Higher education's role in 'education for sustainability'

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This paper describes some of the drivers for 'education for sustainability' that exist in universities and also explores some of the rationales that underpin higher education's reluctance to engage more formally in education for sustainability. It attempts to provide a balanced commentary on the role and capability of higher education in promoting environmental sustainability to students. Because the paper is grounded in higher education learning and teaching discourse it starts by interpreting the term 'education for sustainability' for a broad higher education audience and situates concepts of sustainability within domains of higher education learning and teaching. The paper focuses on Australian and New Zealand universities but introduces developments from around the world for comparative purposes.

Introduction

The idea for this article arose when I was asked to contribute to an online discussion, in the UK, on the status of 'education for sustainability' in countries other than the UK (Sustainability in Higher Education Developers Act Network, *Shed-act@jiscmail.ac.uk*). I volunteered some thoughts about the situation in New Zealand and attempted to role-play the mindset of a higher-education institutional chief-executive. I considered the pressing problems of research funding, issues of student recruitment and retention, the emphasis on accountability in learning and teaching, and the financial situation of my hypothetical university; and I managed to place calls for 'education for sustainability' someway down my 'to-do list'.

Educators, higher or otherwise, will know the power of role-play in stimulating critical thinking and enabling learners to challenge their own assumptions as they develop their values and attitudes. My role-play did not, perhaps unfortunately, totally displace my concerns that higher education is failing to address the sustainability-needs of society but did enable me to see aspects of both sides of the argument on many of the issues. So this brief paper attempts to illustrate some of the drivers for education for sustainability and also explores some of the rationales that underpin higher education's reluctance to engage more widely in education for sustainability. The article focuses on Australasia but brings to bear research and development from around the world for comparative purposes. On the way, and to interpret the term 'education for sustainability' for a broad higher education audience, I attempt to situate concepts of sustainability within domains of higher education learning and teaching.

Taxonomies of 'education for sustainability'

The term 'education for sustainability' arose from the broad and extensive discussions on sustainable development in the latter part of the last century (and summarised below). Any attempt to define it must focus on

the preposition 'for'. This is not necessarily or exclusively education about sustainability. At least in part it is education for the purposes of saving the planet and other entities that we may be fond of, such as cultures and economies. There is little doubt that if higher education were to analyse all of the possible purposes to which its educational activities were to be 'for', some would have less worthy causes; but this does introduce the need to catalogue the higher education learning and teaching enterprise. Cutting the higher education learning and teaching cake will never be a value-free enterprise but I attempt it here in three different ways.

One approach to categorise learning for, or about, sustainability is to divide it into *activity* elements of formal, informal and non-formal. So, it is possible to identify a range of higher education formal-learning activities that are predominantly *about* sustainability. Students study environmental sciences to learn *about* the environment, for example. Then there is a range of less precise activities. We must recognise the longstanding quest for 'greening the curriculum' that could reasonably apply to the formal curricula of all university students (See, for example, UK discussions on the Toyne Review, *British Government Panel on Sustainable Development Third Report,* 1997).

Links between society's quest for sustainability and education have been with us for some time. The Brundtland Report suggested that 'the world's teachers . . . have a crucial role to play' in helping to bring about the 'the extensive social changes' needed for sustainable development.

Educators are aware that not all student-learning is described within their curriculum. Non-formal and informal learning within higher education contexts occurs with (non-formal) or without (in-formal) prior planning. Much has been made of 'teacher as role-model' in school settings, but less so in higher education, where the focus has been primarily on the roles of teachers as potential advocates for the environment (Jickling, 2003). More recently much concern addresses the notion of 'institution as role model', with consequential emphasis on campus sustainability (see in particular ACTS, *Australasian Campuses towards Sustainability, http://acts.asn.au/about*). Many institutions are involved in sustainability research and where teaching is research-informed it seems likely that this will directly or indirectly impact on student learning. Even research into learning and teaching may have an effect on students' understanding of sustainability. We should also consider the wider, community-based, learning responsibilities of higher education. Our cake needs to include slices for adult/continuing education and 'institution as local leader'.

Cutting the cake in this way may help us to analyse the broad range of activities that influence learning, but is less effective at enabling us to understand the *consequences* of this learning; and education for sustainability is fundamentally about consequences. Put bluntly, graduates may know much about sustainability and possess many of the skills needed to function sustainably, but unless they choose to put this knowledge and these skills to sustainable ends, their education (for sustainability) will have in some senses failed. Bloom and colleagues (Bloom, & Krathwol, 1956; Bloom, Hastings & Madaus, 1971) categorised learning as cognitive, psychomotor and affective, and it is within this latter category that values, attitudes and behaviours reside.

Increasingly attention is being paid to students' affective characteristics as they relate to sustainability (Shephard, 2008) involving, for example, an individual's disposition to put the knowledge that they have about sustainability to sustainable ends and how these change as students pass through the education system. Equivalent development is occurring in other fields that relate to affective attributes such as social justice and citizenship (see for example Maas Weigert, 2006). The term 'action competence' has been developed to describe some higher-order affective attributes (Jensen & Schnack, 2006). Cutting the cake in relation to consequences allows us to identify that some forms of higher education explicitly express concern for the affective consequences of their teaching activities and others do not.

A third cake-cutting exercise is necessary if we are to get to grips with the *intentions* that higher education practitioners have for their teaching, and by extension, for their students' learning. Higher education generally, and nowadays, attempts to describe the knowledge and abilities it intends its graduates to have acquired prior to graduation, and of an assessable nature, primarily in the form of 'intended learning outcomes'. This modern approach to education is sometimes referred to as 'out-

come oriented education'. But many of the outcomes that higher education seeks have consistently proved difficult to assess by examination, assignment or other traditional approaches and many of these, some clearly affective in nature, are alternatively described as graduate attributes (reviewed and described by Barrie, 2004). Often these 'other' outcomes are not openly assessed and they remain indicative or aspirational on behalf of institutions (Carter, 1985; Shephard, 2008). Not all teachers are comfortable with precise descriptions of intended learning outcomes (see for example Hussey and Smith, 2003) and there is ongoing opposition to their universal imposition. This alternative slice of the cake accepts that some forms of learning are difficult to describe and that some higher education teachers focus on creating learning environments that provide the best possible conditions for learning.

In further exploring concepts of education for sustainability all three categorisations of activities, consequences and intentions will be useful.

Higher education's engagement with sustainability up to and including the 90s

Links between society's quest for sustainability and education have been with us for some time. The Brundtland Report suggested that 'the world's teachers . . . have a crucial role to play' in helping to bring about 'the extensive social changes' needed for sustainable development (World Commission on Environment and Development, 1987, p. xiv). Berberet, in a widely cited report, went further to suggest that education has played a key role in perpetuating unsustainable environmental practices:

> 'Not only has education uncritically accepted the association of progress and the unfettered growth economy, it has trained the engineers and managers, performed the research, and developed the technologies which in aggregate have had such a devastating impact on the environment.' Berberet (1989, pp. 4-5).

Agenda 21 identified that:

> 'Education is critical for promoting sustainable development and improving the capacity of the people to address environment and development issues . . . It is critical for achieving environmental and ethical awareness, values and attitudes, skills and behaviour consistent with sustainable development and for effective public participation in decision- making.' (United Nations Conference on Environment and Development, 1992, ch. 36, p. 2)

Many universities responded to these challenges. Two elements of the Talloires Declaration (Association of University Leaders for a Sustainable Future, 1994) relate most directly to the teaching activities that occur within institutions. These are to 'Educate for Environmentally Responsible Citizenship' (establish programs to produce expertise in environmental management, sustainable economic development, population, and related fields to ensure that all university graduates are environmentally literate and have the awareness and understanding to be ecologically responsible citizens) and to 'Foster Environmental Literacy For All' (create programs to develop the capability of university faculty to teach environmental literacy to all undergraduate, graduate, and professional students). Our cake-cutting exercise above should be useful in interpreting these elements. In some respects they are modest expectations. Signatories agree to either 'greening the curriculum' or providing specialist courses for *all* students to ensure that they become environmentally literate but say nothing about students' affective attributes (environmental literacy, awareness and understanding are generally regarded as cognitive, rather than affective, characteristics). They also agree to ensure that programmes will be developed to enable faculty to become capable teachers of environmental literacy, but not that faculty will so engage or choose to teach environmental literacy if they do. No New Zealand universities have signed up but many Australian universities have (Association of University Leaders for a Sustainable Future, 2009).

Higher education's engagement with sustainability in the current decade

The scientific community has for many years understood that mankind's release of carbon dioxide and other greenhouse gases may be contributing to global warming, but the Intergovernmental Panel on Climate Change (IPPC) took until 2007 to identify that: warming of the climate system is unequivocal; that the probability that this is caused by natural climatic processes alone is less than 5 per cent and; that most of the observed increase in globally averaged temperatures since the mid-20th century is very likely due to the observed increase in anthropogenic (human) greenhouse gas concentrations (IPCC 2007). There were of course earlier warnings. And it is still possible for those who are inclined to optimism to interpret these warnings as unduly pessimistic.

There are many studies, particularly within the environmental education literature, that address the 'education for sustainability' status of higher education, how it might be responding to these increasingly bleak messages but also illustrating innovative and successful educational programmes. See for example recent special issues of Environmental Education Research that focus on higher education. These and similar studies paint a picture of great variability. At an institutional level some institutions are highly proactive, others less so. One recent research report emphasises the considerable variation in how even the most proactive higher education institutions around the world, in the USA and in Germany, go about addressing sustainability (Beringer, 2007). It would be difficult, therefore, to succinctly summarise the situation in all of higher education, but this has recently been attempted for one country (the UK):

> '... if we examine the extent to which HEIs [higher education institutions] have actually reoriented themselves such that environmental and sustainability issues now pervade the vision, ethos, thinking and work of the institution, then the conclusion probably has to be that very little has happened in most cases.' (Sterling and Scott, 2008).

If we look more particularly at university lecturers' understanding of sustainability and of their role in relation to sustainability, perhaps with a view to explaining this situation, recent research from Australia is notable. Reid and Petocz (2006) used a phenomenographic methodology to identify that while many higher education teachers are aware that sustainability has some role to play in their teaching, some of them view that role in quite limiting ways. These authors suggest that changes in thinking about sustainability will require 'creative pedagogy' that provides 'spaces' within which individual teachers may develop their ideas; but it would be difficult to read this research with an optimistic mindset. It seems that many higher education institutions and many lecturers in higher education have not yet committed themselves to the concept of higher education for sustainability. What are the arguments for and against such commitment?

Eight reasons why higher education may be reluctant to engage more widely in education for sustainability; but perhaps should

What follows are brief descriptions of eight broad issues relevant to education for sustainability in Australian and New Zealand universities. They are styled, as well as I am able to, as arguments against and for greater engagement with education for sustainability. To avoid doubt in the minds of readers, generally the 'for' argument starts with a 'but'.

Australasia appears to be such a minor contributor to global problems; surely universities in other parts of the world should take the lead?

It might be rational to expect higher education institutions and associated groups in those countries that are making the greatest unsustainable impact to take the led on education for sustainability and there is some evidence that this is occurring. In the USA, leadership comes from the Association for the Advancement of Sustainability in Higher Education. AASHE is currently developing a Sustainability Tracking, Assessment & Rating System; STARS *(www.aashe.org/stars)* and there is little doubt which universities and colleges in the USA have lead progress on campus sustainability in recent years, or that the USA in general is leading the world in this aspect of education for sustainability. In the UK the student group People & Planet ('the largest, student network in Britain campaigning to end world poverty, defend human rights and protect the environment' *http://peopleandplanet.org/gogreen/greenleague2008*) is harnessing the power of the league table to rank higher education institutions largely on the basis of their self-reported campus sustainability. An indication of a developing partnership between student groups and higher education funding bodies is apparent in the Higher Education Funding Council for England's (HEFCE) most recent policy statement on sustainable development in higher education:

> 'We will work with student organisations, including the National Union of Students (NUS) and NUS Services Ltd, to promote behavioural change among students and support initiatives that seek to harness the student resource for positive environmental initiatives at the campus level.' (HEFCE, 2009).

But higher education in Australasia is not necessarily leaderless on these issues. In New Zealand's tertiary (broader than higher) education context, Otago Polytechnic is taking a clear leadership role in establishing that:

> 'Our goal is that every graduate may think and act as a sustainable practitioner. Moreover, educators must take a lead in sustainability so that our graduates can be encouraged and supported to promote sustainable practices in their chosen career. This

can primarily be achieved by fostering education for sustainability in all our qualifications and by re-visioning and changing our approach to teaching and learning to model a transformative context for all learners' (Otago Polytechnic, 2009).

Otago Polytechnic's approach encompasses transformative learning for all students, the development of learning communities as well as campus sustainability. In Australia, special recognition needs to go to AIRES (Australian Research Institute in Education for Sustainability *www.aries.mq.edu.au*) for its research to inform policy and practice in education for sustainability across a range of sectors. Many Australian higher education institutions have inspirational initiatives that pilot and promote education for sustainability. ANU's Sustainability Learning Community is one example that extends far beyond campus sustainability (Australian National University, 2009).

Universities can only do what they are funded to do

I value my job as a university academic, particularly in that it enables me to study what I am interested in. I also value my salary and have to accept that without it I would be hard pressed to have impact in my professional role. The argument that universities need to be funded to have impact is a strong one. New Zealand and Australia both have comprehensive government-led strategies for tertiary or higher education and particular emphases for education for sustainability. New Zealand's Tertiary Education Strategy (2007-2012) describes many aims relating to environmental sustainability. These include: …. balance progress with environmental sustainability; ….build understanding and connections with each other, with our natural environment, and with the wider world; … and help to preserve our natural environment by promoting understanding and skills in conservation and eco-restoration. (Ministry of Education, 2008, p. 9).

Australia's National Action Plan for Education for Sustainability aims to support 'whole-of-institution change for sustainability in universities' and intends that 'Education for sustainability is integrated into all university courses/subject areas and campuses are managed in a sustainable way' (Australian Government, 2009, p. 5 and p. 21). With respect to New Zealand, it has been argued, however, that strategic issues identified for the tertiary education sector by government have not been translated into explicit investment funding (Mellalieu, 2009). Mellalieu suggests that monitoring processes for tertiary education organisations do not generally refer to changes associated with sustainability education and that the signals that the Tertiary Education Strategy gives to institutional leaders about sustainability are, by and large, very weak. (A similar analysis could potentially be made for Australia, but I have not yet seen such a case made). Without explicit funding, higher education has limited opportunities to have an impact and institutions that attempt to do so are doing it by redirecting funding allocated for other purposes and jeopardising their financial security.

But is higher education really waiting for governments to tell it what to do and how to do it? Lack of funding may provide an explanation for lack of higher education involvement in society's most challenging problems but surely never a justification?

'Society' expects its universities to act as its critic and conscience. Society cannot at the same time tell higher education how to act

Historically university academics have accepted responsibilities to think critically about, and to comment on, issues that they think are important for their sponsoring societies to consider. These responsibilities are in turn, and again historically, dependent on the protection of academic freedom. In New Zealand, both concepts are laid down in its 1989 Education Act. Useful recent analyses of the developing play-off between academic freedom and academic responsibilities have been provided by Bridgman (2007) for New Zealand and by Sharrock (2004) in a case study analysis of one Australian university. Bridgman creates a case for this critical role to be particularly challenging in 'anti-intellectual' New Zealand but identifies an ongoing need to support it.

Sharrock, in promoting a case for rethinking the Australian University, argues that 'After postmodernism, it is harder for a university to profess its ability to inscribe the correct set of values and virtues in the student-as-citizen. It is also harder for it to profess to be a 'tribunal of truth' with sufficient authority to act as critic and conscience for its host society, by defining what is good or true or beautiful.' (Sharrock, 2004 p. 267). Even given the precarious nature of these concepts in the modern university, there is no doubt that academics based in environmentally-focussed disciplines within universities continue to contribute their views to wider debates on environmental issues. What may be in doubt in the minds of some is higher education's responsibility to internalise the views and values

of just some of its academic members in deciding what and how to teach, but I am not sure why this should be so. In New Zealand academic freedom includes 'The freedom of the institution and its staff to regulate the subject-matter of courses taught at the institution' (Parliamentary Counsel Office, 2009) and in my experience this freedom is anticipated in many developed countries even where not laid down in statutes. Greening the curriculum should be a voluntary activity and it is irrational to expect higher education to respond to government steering on this, or on any other value-laden societal issue. Comments about carts and horses fit here.

But there are many arguments to the contrary. Primarily they question the balance between academic freedom and responsibility perceived by academics and their institutions and suggest that societies need their academics to step-up-to-the-mark and put their privileged positions to good effect. They ask academics to put to one side their disciplinary and research focus, their complaints about the ills of performance-based research funding and massification, and to help society address a huge problem by harnessing their power over student learning. These arguments are not necessarily based on academics' rights or their historical roles. They are not necessarily academically rational, liberal or particularly long-term. They paint a picture of rising waters lapping on the walls of ivory towers, each housing a tribe of academics arguing important matters amongst themselves.

How can this be a priority for higher education when neither academic staff nor students think that it is?

A recent discussion document on sustainability at my own university, with approximately 20,000 students and 3500 staff, elicited almost 140 responses (University of Otago, 2009a). The discussion document was well written and invited responses on a broad range of sustainability issues. Opportunities to respond were provided over a generous, and extended, timeframe. A large majority of responses were positive towards greater sustainability and some were from groups rather than from individuals, but the University's senior managers would have been hard-pressed to be overwhelmed. This university does have an active student sustainability group and an effective campus sustainability programme. It has had a range of environmental policy initiatives in place for many years. It has an international reputation for its research, including a wide range of environmentally-focused research. It has a long-standing tradition of providing learning opportunities for all students to study environmental topics at several levels (described at University of Otago, 2009b). Yet given the opportunity to comment on the ways that this institution will address environmental sustainability (including education for sustainability) in the future, relatively few chose to do so. It would be difficult to conclude that staff and students in this higher education institution consider education for sustainability to be a priority, or that the pathway before us is clear.

But academic staff and students have a right to expect representative and managerial groups in the University to make difficult decisions on their behalf. As skilled critical thinkers, many staff and students will have opinions on the relevant issues that span the range discussed in this paper. They will be able to see the strengths of both sides of each argument. Also, personal issues such as financial security may primarily dominate their individual views. It may not be rational to expect such people to individually push the University in any particular direction and entirely rational to expect them to conclude that University leaders are there to make these close-call difficult decisions.

Perhaps other parts of the post-compulsory education sector should focus on this?

Australia and New Zealand's post-compulsory education sectors are comparatively large, complex and affluent. In both countries there is a tradition, if not an explicitly stated policy, that different parts of the sector perform different roles and operate in different ways. Given this diversity there is no a priori reason why higher education needs to address education for sustainability. Other parts of the sector, for example, those focussing on vocational training, may be better placed to instil sustainability principles into our citizens. Also, higher education institutions look to other national bodies for guidance and support on learning and teaching matters and neither the Australian Learning and Teaching Council, nor New Zealand's recently established National Centre for Tertiary Teaching Excellence (Ako Aotearoa) currently provide leadership on education for sustainability.

But other parts of the post-compulsory education sector are far more government-directed than is higher education so different rules apply and making comparisons is unhelpful. Each part of the sector must make the contribution that is appropriate. Also, lack of

engagement with education for sustainability by practitioners whose field of enquiry is higher education is not evidence of lack of need, nor of absence of shared responsibility. Universities need not wait for national learning and teaching entities to prescribe what their appropriate contribution might be.

Universities cannot, or should not, set out to change students to be better citizens

Calls for universities to change students' values and attitudes so that they become sustainable citizens imply the need for particular forms of learning. Bloom and Krathwol and others systematically examined domains of learning in the last century (Bloom & Krathwol, 1956) and many of the required attributes for sustainable citizenship fit squarely within the affective domain (Shephard, 2008). Bloom, Hastings and Madaus (1971) emphasised the difficulties that educators face when 'teaching' affective outcomes. They concluded that educators avoid being too open about their affective objectives because they are concerned about charges of indoctrination or brainwashing.

A key concern when educating for sustainability is whose values are we promulgating and which environments, cultures and economies do we choose to sustain?

In addition, many educators regard these matters as 'private' rather than public and also express concern that affective outcomes are far too long-term to be assessed within the timescale of any particular learning programme. These issues have not yet been resolved by higher education practitioners and it not unknown for educators to be accused of indoctrinating practices (see Carlson, 2006, for an example in the area of college sustainability). It is also still relatively rare in education for attainment of these values and attitudes to be openly assessed or for programmes that attempt to, or inadvertently, develop values to be evaluated on this basis. The term 'hidden curriculum' has been used to describe these and related anomalies (Margolis, 2001). A key concern when educating for sustainability is whose values are we promulgating and which environments, cultures and economies do we choose to sustain? Stanley Fish has travelled the world (he was in New Zealand recently) to extend the message that academics should save the world on their own time:

> 'College and university teachers can (legitimately) do two things: (1) introduce students to bodies of knowledge and traditions of inquiry that had not previously been part of their experience; and (2) equip those same students with the analytical skills-of argument, statistical modelling, laboratory procedure-that will enable them to move confidently within those traditions and to engage in independent research after a course is over.' (Fish, 2008, p. 13).

Fish suggests that universities have inappropriately overstated what they are able to do for their students and for their wider communities and that higher education is not equipped to enhance their moral, civic or social characters with respect to social, political and cultural issues. Fish is not alone in doubting the role of higher education in this field. Butin (2008) in reviewing Fish's book within the context of its application to service learning, or community engagement, has used Fish's arguments to analyse the range of teaching approaches inherent within service learning. Butin argues that indeed some service learning practices are not as appropriate to higher education as others and suggests that the real value of Fish's analysis is in encouraging higher education teachers to fully examine what they are doing and that Fish is 'saving the University on his own time'.

But universities around the world have not heeded these messages. Many professions find a home in higher education and many of these seek professional values in their graduates. Medicine provides the best examples of learning, teaching and assessment in the affective domain (Shephard, 2008) but my favourite is from the University of Sydney; 'Graduates of the Faculty of Veterinary Science will hold personal values and beliefs consistent with their role as responsible members of local, national, international and professional communities. (e.g. protect the natural environment, maintain biodiversity and conserve endangered species).' (University of Sydney, 2009). Indeed broad descriptions of graduate attributes provide ample evidence of higher education's willingness to seek affective outcomes in its graduates; outcomes such as 'having an appreciation of…' or 'showing a commitment to …' or 'being willing to …'. I conclude that higher education, in general, is not averse to teaching in the affective domain, only to bringing its skills to bear in pursuit of particular affective outcomes. These issues have been important to environmental education, and related fields, for many years (see for example

the work of Jickling, 2003) but have resulted in great uncertainty about the academic limits and moral scope of education for sustainability. Lemkowitz *et al.* (1996), for example, describe a long-established higher education course for science and engineering students that stimulates critical and creative thought on sustainability (and assesses its attainment), but does not attempt to teach any particular viewpoint or assess students on their attainment of particular values and attitudes. They argue strongly that it is not their role to change students' values, but they are happy to encourage students to engage with the issues and think critically about sustainability.

Shephard (2008) has extended this argument to conclude that most teachers in higher education are happy to encourage students to acquire affective characteristics at the lower end of the Bloom, Krathwol *et al.'s* affective domain. Most teachers find it acceptable to encourage their students to be willing to listen, to read, to acquire information, and to discuss environmental issues with others. In these ways they are happy to create opportunities for students to formulate their own views on the issues based on their experience and learning. Assessments at these levels, at most, ask students to argue, challenge, debate, refute, confront, justify or criticise. A recent AIRES publication describes it as promoting 'values clarification' (Australian Research Institute in Education for Sustainability, 2009). University teachers who do entertain the notion that at least part of their role is to prepare students for citizenship do need academic space in which to properly explore the limits of their influence.

Even if we were interested in changing students' attitudes we would not be able to measure these changes

The difficulties involved in following changes in the affective sustainability attributes of students may be too great for higher education to address. Bloom, Hastings and Madaus (1971) commented that many educators express concern that affective outcomes are far too long-term to be assessed within the timescale of any particular learning programme.

But since the 70s a great deal of academic work has been undertaken to devise means whereby affective attributes may be variously measured, assessed, monitored or evaluated. Shephard (2009) describes a range of processes in higher education that directly or indirectly assess affective objectives. Anderson *et al.* (2007) and Packer (2009) used self-reporting attitude surveys to monitor how students' worldviews changed during higher education experiences. Shephard, Mann, Smith and Deaker (2009) have established a benchmark of student attitudes for a substantial proportion of a whole institution's intake, in preparation for monitoring subsequent changes. There is a strong case for the use of whole-cohort evaluation rather than individual student assessment for these purposes (Bloom, Hastings and Madaus, 1971; Shephard, 2009). I have little sympathy with the suggestion that changes in line with education for sustainability cannot be followed, quantified or substantiated.

Academic staff in universities have essentially the same values as those of wider society and are in no position to lead our students towards sustainable living

As described above in relation to the contribution that education has made to unsustainable practices, Berberet (1989) argued that 'Historically, the values of schools and colleges have mirrored those of the larger society'. As such there is reason to doubt that those who teach in higher education are able to provide leadership for values-based transformation where the values sought are different from their own. How can we expect academic staff who have not themselves embraced sustainable life styles to teach these values to others?

But this argument is predicated on a fundamentally outdated notion of the role of a university teacher. The counter argument naturally starts with a denial that education for sustainability does attempt to teach, or change, student values, but this has been discussed above. Extending beyond that, we consider the foundations of the teacher/learner interaction as it applies in particular to higher and adult education. There is a broad and active debate in higher education on the merits of student-centred rather than teacher-centred teaching. The debate addresses the extent to which teachers focus on transmitting information, rather than encouraging active learning. It focuses on the power relationships that develop within teaching and learning frameworks and the central role of assessment. The debate questions the control that teachers have over the curriculum and the learner's engagement with the curriculum and emphasises the potential of service learning, enquiry-based learning and the learning technologies to liberate students from this control. Fears that teachers can teach values, however appropriate or inappropriate, to their students have less foundation as

the power swings from teacher to learner. Higher education is no doubt a long way from achieving the ideals of student-centredness but it is clear to me that challenging the relationship between teacher and learner in higher education is central to the education for sustainability mission.

Summing up

Those who read this paper will no doubt favour one side of each argument over the other. Some may have additional issues to address. Situating the analysis within something other than the learning and teaching discourse is particularly likely to introduce different issues. My own analysis suggests that the concept of 'higher education for sustainability' is fraught with problems but on balance higher education is failing to adequately address the sustainability needs of society. This same analysis produces, for me, a more fundamental concern that higher education is failing to address its own reasons for being and fitness for purpose.

My own approach, and expertise, is to systematically address these concerns and responsibilities one by one; researching answers and opportunities from within my own disciplines. But in so doing I accept that perhaps this is the approach that has enabled higher education to focus its attention on the individual disciplines, roles and problems that define, and constrain, its operations. A different approach may be necessary to achieve education for sustainability in higher education.

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