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The Relationship between Teaching and Research: where does geography stand and deliver?

ALAN JENKINS, *Oxford Brookes University, UK*

ABSTRACT *Many academics, including distinguished geographers, believe in the close interdependence of teaching- and discipline-based research. However, much of the considerable international research evidence questions this close positive relationship. This research is analysed and then more recent research reviewed which suggests that there can be productive relationships between staff research and teaching, if teaching and research are conceptualised in ways that enable them to be effectively linked, and if staff research is 'managed' to benefit student learning. Hence, geographers should design courses and organise teaching and research to ensure that students benefit from (staff) research. Also, as a disciplinary community we should research the nature of teaching–research relationships in the discipline and the impact of our practices and policies.*

KEYWORDS Teaching, research, geography, discipline, research assessment, teaching policies.

> There was a clear evidence of scholarship and research activity having a beneficial impact on teaching and learning in around half of the providers visited. (Higher Education Funding Council for England, 1995b, p. 9)
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> … the research universities have often failed, and continue to fail, their undergraduate populations, thousands of students graduate without seeing the world-famous professors or tasting genuine research. (Carnegie Foundation for the Advancement of Teaching, 1998, p. 1)
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> The strongest policy claim that derives from this meta analysis is that universities need to set as a mission goal the improvement of the nexus between research and teaching. The goal should not be publish or perish, or teach or impeach, but we beseech you to publish and teach effectively. *The aim is to increase the circumstances in which teaching and research have occasion to meet, and to provide rewards not only for better teaching or for better*

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> *research but for demonstrations of the integration between teaching and research*. (Hattie & Marsh, 1996, p. 533, emphasis added)

This article was prompted by Ron Cooke's address to the 1999 annual conference of the Royal Geographical Society/Institute of British Geographers. Speaking (in his then new role as Chair of the Higher Education Funding Council's Learning and Teaching Committee) [1] on 'Quality Assurance in Higher Education', he challenged us to consider "Where does geography stand on the relationship between teaching and research?".

In the UK this issue has an immediate relevance because of the rapid expansion to a mass higher education system. However, the question is of international significance. Indeed, as I will show, there are strong parallels between how these issues manifest themselves in the UK, Australasia and North America, and perhaps elsewhere. Certainly in Australia and the UK the issue has an added urgency, as governments, funding bodies and universities themselves reorganise research funding and rethink the role of research. My intention is to ask us all to consider, and perhaps reconsider, where we stand and deliver on that relationship, as individuals, members of departments and as members of our national and the international community of geographers. In particular, I will argue that if we really value research, we need to look at the teaching–research relationship in the light of the considerable research and scholarly literature on that relationship. This evidence should cause many of us to rethink where we stand on or how we conceptualise these issues, and more significantly how we 'deliver' (i.e. how we practise). To offer my own 'mea culpa' I too have had to radically rethink how I see that research evidence. I conclude with some suggestions on how geography departments and the disciplinary community should seek to deliver on teaching–research relationships.

The main focus is on undergraduate teaching, partly because the association between staff research and teaching at postgraduate level is perhaps more self-evident (though still requiring scrutiny), but mainly because it is at undergraduate level that the relationship is most problematic and the issues of policy and teaching practice are most important and difficult to resolve. However, the issues analysed in this article are highly relevant to the growing range of (taught) postgraduate courses.

Quotable Geographers

Consider whether these two quotations encapsulate or miss your view on the relationship between teaching and research in geography. Ron Johnston (1996), reviewing the external review (the Teaching Quality Assessment [2]) of British Geography Departments, argued:

> For many of us, teaching and research are inextricably linked in a university context: you can't have one (teaching) without the other (research), and where the latter is absent then the institution does not fit the (my?) standard definition of a university as an institution in which knowledge is stored, created and disseminated… Since it surely goes without saying that people who train students to higher degree level must themselves be active researchers, then to my mind at least a majority of those employed in British universities must necessarily be active researchers… *Why are some geographers so concerned*

> *about an assumed negative impact of research activity (and the accompanying competition for RAE grades) on undergraduate teaching? Alan Jenkins (1995) is particularly associated with this view …* (Johnston, 1996, pp. 161–162, emphasis added)

Ron Cooke (1998), speaking in the context of the development in the UK of a national system for the accreditation and 'training' of university teachers, argued that:

> One of the enduring memories I have taken with me from when I had a real job as a desert geomorphologist is that all the issues of teaching and learning ultimately focus more on individuals and disciplines than on institutions and government policies; and quality of teaching performance is more a function of intellectual substance, and of individual intelligence, vision, enthusiasm and knowledge, than it is teaching competencies, although of course all are important. These memories underlie my continuing prejudice *that the best teaching and learning is led by the best researchers, provided that they are appropriately trained to teach, a view that may well explain why there is such a high correlation in the UK between Teaching Quality Audit (TQA) and Research Assessment scores.* (Cooke, 1998, p. 283, emphasis added)

Though Johnston's and Cooke's emphasis differs here in detail, both see quality teaching being closely linked to and dependent on quality research at the level of the individual academic and academic department. Clearly it is this view of the close interdependence of teaching with research excellence (which is mirrored in Ron Johnston's account) that shapes Ron Cooke's challenge to geographers to determine where we stand on the relationship between teaching and research.

The Two Stances Criticised

Three things distinguish the stances of these two distinguished geographers, both of whom have been amongst the discipline's major researchers, and I know to have demonstrated a strong concern for teaching. In arguing for the close interdependence of quality teaching and research, they are stating a view that is widespread in academia (Brown & McCartney, 1998; Davies, 1998; Hughes & Tight, 1995) and that has been also stated by other geographers in *JGHE* (Gardiner, 1993; Lee, 1992). However, they totally ignore the considerable international research literature on teaching–research relationships. Relatedly, their arguments selectively use limited positivist-style evidence, such as TQA grades and Research Assessment Exercise (RAE) grades, to draw normative-style conclusions as to what should be the nature of the university and the roles of academics.

The answer to Ron Johnston's query as to why some geographers (myself included) "are so concerned about an assumed negative impact of research activity" is that much of the research and scholarly evidence (see later discussion) confirms my concern about the impact of staff involvement in research on undergraduate teaching. I also point out that the article to which he refers (Jenkins, 1995a) was about the impact of the RAE on undergraduate teaching in the UK. I can, however, envisage a very different (external) quality-review process for research 'performance' which should ensure that there are positive impacts of staff discipline-based research on student learning. Of that, more later.

The response to Ron Cooke's "continuing prejudice" that "the best teaching and

learning is led by the best researchers" is what he says himself: it is a prejudice. Or perhaps more fairly, I think it translates his own experience as a student and as an academic, learning and working in high-prestige research universities, onto the system at large. It also ignores the research evidence and it makes the mistake that surely he would never make as a geomorphologist: of deducing causation from correlation. The fact that there is a strong correlation in the UK between the grades for the external review of teaching (TQA) and those for research (RAE) is often commented on, particularly by those in high-ranking departments and institutions. This is not just a parochial UK question for it asks whether those institutions—e.g. in the USA the Carnegie Research 1 universities, in Australia the 'sandstone universities' such as the University of Sydney—are those with the highest quality teaching.

Such comments on the association between research and teaching 'performance' generally ignore that many of those in the UK making these arguments have attacked the validity and the reliability of the TQA process and thus effectively argued that the scores from which this correlation is derived are suspect. Moreover, the high correlations may simply measure the impact of the greater wealth/resources, and prior funded research activity of the high-ranking institutions. The research evidence from one major research study in the USA (which will later be considered in more detail) is that those colleges which scored highly on both research and teaching were those which spent more money per undergraduate student and were academically highly selective (Astin & Chang, 1995). However, in this study, in general, those institutions with the highest scores on research were not those with the highest scores on teaching.

Moreover, in the UK there is strong practitioner evidence which suggests that the TQA process (in geography) may have been distorted by the 'halo effect' of research reputation (Chalkley, 1996). This is also indicated by the limited research on this issue. Entwistle's study (1995) of the TQA process in Scotland has indicated that assessors' judgements of teaching quality were heavily swayed by features such as good libraries and laboratories rather than the actual teaching or student learning. Some departments were rated as 'excellent' for teaching where the assessors judged that 'unimaginative' teaching prevailed. Milton, director of a recent review of the UK Quality Assurance process for teaching, has recognised that "because we look at a range of issues related to quality, these better resourced institutions are always likely to do better in the overall ratings" (Baty, 1999, p. 7).

In addition, as in most correlations, there are significant departures from the mean (Higher Education Funding Council for England, 1995a). Thus there were some geography departments with high research scores that did not fare well in the teaching quality exercise. Yet some departments with low RAE scores were praised for the quality of their teaching and the learning their students demonstrated (Healey, 1997). For example, the Geography and Environmental Studies Department at Liverpool Hope University College, which was not even entered in the 1996 RAE, was rated 'excellent' and commended for the quality of the observed teaching and the supportive learning environment for its students, many of whom entered with limited formal entry qualifications (Jenkins, 1998). Should that department—or similar ones in the UK and elsewhere—now focus on improving staff research productivity as a way of improving teaching quality and student learning? For that, surely, is the logic of Ron Johnston's and Ron Cooke's remarks? Or does it mean that the way for such institutions to improve their student learning is for taxpayers, parents and students to pay lots more money so that these institutions can hire more research-active staff and ensure that all staff and all departments are well funded for research?

Mea Culpa: viewing correlations through tinted glasses

Having criticised others, it is about time that I elaborated on how my own views on teaching–research relationships have had to change. I have long been involved in attempts to improve teaching within geography (Jenkins, 1997) and within my own institution. The lesson that I have had to learn is that at times I have conflated my very real difficulties in getting teaching valued by those staff whose priorities were with discipline-based research with viewing staff research as an *intrinsic* obstacle to improving teaching quality. More recently I have failed to separate my concerns for the impact of the RAE and research selectivity on undergraduate teaching from recognition of the very real (potential) value to student learning of staff discipline-based research.

Relatedly, while I have long read the (research) literature on teaching and research, I have read it through those lenses. I too have been impressed by a whole series of correlation studies, for much of the research in this area has been statistical. Thus in the article that Ron Johnston cited, I attempted to give substance to my concerns about the negative impact of RAE research on a commitment to student learning by arguing (Jenkins, 1995a, p. 372): "For those … who believe, as many do, that quality teaching is functionally related to quality research, I emphasise that many research studies have analysed this relationship". The overwhelming conclusion from these studies is that "no empirical support is found for the view that a necessary link, tight coupling or 'nexus' exists between undergraduate teaching and discovery research in the university. Twenty-nine studies completed prior to 1987 and four more recent studies lead to the broad conclusion that there is little functional interaction between undergraduate teaching and discovery research" (Ontario Council on University Affairs, 1994, p. 18).

I have also often cited Astin's detailed study of over 200 US institutions, which concluded: "a college whose faculty is research-orientated increases student dissatisfaction and impacts negatively on most measures of cognitive and affective development" (Astin, 1993, p. 363). To give further substance to my argument and to emphasise the international nature of this research evidence questioning the value of staff research, I would cite Ramsden and Moses's (1992) empirical study in Australia. This analysed faculty research and teaching effectiveness across a large number of varied institutions. It concluded that "the results revealed typically no relation or negative relation between teaching and research at the level of the individual and at the level of the department across all subject areas … It is concluded that there is no evidence in these results to indicate the existence of a simple functional relationship between high research output and the effectiveness of undergraduate teaching" (Ramsden & Moses, 1992, p. 273). As an overall 'proof' that the research evidence questions the positive impact of staff research, I often drew attention to the vast research literature on higher education that is brought together in Pascarella and Terinzini (1991), and delighted in citing their conclusion "that good teachers are researchers is a myth and that, at best, the association between ratings of undergraduate instruction and scholarly productivity is a small positive one, with correlations in the .10 to .16 range" (Terinzini & Pascarella, 1994, p. 30).

That all seemed pretty conclusive to me of the negative or perhaps null benefits of staff discipline-based research (at undergraduate level). But then, as part of a research team that analysed teaching–research relationships at Oxford Brookes University (Jenkins *et al.*, 1998), my colleagues and I systematically re-read the research literature and all that seemed solid about teaching–research relationships had to be reconsidered. For I too had been seeing correlations through tinted glasses or from a prejudiced

position. So I now set out what re-reading that research taught me, and then draw from it the implications for how geographers should stand and deliver on teaching–research relationships. To preview the argument:

- I have shown above that the conventional wisdom of the close interdependence between staff discipline-based research and student learning is not supported by the statistical research on this issue.
- In the next section I show that in analysing the research or commenting on this issue we have to recognise the complexities of the issues we are considering.
- Recognising that complexity I then review the statistical and in particular the more recent qualitative research and scholarly evidence, which offer suggestions that would enable staff discipline-based research to benefit student learning.
- Before concluding with a set of recommendations for the discipline, I briefly consider how the twin processes of globalisation and information technology may be transforming these relationships, and how the view of governments and others that research is central to national and international economic and social 'performance' may shape the policies we adopt and how we act as academics.

Problems of Definition and Measurement

In reading the research, scholarly and policy-orientated literature and when pronouncing and making policy on these issues, we need to recognise their utter complexity. This careful analysis of terms and variables is central to both valid research and effective policy and practice.

(1) We need to begin with careful definition of key terms such as 'excellent', 'teaching', 'student learning', 'scholarship', 'research' and 'university'. We need to decide how to conceive and to model the relationships between these categories. Thus in a recent review of the research evidence, Hattie and Marsh (1996) analysed nine models of the relationship between staff discipline-based research and teaching. Their analysis was that these models fell into three broad categories: first, that there was a negative relationship between teaching and research; second, that there is a positive relationship, where the basic model is the conventional wisdom of academics that research benefits and is essential to good teaching; and third is the group of models that suggest that there is a zero relationship. In this article I essentially focus on the conventional wisdom that staff discipline-based research benefits teaching and student learning. (Very few studies have looked at how teaching might benefit research though Gardiner (1993), drawing on his then experience as an HMI, gives good examples of this from UK geography departments in the then public sector.)

(2) In particular one needs to recognise that much of the statistical literature focuses in part on the *outputs* of staff research such as the number of publications. Other studies, in particular some of the recent qualitative research, focus on what staff have learned from research as *process*. Relatedly, in analysing teaching (and whether it links to staff research) one may need to distinguish between different methods or conceptions of teaching.

(3) We then have to consider the scale of observation. Is it of the individual teaching session, an individual teacher, the department, the institution and the (international) disciplinary community? Are we considering the quality of first-year or advanced undergraduate specialist options, taught master's courses or doctoral education?

(4) We continually need to go back to our conceptions and models of the relationship. Thus if we posit a positive relationship, do we hypothesise that students benefit from individual staff research because staff have qualities of superior knowledge, authority or reputation, or are simply more intelligent or more hard working than less 'research-active' staff and are therefore better teachers? Or is the connection in how these research-orientated staff teach their courses through getting students as active researchers of the discipline (and this is seen as being 'quality' teaching)? Or is the positive connection through students being enthused and motivated through contact with that research, top researchers and the sense of being in a high-ranking department?
(5) We should ask whether students are one category and whether we need to control and disaggregate students for characteristics such as gender, age and reasons for attending university.
(6) We should also ask who are fit and appropriate 'judges' of teaching and research. Is it students, parents and taxpayers, discipline-based peers, those academics with expertise and training in teaching, potential employers and/or funding or accrediting bodies?
(7) We need to establish whether the categories 'teaching' and 'research' are totally separate, or in analysing them do we need to see them as entities that blur and combine?
(8) In positing a relationship between teaching and research activity, we have to decide what is the time span considered. For example, for 'excellent' teaching, is it sufficient for the teacher to have been research 'active' say 5 years ago, or do advanced option (or introductory) courses need to be taught by those currently involved in research?
(9) We have to consider how to recognise and how to measure or assess 'excellence' in teaching and research. This then surely leads us to ask on what research evidence these definitions are based e.g. what theories of student learning underpin views of what is 'excellent' or just 'effective' teaching?
(10) We should ask if these issues are differently played out by disciplines. For example, are the relationships between teaching and research different in history from those in biology? Within a discipline as broad as geography we may hypothesise that the relationships between teaching and research might be different between say GIS and cultural geography.
(11) We can also ask whether these issues are shaped by type of institution. For example, are or should the relationships be different in high-prestige research-based institutions from those that focus on providing access to less economically or socially advantaged students?
(12) Finally we should ask whether the relationships vary by cultural and national views as to the role and purpose of universities, and how teaching and research is funded, reviewed and rewarded.

These questions need to be uppermost in our minds as we read the research and scholarly literature.

A Review of the Research Evidence

Most of this research has been about the undergraduate level. (For other recent reviews see Braxton, 1996; Elton, 1999; Hattie & Marsh 1996.) Many of the studies have been

in the positivist and experimental tradition of analysing the relationships between measures of 'research' and 'teaching'. Such studies have been at the level of the individual, department and, to a limited extent, the institution and the national system. Measures of 'research' used in these studies tend, at the level of the individual, to be the numbers of publications or the importance that staff ascribe to their role as teachers. Probably reflecting the cultural importance of student ratings in the US higher education system and the availability of research funding for large national surveys, many of these studies have been in the USA (and to a lesser extent Canada). This North American focus may or may not be significant in shaping the validity and the international generalisability of this research, though similar studies have been carried out in Australia (e.g. Ramsden & Moses, 1992). The overall conclusion one is likely to draw from these many research studies is at best seeing staff research as having a marginal, positive impact on student learning, while you can read that research to see staff discipline-based research as having a negative impact. Alexander Astin's (1993) study of 212 US baccalaureate universities and colleges concluded that a college whose faculty is research-orientated increases student dissatisfaction and impacts negatively on student learning. This study is not based on simple measures of student ratings of staff. It is rigorously designed and largely shaped by longitudinal measures of student development over the 4 years of their course. However, the methodology also indicates some of the limitations of this type of research. The 'research orientation' of faculty in an institution was measured by staff answering a questionnaire, 10 questions of which were by factor analysis seen as significantly clustering. These questions included: "(1) How many articles have you published in academic or professional journals? … (3) Do your interests lie primarily in teaching? … (10) How many days during the past academic year were you away from campus for professional activities?" The 'student orientation' combined seven items including: "(1) Faculty here are interested in students academic problems … (7) Faculty are easy to see outside of office hours … (10) There are many opportunities for student–faculty interaction".

The problem with this and many of the similar correlation studies is that they often rate research orientation or research quality through productivity measures. They are thus often either directly or indirectly measuring time spent in research. Perhaps highly productive researchers, departments, institutions and disciplines are not intrinsically poorer or less effective teachers—they simply are less available to students and/or spending less time designing courses and teaching materials. Perhaps. Such a possibility should caution us when interpreting this research evidence. It might also move us to consider the research evidence on how academics spend their time and how that time is managed and organised (e.g. Court, 1996, 1999), and how staff are rewarded and appraised (Ramsden, 1998). Also, and perhaps more significantly, such studies nigh inevitably conceive and treat teaching and research as relatively discrete entities, which perhaps makes it less likely that they will discover interrelationships.

Recent Research Foci and Conclusions

The Importance of Course Design and Academics' Conceptions of Teaching and Research

Building on this research, more recent studies have developed qualitative and quantitative methodologies that try to go 'beneath' these correlations. In a seminal article Brew and Boud (1995, p. 261) comment that these "investigations of the links between

teaching and research … have failed to establish the nature of the connection of the two". They point to the limitations of much of this research, including an emphasis on correlation studies. They call for "more fine grained studies" (p. 272), focused on how academics experience teaching and research. They hypothesise that "if there is a link between the two it operates through that which teaching and research have in common; both are concerned with the act of learning" (p. 261). While academics are not going to learn key pedagogical skills and attributes through doing subject-specific research, research can give them the experience of the process of 'deep' learning which then potentially can be communicated to students. They suggest that teaching and research are correlated when they are co-related and in conclusion suggest that one way to achieve this is to "exploit further the link between teaching and research in the design of courses" (p. 272).

Recently, based on ongoing research using phenomenographic analysis of interviews on academics' conceptions of the research process, and research on student learning which reveals the importance of learners constructing their understanding, Brew (1999a, p. 299) argues that "the relationships between teaching and research are dynamic and context driven". The contexts include whether research is seen as an objective product or as a process of enquiry, and whether teaching is seen as transmission of what is known or an exploration of what is not known by students. "If researchers recognise the ways in which their activities parallel those of students and take steps to involve students in research-like activities, research can inform practice in facilitating learning" (p. 298). Similarly, Barnett (2000, p. 63), who in previous work had questioned the teaching/research nexus (see below), has now argued that universities need to be reformulated to help society deal with supercomplexity. In that context, he argues that:

> … teaching and research are activities that are separate and distinct and are not to be confused. However, research is a strong condition for teaching: being engaged in research of a frame-developing kind and projecting that research to wider publics is a strong—although not exactly necessary and certainly not sufficient—condition of teaching that is aimed at about bringing supercomplexity in the minds of students… *Institutions but also their students have a right to expect that their lecturers are engaged in research … but the issue is whether lecturers adopt teaching approaches that are likely to foster student experiences that mirror the lecturers' experiences as researchers.* (Barnett, 2000, p. 63, emphasis added)

If this perspective is accepted, there are major implications for how teachers teach and students are assessed (Brew, 1999a, 1999b; Elton, 1999). As teachers we need to move radically away from the traditional lecture and forms of assessments to methods that mirror the research processes (in our discipline).

Students Perceive Benefits from Staff Research but Quality Teaching is a Bottom-line Requirement

Neumann is similarly critical of the previous research emphasis on correlation studies. Her central critique is that: "To date no studies have been located which directly examine the teaching–research nexus with a focus on students' views" (Neumann, 1994, p. 324). In a large Australian research-oriented institution, some 28 students in a range of disciplines and from first-year undergraduate to doctoral students were interviewed in depth on their experiences of teaching and learning. Her conclusions were that there

were tangible benefits to students of staff research, mainly through students perceiving that their courses were up to date and that staff demonstrated interest in what they were studying. Also, staff research interests gave students "the opportunity to see their teachers as real people and to be able to glimpse what they do, how and why" (Neumann, 1994, p. 335). "However, many students were also critical of subjects in which a teacher's individual research and research interests were seen to dominate, particularly at the expense of the aims of the course. *Further, up-to-date knowledge and interest in the subject were not seen as substitutes for good teaching practice*" (Neumann, 1994, p. 327, emphasis added).

Powerful factors influencing how students perceived the relation between staff research and their own learning were their own motivation, their year or level of study (the connections were in general clearer to upper level students) and academic discipline.

Our own study at Oxford Brookes parallels Neumann in its methodology and findings (Jenkins *et al.*, 1998) [3]. Eight undergraduate discipline-based focus groups of four to six students were interviewed using a common interview schedule. The disciplines chosen reflected contrasting knowledge types and were also controlled so that the disciplines chosen had fared differently in the 1996 Research Assessment Exercise. We also controlled for year of study. Half of the groups were year one and half were graduating year three students. Geography was not one of the disciplines studied.

Our key finding was that students consider that the principal role of the university and academics is to teach them and teach them effectively. That was a bottom-line requirement and it clearly reinforces the views of Neumann's respondents. Across all the disciplines and years of study there was a common set of core characteristics of perceived effective teaching. These were: communication skills; approachability; availability outside class; ability to enthuse students; and up-to-date knowledge. The first three characteristics will not stem directly from research training or from what research tells us makes an effective researcher, while time spent in research will nigh inevitably reduce availability outside class. (Even with the academics working evenings and weekends, at some point time is not elastic!) The lack of availability of staff was a definite source of concern to students. This was magnified when it was seen as a product of time spent on research, when students saw no benefit to them of staff involvement in research. However, students were generally unaware of why staff were doing research, what research they were doing or why that research was meant to benefit students. They did not see the university or the academic departments making them 'stakeholders' in staff research. Relatedly, in what we have described as the 'Alien Abduction Theory', students noted that in 'X Files' fashion some staff were periodically absent, sometimes for a whole term. When they returned they looked the same, but surely something had happened to them? But what these sabbaticals were was not explained to them; nor were they informed of the presumed benefits to them. Yet students did perceive clear benefits to them of staff involvement in research. These were what many of us would hope for: in particular, up-to-date knowledge, enthusiasm and academic credibility of the lecturer, the department and their degree.

A related questionnaire-based study at Oxford Brookes (Breen & Lindsay, 1999) suggests that student motivation to study is an important variable in undergraduate student attitudes to staff research. In this study, students who came to university for social contacts or to gain a useful qualification were indifferent to staff research. Students who claimed to be interested in learning for its own sake were more likely to express positive attitudes to academic research and staff involvement in that research. A third group of students who described themselves as having no interest in communicat-

ing with staff were the only ones who demonstrated an overall negative view of staff research. Clearly, this study questions the conclusions drawn from much of the previous research, which often effectively treats students as one group. (These two Oxford Brookes studies are now being replicated with postgraduate students.)

The Discipline May Shape the Relationship

Neumann's (1994) student respondents saw a clearer connection between staff research and the curriculum in science subjects, such as biology, where knowledge was seen as changing rapidly, than in other physical sciences and mathematics, where knowledge was perceived as more fixed. The importance of the academic discipline as an important factor shaping the (lack of) connection was also observed by Neumann (1993) in a related study of the views of senior university administrators. The role of the discipline in shaping how the teaching–research relationships are perceived is also demonstrated by Jensen's (1988) interview-based study of the views of academics in Denmark and Rowland's (1996) study of the views of Heads of Department at Sheffield University. To my knowledge, other than a highly flawed study by Knight (1987, see also Jenkins, 1988) and one by Batty and Mathews (1988), there has been no systematic research on teaching–research relationships in geography.

The Role of the Discipline, Department, Institution and What Counts as Research

Colbeck (1998) sought to move beyond much of the previous research, which treated research and teaching as separate categories. The behaviour and roles of 12 academics were studied in detail, amongst other things seeking to understand how "university, departmental and disciplinary contexts influence the ways and extent to which faculty integrate teaching and research" (Colbeck, 1998, p. 649). The sample was chosen from staff in two contrasting disciplines in very different US institutions (the names are fictions for disguise): one, 'Vantage', a high-prestige research university (according to Carnegie Classification a Research University 1) and the other Cosmopolitan University (a Master's University 1, i.e. equivalent to a former UK polytechnic). In both universities she observed staff from two departments from contrasting disciplines, physics and English studies. Research on disciplines (in particular that by Becher, 1989 and Biglan, 1973) has suggested that there are major differences between 'hard' and 'soft' disciplines. In 'hard' disciplines such as physics, knowledge is seen as cumulative, is heavily quantitative, is often researched in teams and is aimed at establishing universals. Here curricula are often tightly defined, linear and cumulative. By contrast, in 'soft or low paradigm disciplines' such as English studies, knowledge is seen as more recursive, where research may well involve re-interpreting work done by others and is often done by individuals. Here curricula are more idiosyncratic and disciplinary norms give more latitude to individual staff interests and roles.

The conclusions Colbeck draws from this clearly limited sample include:

- The 'low paradigm consensus' in English gave staff more freedom to design their courses and integrate their research with their teaching. By contrast, in physics, staff research interests were often beyond the understanding of undergraduates or even beginning postgraduate students.
- However, in those aspects of the undergraduate and postgraduate curriculum which were focused more on research training, the linkage between staff research and student

learning was stronger in physics than in English. The group nature of much of the research culture in physics, and what Colbeck describes as the 'master–apprentice' model of research supervision in the discipline (where graduate and undergraduate students might well work with staff on research topics), enabled physics staff more clearly to integrate teaching and research roles.

- Staff were also more able to link the roles of teacher and researcher in those departments with participative decision making and where staff had more control over what and how they taught.
- Paradoxically, staff in the less well-resourced university found it easier in one respect to link their teaching and research. At Vantage University, 'research' for faculty evaluation was narrowly (or some would say precisely) interpreted to mean standing as an original researcher amongst peers in the discipline. By contrast, at Cosmopolitan University faculty evaluation for 'research' included the writing of textbooks and creative works in popular media. Colbeck (1998, p. 661) draws a strong contrast between two physicists. Of her sample of 12 staff, the person who demonstrated in how they spent their time the strongest integration between the teaching and research roles was a physicist at Cosmopolitan University "whose research involved writing an introductory textbook incorporating new pedagogical techniques". By contrast, at Vantage University a physicist who previously had written an acclaimed computer-aided physics course text had declined to write a follow up because he knew his "department colleagues would not recognise the value of such a project".

Conclusions on the Research Evidence

As well as demonstrating that teaching–research relationships are both complex and have been extensively researched, clear conclusions can be drawn from this research. I largely agree with Hattie and Marsh's (1996, p. 529) conclusion that "the common belief that teaching and research are inextricably entwined is an enduring myth. At best teaching and research are very loosely coupled". To that I would add that the recent research by Neumann, at Oxford Brookes, and by Colbeck offers encouragement to those of us—myself now included—who believe in the importance or even just the potential of staff research to enrich (undergraduate) student learning. While these studies require further testing in a range of institutions, national systems and disciplinary types, this more recent research also indicates that for that 'coupling' to occur requires careful action by individuals, departments, the disciplinary communities and national funding and review bodies.

The Peculiar Case of the UK Research Assessment Exercise

It is important to note that the foregoing conclusions as to the research evidence come from studies in a variety of countries. This suggests they are picking out something that is intrinsic in teaching–research relationships. However, care has to be taken in making these cross-national links, for there may be cultural differences in how the roles of academics and universities are perceived (Barnett, 1992), and there are critical differences in how teaching and research are funded, organised and externally reviewed. In the UK, this has a particular salience because of the impact of the separate external reviews of teaching and research. But again this experience is internationally relevant, for all (national) systems have to consider how to fund and review teaching and research.

There have been two qualitative research studies that have analysed the impact of

these external controls either directly or indirectly for their impact on teaching–research relationships in UK geography departments. My own pilot study (Jenkins, 1995a, 1995b) of the impact of the RAE was based on the accounts of 14 geographers from a range of institutions who anonymously described how the external TQA exercise and the external RAE was impacting on undergraduate teaching in their department. I concluded that the impact of the RAE was fundamental in that its funding arrangements were pressurising geography departments to prioritise research, seemingly at the expense of undergraduate teaching, and in certain cases leading to a separation of teaching from research. There was strong evidence that the perceived values and rules over what counts as research were leading staff (particularly in high-ranking research departments) to decline to write textbooks and to withdraw from involvement in nationally funded information technology projects.

This increasing separation of teaching from research, and the functional specialisation of academic work, is also a theme in James Sidaway's (1997) sociological analysis of interviews with some 40 British geographers as to how external factors were transforming the 'moral economy' in which geography is reproduced.

While recognising the partial nature of these two research studies on the impact of the RAE in geography, they are reinforced by the findings of McNay's (1997a, 1997b, 1998) study for the Funding Council of the overall impact of the RAE. He concludes that the funding rewards the RAE offered led at the level of the individual, the department and the institution to "*a gradual separation structurally of research from teaching*" (McNay, 1998, p. 196, emphasis added). Department heads reported that "good researchers spend less time teaching …and more undergraduate teaching is done by part-timers and postgraduates" (p. 199).

These studies give us as geographers in the UK, and elsewhere, clear directions for action. They do not demonstrate that a focus on research has to be at the expense of teaching. They do point to, even 'prove', that the RAE is leading in geography to an élite tier of research departments (this after all is a stated central intent of the exercise) and within departments to a separation of undergraduate teaching from research. (If this is happening that is not its stated intent.) I think they do demonstrate that the RAE (like the faculty evaluation culture and practice at 'Vantage University') devalues the production of textbooks and other learning materials, and in that respect is not supporting teaching–research linkages. I would now go further in arguing that the UK system of separate external reviews of teaching and research is threatening the integration of teaching and research. If discipline-based pedagogic research is seen as one way of forging links between staff research and student learning then the widespread perception that the RAE does not value such research is further evidence of its negative impacts on teaching–research linkages (Yorke, 1999). Some would no doubt see those conclusions as going beyond the evidence. Some might see those developments as desirable. These studies do demonstrate the common-sense conclusion that the way national systems fund and review teaching and research will shape the extent to which they are likely to benefit each other, and how academics spend their time.

A Review of the Scholarly Evidence

There is a massive scholarly literature [4] on the roles of teaching and research in higher education which can only be briefly considered here (for four different perspectives see Ben-David, 1977; Boyer, 1990; Barnett, 1992; Clark, 1997). In the postwar UK and elsewhere, the idea of a close connection between teaching and research, which both

Cooke and Johnston support, has been a dominant view. In the UK the Robbins Report on the then future of higher education (Committee on Higher Education, 1963, para 555) argued that university staff should both teach and carry out research on the grounds that "the element of partnership between teacher and taught in a common pursuit of knowledge and understanding, present to some extent in all education, should become the dominant element as the pupil matures … It is of the utmost importance that the ablest, who are capable of going forward to original work, should be infected at their first entry to higher education with a sense of the potential of their studies." The American scholar Burton Clark, as do others, traces this view back to Wilhelm Humboldt, brother of Alexander, the nineteenth-century German geographer! For Clark (1997, p. 242) "research activity can and does serve as an important mode of teaching and a valuable means of learning …" He further argues that "student involvement in research is an efficacious way to educate throughout the education system the great mass of students, as well as the elite performers, for the inquiring society into which we are rapidly moving". But note that Clark here posits a view of the future which others might contest. What is perhaps more significant to this article is his emphasis on the *process* of research as inquiry, of *students as researchers* guided by research-active staff, that provides the link with effective teaching from postgraduate to elementary school level. He dismisses the "American literature on the research–teaching connection. For that literature is centred on undergraduate 'teaching', a faculty activity located in the undergraduate lecture hall and undergraduate instructional classroom. Research is then viewed as a separate faculty activity, one that may be quite removed from teaching and opposed to it in the use of academic time" (Clark, 1997, p. 242).

In contrast, there are scholars such as Barnett (1992) who point out that much research—particularly in some disciplines and some national systems—is largely conducted outside universities in private and public 'think tanks' and large commercial and corporate institutions. Moreover, in many universities research has become a commodity important to institutional, department, disciplinary and individual survival and advancement, but whose connection to higher education, to teaching and learning, is at best incidental. He concludes that:

> Institutions of higher education do not need to conduct research in order to justify the title 'institution of higher education' … A genuine higher education today cannot be operated entirely separately from some kind of research base. But that does not mean that either institutions of higher education or their staff are obliged to conduct research. Staff, though, do need to have the time and resources to keep up with their field of study so that they are immersed in its conversations. So the *argument here is just not theoretical: it has policy implications* (Barnett, 1992, p. 631, emphasis added)

He illustrates this view with the analogy "of the musical soloist to the score. There is no demand on the soloist … to produce new scores. But it is paramount on the soloist to be so acquainted with the score … [as to offer] a critical commentary on it" (Barnett, 1992, p. 631). With approval he cites Lewis Elton's (1986) review of the literature on teaching–research relationships which argues that the link between teaching and research lies in scholarship, or the re-interpretation of existing knowledge (see also Elton, 1992). Thus, following this interpretation of the evidence, one could argue that teachers in higher education are required to be active scholars of their discipline, to be fully aware of and able to interpret that knowledge to students. It may be important that at some point they have done research and had research training. But they need not currently be

(centrally) involved in discipline-based research. In the language of the RAE they need not be 'active researchers'. However, somewhere some geographers need to be doing that research and effectively communicating that to these 'teaching scholars'.

The Boyer Critique and the Scholarship of Teaching

A related and immensely influential argument is that of the late Ernest Boyer and his colleagues at the Carnegie Foundation for the Advancement of Teaching (Boyer, 1990; Glassick *et al.*, 1997). They argue that the Germanic, natural-science-based view of the role of the university has resulted in a devaluing of teaching, particularly at undergraduate level, and a devaluating of broad integrative scholarship including the writing of textbooks.

They see that at the heart of the issue is how faculty spend their time and in particular how they are rewarded, i.e. what aspects of the job result in promotion and prestige. Boyer (1990, p. xii) argues that "research and publication have become the primary means by which most professors achieve academic status, yet many academics are drawn to the profession precisely because of their love for teaching or for service". They argue for a broader conception of 'scholarship' that values the various roles of universities and faculty. They identify four separate but overlapping areas of scholarship:

- the scholarship of discovery research;
- the scholarship of integration, including the writing of textbooks;
- the scholarship of service, including the practical application of knowledge;
- the scholarship of teaching (for discussions of what this might mean for geography see Jenkins, 1998 and Healey, 1999).

Note that in presenting Boyer's work in this section on scholarship I have perhaps not given it the 'research' legitimacy it deserves. For though this work has mainly been presented in accessible scholarly works, it is based on a whole series of primary research investigations. For example, Carnegie Foundation surveys have shown that "sixty per cent of the faculty in our country would rather teach than do research … and in the 1990 survey nearly seventy per cent of all the professors … said that we needed better ways, besides publication, to measure faculty performance" (Boyer, 1994, p. 127).

There have been similar critiques of this 'academic drift' in the UK, Australia and elsewhere, a major thrust of which is calls to professionalise teaching through accreditation and training and to change promotion procedures to reward teaching and teachers (Gibbs, 1995a, 1995b; Ramsden *et al.*, 1998; Ramsden, 1998). Indeed, Ron Cooke in his speech to the 1999 RGS/IBG conference, and clearly speaking for the Funding Council, stated that "the balance between teaching and research has moved too far towards research" and signalled that there would be moves to reward teachers and teaching financially through promotions and in other ways. Similarly, stimulated by the Boyer critique, a task force of the Association of the American Geographers concluded that "Geographers employed in American colleges have too long been hired to do one job (teaching) and rewarded for doing another (research)" (Abler *et al.*, 1994, p. 9). One of the major US conferences on higher education is now the American Association for Higher Education's annual conference on 'Roles and Rewards', where departments and institutions report on how they are implementing Boyer's work.

However, even if one agrees—as I do—with the Boyer critique and the arguments for giving greater priority to teaching in promotion, that still leaves open how to handle the

relationships between teaching and discovery research. Indeed, there are certain strong connections between the critiques of (US) undergraduate education by Boyer and Clark. In *College* (Boyer, 1987) Boyer and his co-workers strongly criticised the dominant passive lecture-based student experience, the separation of undergraduate education from inquiry- or research-process-based teaching and the lack of connections between research-orientated staff and (undergraduate) student learning. Indeed, much of the thrust of the powerful reform movement that stems from Boyer's work is to bring research as student inquiry guided by (research-based) staff into the undergraduate curriculum (e.g. Carnegie Foundation, 1998—http://notes.cc.sunysb.edu/Pres/boyer.nsf/). Book titles such as *Promoting Inquiry in Undergraduate Learning* (Weaver, 1989) and *Student Active Science* (McNeal *et al.*, 1996) demonstrate this movement to better connect staff research and student learning. Relatedly, major research funders in the USA such as the National Science Foundation are requiring undergraduate student involvement as junior researchers in some competitive research awards to faculty.

Teaching–Research Relationships in a Mass Higher Education System and where Globalisation and Information Technology are Transforming University Teaching

In seeking to formulate an appropriate and evidence-based conception of teaching–research relationships governments, institutions, departments, disciplines and individuals have now to confront the pressures and potentials of mass higher education systems and the likely impacts of the twin processes of globalisation and information technology. When in 1962 Ron Cooke and I graduated from the geography department at University College London, we were part of an élite system, with small classes, low student–staff ratios and learning full time at residential campus-based institutions. In 1963 the Robbins Report that inquired into the then future of UK higher education recommended a modest expansion. Now in the UK and elsewhere, geography and other disciplines are taught in higher education systems that teach a third or more of an age cohort at very different student–staff ratios from those in the early 1960s. Many students work part time and pay directly for their education. The research and anecdotal evidence tells us that for many students desired future job prospects provide their motivation to be at university, and certainly many need to be acculturated to study in higher education (Zhou *et al.*, 1999). Moreover, new, more practice-based disciplines, such as tourism and business studies, are rising in prominence. Internationally, geography and geographers are being reorganised and the discipline reconstituted as evidenced by the growing importance of applied work and the development of degree courses such as geography and tourism. In such programmes there are evident pressures for staff to have industrial or commercial experience, which limits the time and resources for research. Indeed, such industrial experience and ability to do consultancy might be more potentially valuable to student learning than staff expertise as academic researchers.

All this calls into question the research-based (undergraduate) teaching conception of the university that Robbins propounded for the UK, for such was founded on the view that teaching should be done by staff at one institution, most or all of whom were teacher/researchers. Indeed, in the UK the large-scale expansion of higher education from the 1970s to the early 1990s took place in polytechnics and colleges whose staff were not directly funded to carry out research. Staff in such institutions were expected to be 'scholarly' in their knowledge of their discipline, and many did do subject-based research, but the system limited that research by not explicitly funding it. Effectively the UK (and the Australian system) was moving towards the US model of

a differentiated mass higher education system where research staff are concentrated in an élite tier.

The Impacts of Globalisation and Information Technology

In deciding where we stand and deliver on teaching–research relationships we have to recognise that the structures and institutions of higher education are likely or even certain to be radically transformed by the twin processes of globalisation and information technology. One can readily see hypothetical scenarios in which universities that were once at 'one' place may soon be at many places and linked into regional, national and international consortia. Curricular materials may be produced by a range of staff in a number of institutions (including publishers and software companies) and delivered globally to students who study at home, and to institutions where (part-time) teacher scholars support student learning. Already in geography there are examples of projects that suggest possible futures (Rich *et al*., 1997). In the USA the virtual geography department (Foote, 1999, http://www.utexas.edu/depts/grg/virtdept/contents.html) provides a mechanism for staff to share curricular materials and use courses that have been designed by others. In the UK, GeographyCal produced courseware for a wide variety of geography courses (Robinson *et al*., 1998), and the virtual field-course project (Dykes *et al*., 1999, http://www.geog.le.ac.uk/vfc/index.html) was a research/curriculum development project where a consortium of four institutions produced software that can be used by geography departments anywhere.

To repeat, the impact of such developments is speculative. Such hypothetical scenarios have not been researched for their impact on teaching–research relationships. They are, though, the subject of think-tank style scholarly reports for individual institutions and national systems. See, for example, two Australian studies which try to chart the nature of academic work in the twenty-first century (Coaldrake & Stedman, 1999) and consider how the Australian system can develop a more diverse institutional base (Kemmis *et al*., 1999).

In the context of globalisation and the impacts of IT, Barnett's (1992, p. 631) arguments have an added force: "that does not mean that either institutions of higher education or their staff are obliged to conduct research". One can readily see scenarios in which somewhere someone needs to be doing research, but that could be elsewhere in the world and perhaps outside academia. Even if one accepts Ron Cooke's (1998, p. 283) view that "the best teaching and learning is led by the best researchers", that 'leadership' could be 'elsewhere'.

Research and the Knowledge Economy

Yet, the perhaps contradictory pressure is that research is now seen as vital to the new 'knowledge economy' with implications for both the curriculum and the organisation and funding of research. The emerging economy is seen as one that requires individuals with creativity and ability to create, find and synthesise new knowledge. However, in the view of a recent report "our educational structures are lagging behind … The dominant educational paradigm still focuses on *what* students know, rather than *how* they use that knowledge" (Seltzer & Bentley, 1999, p. 9). If this is taken to be so, then students' understanding of the research process and ability to do research may be the vital 'key skill', and thus should be central to the curriculum for most if not all students. If this

perspective is accepted, it reinforces my argument that the Boyer and Carnegie critique of HE is in part an argument for the effective coupling of teaching and research.

The Pressures for Research Selectivity

As private companies and governments see the role of research in creating wealth, they set up their own research units (and private research universities) to carry out that research quite separately from any teaching function. Thus much of the fundamental research is taking place outside higher education. Governments and private companies also fund higher education to carry on research that is seen as productive. There are large rewards for that research, which governments and some university authorities argue should be concentrated in particular departments or institutions. Beckhradnia (1998, p. 3), Director of Policy for the English Higher Education Funding Council (HEFCE), points out that while in teaching the aim of the Funding Council is to be relatively equitable in funding teaching and students, in research "we take the view that it is in the national interest that we should concentrate the money on units and departments which are of the highest quality". The result of similar trends in the postwar USA was the rise of the large research universities, departments and graduate schools and a highly differentiated higher education system, in which in all disciplines—including geography—research and research funding are highly concentrated. Similar concentrations of research in élite institutions are apparent in other national systems. Thus, a recent Australian government review of research training in higher education sees research in terms of wealth creation: funding is to become more highly selective and competitive to ensure world-class research and researchers. The discussion of how to ensure links to undergraduate teaching and learning is conspicuous by its absence (Commonwealth of Australia, 1999).

The Recommendations of the Dearing Report

In the UK the Dearing Report (NCIHE, 1997, http://www.leeds.ac.uk/educol/ncihe/), in charting the future of UK higher education, supported the "arguments in favour of research selectivity" (as through the Research Assessment Exercise). However, partly as a result of a visit to the USA, it was "persuaded … of the important role of research and scholarship in informing and enhancing teaching" (para 8.7). It recognised that "there is a near universal rejection of the idea that some institutions of higher education should be teaching only institutions" (para 11.60). However, it saw that "to inform and enhance teaching" was but one of four roles of and reasons for funding research in higher education. The other three were:

- to add to the sum of human knowledge and understanding;
- to generate useful knowledge and inventions in support of wealth creation and an improved quality of life;
- to create an environment in which researchers can be encouraged and given a high level of training.

Dearing further argued that the financial incentives for institutions to promote research were resulting, particularly in the ex-polytechnics and colleges, in staff doing research for which they "may not have been trained and are not, in all cases suited", and "resulting in a downgrading of teaching" (para 11.63). (The parallels with the Boyer critique of US higher education are clear even if the particular funding and external

quality arrangements are different.) The report proposed that one way of resolving this problem was to make it "attractive for departments or institutions who feel that their main strength is teaching to opt out of the RAE and receive instead a modest allocation of funds (for example, no less than £500 per capita) relating to the number of their permanent teaching staff" (para 11.64). Though this particular 'solution' was immediately rejected by the UK higher education system, we should note the view that for the Director of Policy for HEFCE "this was a serious proposal to tackle a serious problem" (Bekhradnia, 1998, p. 5).

Johnston (1995, 1998) has shown powerfully how the result of this research selectivity, and this Dearing-based view of the role of research *vis-à-vis* teaching is resulting in the UK in a move towards a small élite of research departments with particular research foci based on research teams (and a possible narrowing of the student curriculum). Outside this élite tier, many geographers will work and many geography students will learn in departments where staff will have little or no time to do research.

HEFCE and Parliamentary Reviews of Research Policy and Funding

When in January 1999 Ron Cooke challenged us as to where we stand as a discipline on teaching–research relationships he was clearly raising fundamental questions. These now have an added urgency for UK academics. For in advance of the results of the RAE 2001 exercise, the Funding Council has started a fundamental review of research policy and funding (HEFCE, 1999b) on very similar lines to the Australian review (Commonwealth of Australia, 1999). Amongst the concerns of this UK review is the need to maintain the international competitiveness of the research base and ensure that research policies and funding continue to promote high-quality research. Relatedly, but from a position that is critical of the impacts of the RAE on research and on teaching, a Labour MP on the House of Commons Education Select Committee has recently stated that "in January 2000 the … Committee … begins a major enquiry into higher education. The operation of the RAE is expected to feature significantly in it. Watch this space" (Marsden, 2000, p. 11).

Conclusion

Clearly the central answer to Ron Cooke's challenge as to where geographers should stand on the relationship between teaching and research is founded on the considerable generic and limited discipline-based research and scholarship on this issue. As academics, we should not argue for the value to society of research and scholarship, and then ignore it when we act and pronounce on our own roles as academics. In this conclusion I briefly recall the central results of the research and scholarly evidence and then outline what I see as the implications as to where we should stand and deliver as individual geographers, members of course teams and as a disciplinary community.

The central conclusions are that, while recognising the utter complexity of the issue, we can 'stand' or state our understanding of these issues as follows:

- The 'conventional' view as stated by Cooke (1998) and Johnston (1996) of the close interdependence at the level of the individual academic is not supported by the research evidence, while even at the level of the academic department it is not self-evident. However, nor does the evidence support the 'no functional relationship' view as stated by the Ontario Council (1994), or the more 'cautious' statement by

Beckhradnia (1998, p. 5) "I have not seen any convincing empirical evidence for a causal relationship between teaching and research".

- There is a considerable research and scholarly literature on teaching–research relationships, much of which questions the value to student learning of staff involvement in research. Much of that research can, however, be criticised for an overemphasis on correlation studies and for treating teaching and research as separate categories.
- More recent research has demonstrated that the 'nexus' between teaching and research is potentially a valuable one for student learning, in particular for those students with a strong academic orientation to their studies. Realising the link is probably dependent upon staff who see research as enquiry, and teaching as helping students to construct their understanding.
- For this nexus to be realised requires careful planning and organisation. There is some evidence that course teams can achieve this. However, we know little as to how departments, institutions, national systems and disciplinary communities can achieve this, though there are pointers to action.
- Some of the research, in particular the work of Colbeck (1998), indicates that the discipline is a key variable shaping the relationship. We might hypothesise that the broad nature of geography, which incorporates content and methodologies from both 'hard' high consensus and 'soft' disciplines, will mean different teaching–research relationships within the discipline and between geography and other disciplines. However, we have effectively no research to guide us as geographers *per se*. So this both suggests a research agenda for the discipline to support and indicates that as we practise and pronounce we do so with an awareness of that uncertainty, and a recognition that until the research is done within the discipline we will have to stand on the generic research.
- In formulating an evidence-based practice and delivery of teaching and research, we have to confront the realities of mass higher education systems, and the likely challenges of globalisation, information technology and the view of governments that research is central to national and international economic and social 'performance'.
- While more recent research has demonstrated the potential value of staff research to student learning, it does not follow that all staff need to be 'research active' or that all departments need to focus on discipline-based research. What does follow is that, as Hattie and Marsh (1996, p. 533) argue, "the aim is to increase the circumstances in which teaching and research have occasion to meet, and to provide rewards not only for better teaching or for better research but for demonstrations of the integration between teaching and research".
- It appears clear that how national systems fund and review teaching and research effects how staff and institutions see their role and the extent to which they effectively link student learning and discipline-based research.

While recognising the gaps in the research evidence, there are clear pointers for action by individual geographers, course teams and departments who want to ensure that students benefit from staff research. I consider that this will be most important for those individuals or departments who wish to pursue a research focus, and for those students with a more 'academic orientation'. But the messages have a general relevance to all geography departments and all national and international professional organisations of geographers.

At the level of the individual academic and the department, the key to where we should stand and deliver is in how we design and deliver courses, how we manage student expectations and how we conceive of teaching and research (for

further explication of this, with examples from geography departments, see Jenkins, 1998).

- We should design courses to ensure that students experience the practice and process of research and develop their abilities as researchers (and perhaps develop their abilities to 'transfer' these skills into future employment). In many cases this will require fundamental curriculum re-thinking, for the focus has to include an emphasis on active learning methods and a radical re-thinking of how students are assessed. The literature coming out of the work by Boyer and colleagues (see the previous discussion about scholarship) is particularly relevant.
- Through what and how they learn, students need to become aware of geography as a research-based discipline. Here we need to think not just about those synoptic or 'capstone courses', advanced options and student dissertations, but also how we design introductory modules (see below).
- Staff should manage the student experience of staff research. Students need to know why (certain) staff are involved in research and what the presumed benefits are to them. One excellent example of this is at University College London, where all first-year geography students in seminar groups interview a member of staff about the nature of and role of their research (Jenkins, 1998). Effectively, this acculturates students to learning in a research-led department. This may not be an appropriate model for non-research-élite departments, though the basic idea was developed by Cosgrove (1981) for a third-year course at the then Oxford Polytechnic. But the general point is that departments need to inform students and manage their experience of staff research (and consultancy) and ensure that students feel themselves to be 'stakeholders' in that research.
- Students should have opportunities to reflect and report on how they are experiencing this research-informed and research-based curriculum. This needs to go beyond questionnaires at the end of a module to more rigorous research-based evaluations with the results of that research feeding back into the curriculum.

At a departmental level we need to experiment with different models of organising teaching and research. Some departments may wish to require all staff to be research active in the discipline and for their teaching to be research-based in both subject-matter and methodology. It may be that some staff should take a leading role in discipline-based pedagogic research and/or become specialist scholars in the teaching of the discipline, but conduct little or no discipline-based research. Departments outside the few élite research departments may realistically have to recognise that restricted funding restricts a research-based approach to selected staff and courses. However, this may mean that non-research-active staff are supported (particularly through sabbaticals and promotion) in developing a scholarly teaching-based career.

All staff centrally involved in supporting student learning need to be aware of and use the current research on student learning and be aware of the current debates in their discipline. In short, they should be (discipline-based) teacher scholars (Healey, 1999; Hutchings & Shulman, 1999). This requires that they receive initial professional training as teachers and then are required and supported to develop that knowledge and those skills throughout their career.

Departments need to recognise and decide on what should count as research and that it may well be that if they want to integrate teaching and research they may need to widen the concept of research to include the production of teaching materials and pedagogic research. We should also consider how department- and institutional-based

funding of research and its quality assurance processes can foster effective teaching–research links. There are limited examples of good practice to guide us here. Earlham College, a US liberal arts college, requires 'pedagogical impact statements' for all internal research grants. One of the Deans who designed the system argues that the statements enable departments "to talk about teaching and research to a point when something can actually be done to ensure that they complement and reinforce each other" (Bakker, 1995, p. 133)

I am well aware that these suggestions are based as much on recognising the likely 'realities' of funding and the likely impacts of information technology as on what the research and scholarly evidence suggest is desirable. But what is axiomatic is that the impact on student learning of these different forms of national and departmental funding and organisation be systematically researched. As a disciplinary community we should also communicate how different departments seek to balance and link teaching and research (see the recent *JGHE* symposium edited by Butlin (1999) on this issue).

Moving up the scale to the level of the discipline at national or international levels, the research and scholarly evidence are less clear in their pointers to action, mainly because little of the research has been at that scale. Furthermore, this is where decisions are largely at the level of governments and funding bodies, and where questions of available finance and balancing priorities shape the resources allocated and the organisation of teaching and research. Perhaps paradoxically then, my central argument is that we should try to ensure that at all levels from that of our own department to that of the national system decisions and actions should be evidence based. This means that we have to argue that, where there is no research base to guide action, research be funded, be conducted rigorously by independent researchers, and the full results be made public and be acted upon.

Thus, to return to the UK Research Assessment Exercise, I think that the evidence is clear that whatever its impacts on research, it is having negative impacts on teaching. HEFCE (1999) has stated that the current review of the RAE will consider other national systems of funding and quality assurance. For example, what is the impact of the system in New Zealand where the Academic Audit Unit "is required to audit not only the research policies and procedures of the university, but also how it links research and teaching, and the effect of this link" (Woodhouse, 1998, p. 39)? Some of the research that is now coming out from New Zealand universities suggests that this form of external audit is fostering a better awareness amongst academics of teaching–research relationships and perhaps strengthening the linkages (Robertson, 1999; Willis *et al.*, 1999). Clearly in the UK (or elsewhere) both government and the Funding Council will not be easily moved from their view that research should be selectively concentrated. (Nor perhaps will the heads of geography departments and Vice Chancellors at, say, Bristol, Oxford or York Universities?) But as academics we should require them to ensure that this perspective is rigorously researched and that the arguments for research concentration in particular institutions and departments be based on research evidence. As a minimum, as a disciplinary community, we should argue that any selectivity should not harm undergraduate teaching.

But I think we should go much beyond this minimum position. My reading of the research and scholarly evidence is that staff discipline-based research can and should be 'organised' to benefit student learning. In whatever national system we work, we should argue that staff discipline based-research and scholarship be adequately funded and reviewed in ways that maximise the benefits to student learning. This will have evident implications for both research funding and the external (and internal to universities)

processes of teaching review and funding. Certainly in the UK we should be arguing for a system of external review and funding that links teaching and research and an end to this divisive process of the two external reviews, the RAE and the QAA.

I will end with suggestions that are more in our control. In whatever type of institution we work—'sandstone', 'research led' or 'concrete', 'access led'—whether we are Vice Chancellors, Heads of Department or newly appointed lecturers, we should be arguing for independent research-based investigations as to whether our institutional mission and our departmental teaching and research policies are underpinned by research evidence. At a minimum, we should ensure that is the case for our department and above all for the courses or elements of courses that are under our control. For even in the managerial cultures in which most of us now work, when the classroom door is shut there is still space for us to act as we see fit.

Finally, as members of national disciplinary associations and international organisations, I think we have to argue that such associations should research and gather good practice on how individuals, course teams and departments have sought to link staff research and student learning, how they have sought to balance and effectively link staff expertise as teachers and researchers, and how they have researched the impact of these policies.

That is where I 'stand' and try to 'deliver' (Jenkins *et al.*, 2001). What about you? What are the position and actions of the geography department and national geography association of which you are a member?

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Correspondence: Alan Jenkins, Oxford Centre for Staff and Learning Development, Oxford Brookes University, Oxford OX3 0BP, UK. Email: Alanjenkins@brookes.ac.uk

NOTES

[1] The Higher Education Funding Council for England and Wales (HEFCE) sets policies and allocates funding for higher education institutions.

[2] For those unfamiliar with the UK quality assurance system: in the Research Exercise (RAE), departments were rated by discipline-based panels in 1992 and 1996 on research quality from 1–5 with 5 being the top score. In Teaching Quality Assurance (TQA) in 1994–1995, separate external reviewers rated geography departments for their teaching as being excellent, satisfactory and unsatisfactory. While current (2000) procedures are different in detail, the essential features of separate national external reviews for teaching and research remain.

[3] Details on that research, bibliographies on teaching–research relationships and suggestions on how geography curricula can be designed to better ensure that students benefit from staff discipline-based research can be found at http://www.brookes.ac.uk/services/ocsd/link1/ltrnew.html

[4] By research I am taking the classic view that this means some form of 'original enquiry', as for example in the UK Research Assessment Exercise. "Research … is to be understood as original investigation undertaken in order to gain knowledge and understanding … Scholarship embraces a spectrum of activities" (HEFCE, 1997, p. 17). Scholarship is often seen as keeping up to date and

contributing to the public discussions in the discipline (e.g. in the writing of textbooks) but not contributing directly to 'original enquiry'.

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