, and impact case mentors across all of the university were put to work.

A further round of cases and critique were put under the microscope in early 2013, with School Impact Directors charged with communicating back to those academics who had developed cases. Impact also began to acquire status. Staff submitting impact cases added these to their list of achievements for promotion. Assessments of the reach and significance of each case would be scored as either 1*, 2*, 3* or 4* (the higher the star rating the greater the degree of reach and significance of the impact). Potential 3* or 4* cases were sent off to the university consultant journalist for even further polishing. New forms of differentiation were now at work in the School, with academics now (and there were not many, considering that a unit of assessment must submit 1 case per 10 staff plus 1 in addition) valorising value in this new status economy. In theory, groups of academics, much as in a science-lab model might make up a case, including the current impact of work of former colleagues who had since left or even indeed died. However, in the social sciences the model tends to be a single individual working on an area of research. This then reinforces further the individualism in these kinds of discipline areas.

The whole process, however, was marked as much by incomprehension as anything else. Academics submitting cases found it very difficult to talk about outcomes, as opposed to outputs. It was equally difficult to assess the esteem they believed these outputs (their papers) represented. How could they gather good evidence of outcomes, when in some cases the users and beneficiaries lived on the other side of the world? Who were the academics' 'public'? How might they write their cases so as both to demonstrate their understanding of their beneficiaries' interests and make them believable for the user groups on the REF panel? Where might they look for impact?

Academics found themselves spinning fairytales about their influence that were likely to be far from the reality on the ground. It felt a great deal like an Alice in Wonderland world – where the normal rules for engagement in the university were all topsy turvy. Well known London School of Economics Professor, Patrick Dunleavy (2012), weighed into the debate by running a public blog on REF Impact. And as he noted:

...don't let this apparent 'reality gap' in Hefce's approach put you off. Instead, take a deep breath, hold your nose tightly, and plunge into the process. You will have to accept that you'll be doing stuff that stinks a bit, and that your hands will get a bit dirty. ... Eschew false modesty and overscrupulousness, while yet maintaining as much academic integrity as possible.

A dirty business? Perhaps, but a deadly serious business and the university administrators believed that a lot was at stake and there was a lot to play for. The university REF administrators estimated that the financial return of a 4* impact case would generate £720,000 over 5 years, though there was never any discussion as to the huge transaction costs to get there. Resistance came from unlikely quarters. Engineers took the view this was a waste of time, and the financial returns were certainly not worth the effort that it took. More likely sites of resistance turned out to be highly compliant, because indeed the stakes were much higher for them financially.

What Are the Likely Outcomes on Academic Staff?

Already academics work in a changed environment. A whole new set of structures and processes are at work as a result. Early phases of incomprehension have been replaced with now quite tight guidance from the centre – even though it is well know that it is still early days and the panels themselves will generate their own rules for interpretation. But this case does demonstrate something very important about the implementation process: it is a complex activity of moving backward and forward between academics, support staff and managers that gives rise to form and meanings, rather than a top-down process of implementing pre-formed ideas. And impact is already changing what it is that academics do, and need to do, to get by.

Conclusion

These accounts show that the research quality assessment systems in the UK, New Zealand and Denmark have evolved as they have moved to new contexts and accumulated more and more purposes. They now act as a quality check, a method of allocating funding competitively between and within universities, and a method for governments to steer universities to meet what politicians consider to be the needs of the economy. Drawing on the studies reported here and the discussions that followed their presentation to the URGE symposium, four main points can be highlighted in conclusion.

Narrowing of the Purpose of the University

Even though the UK and New Zealand systems originated before there was talk of a global knowledge economy, PBRAs gained renewed purpose when governments accepted the arguments of the OECD and other international organisations that, in a fast approaching and inevitable future, countries had to compete over the production and utilisation of knowledge and in the market for students (Wright 2012). 'The work of nations' (Reich 1991) was to ensure that the research and a high skills workforce were available for 'knowledge organisations'. Governments saw universities as the

source of these new raw materials, and PBRAs became important mechanisms to steer universities in particular directions. However, they are quite a blunt instrument. Whether they use peer review, as a first order quality assessment with very high transaction costs, or cheaper bibliometrics, which rely on second order quality assessments via the reputation of the publication outlet and publishers' and editors' quality controls, PBRAs' assessment methods prioritise 'academic' publications with notoriously few readers. Such publications are also heavily weighted in global rankings of universities, and this focus is therefore appropriate where governments aim for their universities to claim 'world class' status in order to attract global trade in students. However, such an instrument steers academic effort away from other purposes of the university, which might also be part of government's aims, for example transferring ideas to industry or more widely contributing to social debates and democracy. For example, Danish universities have a legal obligation to contribute to 'surrounding society', and New Zealand universities' responsibility to 'act as the critic and conscience of society' is also written into law. In Australia and later in the UK (Bastow et al. 2014) PBRAs have tried to adopt multiple purposes – both research quality and social impact, but as Robertson's case study shows, this steers academic effort in two directions at once and has high transactional costs. The Times Higher Education, in its preliminary survey of the transaction costs of REF, quoted one director of academic services' explanation of why her institution's REF submission contained 86 pages of information on 'impact' and 'research environment' compared with just 34 pages for the previous 'environment' and 'esteem measures in the 2008 RAE. Their account of impact had to satisfy three kinds of readers: academic, commercial and client. She said, 'The only thing we could liken the experience to would be writing up a PhD thesis with 20 supervisors' (Jump 2014). In all cases, PBRAs define 'what counts' – and only certain aspects of the multiple missions of the university are privileged in this way, with the danger of narrowing and impoverishing of the mission of the university.

Glorification of Leaders

Just as measures become targets, so such steering tools become the main rationale of management and are used by them to reshape the university. One of the points raised in discussion at the URGE symposium was how governments' steering of universities through such measures relies on enhancing the powers of leaders. Lucas has shown how the history of the UK's RAE is paralleled by the emergence of a managerial class to control the university's performance. Robertson's case study records how yet another new administrative apparatus was developed to advise and quality control academics in the devising and writing of 'impact' case studies for the REF. These systems of steering universities have not only contributed to what in the U.S. is called universities' 'administrative bloat' (Ginsberg 2011) but also what was referred to in the URGE symposium as the 'glorification' of vice chancellors. When university managers' Key Performance Indicators in New Zealand and the UK are based on improving their university's status in national and global rankings, they become organisational imperatives. Spark's article, quoted by Lucas above, gives a vivid example, which rings true with many academics' experience, of the ruthlessness involved when a manager demands that a head of department extracts the performance that 'counts' from a close colleague, regardless of human cost. A new language has emerged that speaks of the violence involved in the RAE, for example, 'cutting off the tail' of departments – getting rid of academics who, regardless of any other qualities and contributions, score low in RAE-able publications. As Shore and Wright (1999, 2000) have demonstrated, the RAE is a totalising and coercive system. In New Zealand, the PBRF rationale has not taken over the life of the university so compulsively and other narratives about the purpose of the university are still available. The discussion at the URGE symposium was not able to find a full explanation for this difference, although New Zealand academics told how universities had used the PBRF strategically to distinguish their profile from other tertiary education institutions and fend off competition for 'their' state budget. Nor is there an explanation in the literature for the different degrees to which PBRAs invade the academic life of universities in different countries.

Myths of the Level Playing Field

In all three countries, PBRAs are accompanied by rhetoric that their standardised metrics obviate favouritism and install meritocratic advancement. In both the Danish examples above, and in examples from the UK given at the URGE symposium, it was argued that before there used to be baronial departments and only the head of department's (usually male) cronies succeeded. Now, the argument goes, there are clear criteria for 'what counts' and all can strategise, individually, to succeed. Examples were given of how, in New Zealand, independent thinkers have been liberated from conformity, as long as they play the PBRF game. The new metric for promotion fetishises external funding and according to this rhetoric, transparent criteria should lead to both excellence and equity. According to the above rhetoric, only 'lazy do-nothings' do not do well under this system, yet Curtis' analysis also reveals that the PBRF systematically disadvantages women, those trained in New Zealand, and those studying New Zealand issues. In the UK, the RAE also systematically disadvantages women. Such sociological analyses have not, however, dented the prevalent meritocratic discourse.

Robertson's analysis of the shift from RAE to REF in the UK clearly shows the systematic disadvantages of different systems. Subjects like nursing, public policy and some humanities, which had done badly under the RAE's focus on academic publications were now good at demonstrating 'impact' in the REF. For these subjects, the income from REF 'impact' would make a considerable difference whereas, for some other subjects, such as engineering, the cost in academic time to put together REF cases demonstrating their undoubted 'impact' would not yield sufficient returns, compared to their other sources of income.

Dangerous Coherence.

PBRAs act as tools of governance when their definition of 'what counts' pervades government steering, university management and academic identity formation. This form of governance is most effective when one indicator or measure 'conducts conduct' across all three scales and brings them into alignment (Wright forthcoming).

Its effectiveness is further enhanced when the practitioners continue to maintain to themselves and each other that these are objective and neutral measures in an administrative procedure which produces unquestionable 'results'. On the contrary, as these studies have shown, PBRAs are 'political technologies' (in Foucault's terms, Dreyfus and Rabinow 1982: 196) which cloak the way they work and their political effects under an appearance of administrative neutrality and necessity.

The UK's REF 'impact' factor has the potential to have a wider impact by rocking the system. The minister threw his rock at the narrowness of what was made to count in the RAE. By making the university focus coherently on four articles per academic in top journals, he was concerned that academics were unavailable for policy advice. In other words, the government-endorsed indicators, used as a coherent form of governance, narrowed the purpose of universities and turned their resources away from other ways of contributing to society. The UK has tried to turn the tanker around by introducing 'impact' as a second, import measure in the REF assessment and rankings of universities. Importantly, the method also introduces two further changes in 'what counts'. First, it is departments (not individuals) that have to demonstrate the impact of their research to society, and this smuggles in a collective dimension to academic endeavour. Second, departments have to make their case through a narrative account, not disembedded, quantified indicators. This opens up alternative ways for universities to 'account' to society by describing what they do, rather than by reducing their multiple and interlaced activities to a number or score that gives a false illusion of comparability and commensurability. New Zealand universities have a legal obligation to be the 'critic and conscience of society'. Danish universities have a legal obligation to engage with and disseminate their research to 'surrounding society'. Both have the potential to diversify 'what counts' if they devised performance and funding measures in keeping with their legal obligations. Hopefully, the UK's quest for 'impact' will have a wider impact, of unmasking the operations of PBRAs as political technologies and their role in a pervasive form of governance that is narrowing and impoverishing the public purpose of the university.

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