



# **Education for Sustainable Development Interdisciplinary Discussion Series Report**

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Above all, our sincere thanks to those who participated in this series; their willingness to engage in a complex and open-ended debate, despite the many demands on their time, generated the valuable findings reported here. Many thanks also to Wendy Miller (formerly of Geography, Earth and Environmental Sciences Subject Centre and the ESD Project), who assisted enormously with thoughtful facilitation and noting of key ideas during the series.

## 1. EXECUTIVE SUMMARY

This series of three meetings was conceived to enable a group of academics to examine the challenges posed by the coincidence of two challenging topics: interdisciplinarity<sup>1</sup> and education for sustainable development (ESD). The specific intentions for the ESD discussion series were to:

1. support dialogue between academics in relation to the intellectual and pedagogical issues surrounding interdisciplinarity and ESD;
2. provide a forum for academics to develop their understanding of the ways that they might work with the parameters and principles of interdisciplinary ESD;
3. inform the strategic agenda for the ESD Project on the issues at stake in the intersections of 'ESD', 'sustainability' and 'interdisciplinarity'.

This innovative project was commissioned by the HE Academy ESD Project, which is charged with working across the HE Academy Subject Centres during the UN Decade of Education for Sustainable Development (2005-2014)<sup>2</sup>. The prompt for the series was a meeting of academics from six disciplines in the social and

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<sup>1</sup> 'Interdisciplinary' is used here to denote research and teaching strategies that bring two or more recognized academic disciplines together, with the aim of interaction and integration between methodologies, epistemological tenets, terminology and data, in an attempt to develop approaches to a common problem. Where 'multi-disciplinary' appears, this refers to the juxtaposition of different disciplinary perspectives within a team consisting of individuals with distinct disciplinary expertise.

<sup>2</sup> Following initial scoping projects undertaken by many Subject Centres into the approaches of their disciplines to matters of 'sustainable development', the ESD Project was initiated in 2005 and funded by the Higher Education Academy. Since then it has allocated a number of small project grants and has organised ESD events at individual HEIs, regional networking days, a community project and a national conference (University of Bradford, 10-11<sup>th</sup> July 2007).

historical sciences<sup>3</sup>, part of an exploratory ESD inquiry undertaken jointly by the Subject Centre for History, Classics & Archaeology (HCA) and the Centre for Sociology, Anthropology & Politics (C-SAP). The meeting revealed substantial complexities around interdisciplinary work related to sustainability, both across the human and social sciences, and via collaborations and connections with the natural sciences.

Colleagues in the network of Subject Centres were in support of further interdisciplinary activities to enable academics to address the ways that ESD cuts across the traditional boundaries of *naturwissenschaft* and *geisteswissenschaft*. There was general agreement that, while individual disciplines could contribute valuably to ESD programmes, a rounded approach would necessarily be interdisciplinary. There are well-developed areas of expertise in sustainability (many of them overtly interdisciplinary), yet there was a perceived need for greater understanding of the range of issues regarding interdisciplinary ESD across the HE sector. There has been recognition within Subject Centres that ESD debates should take place between academics in particular disciplines and those working in broader multidisciplinary contexts, so that mutual feedback and embedding is enhanced in both spheres.

Between October 2006 and January 2007, 27 participants engaged in this debate over the course of three meetings<sup>4</sup>. Each participant had an active teaching and/or research engagement with sustainability and an orientation towards interdisciplinary work. To our knowledge, this was the first attempt to provide extended discussion space to a group of academics active in this area across a wide range of disciplines and institutions. The terrain for this debate was exciting but complex: the tension between aims 1 and 2 above required a sustained space for intellectual exploration while at the same time maintaining a sense of contextualization. This attempt to uncover parameters for a strategic agenda on interdisciplinarity and ESD is intended to be of use to the HE Academy ESD Project, as well as to other colleagues and stakeholders within and beyond academia.

Overviews of the design for this series (Section 2) and the facilitation reflections (Section 4) demonstrate some of the challenges encountered and some of the lessons learned. In Section 3, the findings from these discussions are organized according to three main areas: interdisciplinarity and disciplines; delivery and pedagogy; and organizational and sectoral issues. Section 5 contains a concluding summary and Section 6 makes recommendations for further progress. Participants' evaluation responses, notes captured during the series and other supporting materials have been used to create this report. Here and in Sections 2 and 4, the

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<sup>3</sup> HCA/C-SAP workshop: November 2005 at the University of Oxford, also organised by Colin Brooks and Alex Ryan.

<sup>4</sup> Thirty-five places were allocated in total: after unavoidable absences, 27 were able to attend over the course of the three days.

use of 'we' indicates the facilitators' views; elsewhere, reference to 'the group' indicates the series participants.

We had imagined, and indeed found, that definitions of ESD were varied, as were views on the value of extracting definitions: instead of engaging in extended attempts to agree a definition, it was proposed within the group that 'sustainability' is a 'threshold concept' orientated to the 'ideal', a concept whose very richness and importance lies in its thwarting stable definitions. Hence a range of views were identified on the manner in which interdisciplinary ESD might be developed and located in HE curricula, and the ways that such provision might be taught and learned. The focus was towards pedagogies supporting skills development, particularly skills for dealing with pluralism in the different value systems at stake. This was not to devalue the material under consideration; rather to put the emphasis on the use to which student and teacher alike put that material in order to clarify their understanding of sustainability.

Interdisciplinary approaches to ESD were considered essential, but the discussions showed that 'interdisciplinary' might be interpreted more widely. Rather than simply the bringing together of two or more academic disciplines within an academic programme, it ought to include, for example, professional (and therefore 'inter-professional') perspectives. Questions were raised about the nature of enterprise within the HE sector and tactical ways to encourage structural changes supportive of interdisciplinary ESD. A distinct need was identified for clearer information about students' pre-HE backgrounds and educational interests, their career intentions and employment prospects, as they relate to interdisciplinarity ESD.

These findings are in many ways congruent with the broader aims of skills and employability agendas presently of particular interest to those responsible for HE recruitment and programme provision, as well as with the objectives of the UK Sustainable Development Education Panel<sup>5</sup>. Participants expressed a strong desire to take forward ideas from the seminar series, in their own institutions, between institutions, and in and between disciplines. These proposals remain 'on the table' pending allocation of a further tranche of funding. By their very nature – frequently inter-institutional and interdisciplinary – it is difficult for these proposals to secure conventional funding (e.g., from HEI Teaching and Learning Development funds). The following recommendations are made as points of focus for future funding allocations:

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<sup>5</sup> The UK SDEP was operative from 1998-2003 to inform government aims and strategy with particular reference to the UN Decade of ESD (2005-2014). Its closing report '*Learning to Last*' was presented to ministers in February 2003; see documentation at: [http://www.defra.gov.uk/environment/sustainable/educpanel/pdf/sdeduc\\_draftstrat.pdf](http://www.defra.gov.uk/environment/sustainable/educpanel/pdf/sdeduc_draftstrat.pdf).

- 6.1 Capacity Building: project grants for curriculum development in interdisciplinary ESD;
- 6.2 Capacity Building: development of the inter-disciplinary ESD network;
- 6.3 Resource Development: disciplinarity & interdisciplinarity in ESD;
- 6.4 Resource Development: sustainability policy & funding digests;
- 6.5 Stakeholder Dialogue: further workshops and events.

## 2. SERIES DESIGN

An initial advertisement was circulated via the HE Academy Subject Centres in summer 2006 and the range of responses resulted in 35 academic participants being invited to join the series, including three doctoral students<sup>6</sup>. Participants completed a personal profile outlining their academic engagement with ESD, noteworthy sustainability publications and interdisciplinary thinkers, and position statements on the issue. These profiles were circulated in advance of each meeting to familiarize the group with one another. Further preparatory organization and planning was undertaken to ensure diversity of composition for the group and to design the sequence and process for the series. The main disciplines represented were: anthropology, archaeology, architecture, design, development studies, economics, education, engineering, environmental sciences, geography, history, philosophy, politics, psychology, and religious studies, though many participants, interestingly, had expertise in more than one area.

From the outset we were aware of the range of intellectual perspectives, professional roles and institutional contexts in this group<sup>7</sup>. We hoped to avoid intellectual abstraction of the sort that would thwart progress and result in mutual isolation, yet we were also concerned not to place undue constraint on the scale and level at which discussions might develop. These two intentions were to a certain extent contradictory impulses and the design and structure of the series was a constant attempt to mediate between these poles. It was apparent from the first meeting that the scope of the debate, coupled with the variety of orientations towards the remit, would present a sizeable challenge in terms of finding shared points of focus.

In anticipation of this challenge, we had adopted a pragmatic, cyclical approach, so that changes could be made in response to developments during the series<sup>8</sup>. For

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<sup>6</sup> Unfortunately we were forced to decline some expressions of interest to keep numbers manageable and the disciplinary spread in balance, for example where we had stronger representation in certain disciplines, or for late applications. 27 attended in total: a core group of 5 at all three meetings and the additional 22 on one or two of the days (circumstances meant that we had to hold two meetings during teaching weeks, which was a significant obstacle for some participants).

<sup>7</sup> Ten pre-92 and eight post-92 UK HE institutions were involved, including representatives from Wales and Northern Ireland.

<sup>8</sup> We had also considered inviting guests to stimulate debate on certain practical matters (e.g., quality enhancement or registry colleagues). However, after eliciting reactions from the group and assessing the depth of debate already arising at the first meeting, we decided that this would be

example, following the issues and questions raised at the first meeting, we created an overview 'discussion document' as a shared written record of the remit for the series. This document outlined our developing understanding, as facilitators, of the scope of our task, the parameters of 'ESD', issues of perspective, and ways to explore ESD and interdisciplinarity. The document was circulated after the first meeting and formed a reference point and trigger for discussions at the following meetings. We circulated an additional short document ahead of the final meeting to outline points of agreement and divergence, plus unresolved issues that might benefit from further exploration. These documents also helped to socialize new participants into the discussions.

The basic format for the series involved whole group discussion at the beginning and end of each day, together with small group sessions exploring dimensions of the debate using discussion triggers and dialogue exercises (see Appendix A). For example, on the first day, one exercise was targeted at initial mapping of thoughts about desirable interdisciplinary content for ESD, while the second was an appreciative inquiry technique to extract issues from participants' narratives about previous interdisciplinary collaborations. What we wanted to provoke from the group, above all, was critical sympathy with each other; sympathy in their shared interest in 'ESD', together with critical yet respectful acknowledgement of their divergences – personal, disciplinary and institutional. Constructive criticism was encouraged during the series, in terms of trouble-shooting between members with regard to their own perspectives, and in terms of the trajectory of the debates and our purposes as facilitators.

Given the desire for productive discussions around this broad remit, the series had an 'applied' orientation, to connect our debates to the pragmatic issues of curriculum management and research practice in the current HE climate. Perhaps unsurprisingly, the tensions between the ideal and the actual, and between our aims 1 and 2 as stated in Section 1, presented challenges for the design and management of this series. Participants were encouraged not to theorise in terms of the purely ideal, but to repeatedly situate their intellectual reflections in relation to the realities of quality assurance agendas, student interest and expertise, and commercial pressures. We considered this to be an important set of parameters for these discussions, although we were aware that some might see this contextualisation as a compromise or a restraint on the intellectual debates. Our intention was to use this shared context to unearth practices, attitudes, problems and solutions in relation to educational and professional practice around interdisciplinary ESD.

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premature and might sideline progression on the main agenda. We remain convinced that the participation of representatives of such expertise would be of great benefit for future discussions. Since structures vary across HEIs, it may be that some of these discussions are best held within individual HEIs, in accordance with their particular configurations and attendant strategies.

## 3. DISCUSSION OF FINDINGS

### 3.1 ESD & INTERDISCIPLINARITY: DEFINITIONS & DIVISIONS

The prior existence of a body of research regarding interdisciplinarity led to concern that these discussions might not uncover anything distinctive about interdisciplinarity in relation to ESD. This was illustrated by a list of positive and negative features of interdisciplinary enterprises, identified at the first meeting on the basis of participants' previous experiences; many were applicable outside the remit of ESD<sup>9</sup> (see Appendix B). One participant ventured that two separate conversations were taking place: one about broadening ESD within institutions and the other about creating effective interdisciplinary collaboration. Some participants thought that the 'sustainability' element of the discussion invariably slipped once the focus was directed towards interdisciplinarity. However, a number of those present did view ESD as a special form of interdisciplinary endeavour; this was articulated either as a research programme with clear problems requiring interdisciplinary solutions or as a pedagogical agenda which could be understood as akin to 'Lifelong Learning'. The significance of these understandings was in their focus on fostering habits of mind rather than merely inculcating current knowledge. It was also pointed out that since interdisciplinarity and ESD are frequently conflated, it is important to be specific about how and why they are combined.

A substantial debate revolved around definitions of 'sustainable development' or 'sustainability' and the meaning of the term 'ESD'. The majority view was that divergent definitions are inevitable and that while discussion of the differences can be fruitful as an academic exercise, there should be no expectation of reaching agreed definitions. The Brundtland 1987 definition of sustainable development received criticism during the meetings and in the evaluations submitted by participants<sup>10</sup>. As one participant noted, it is sufficiently vague to allow for interpretation in line with continued economic growth, since it is:

"by its very nature a compromise of compromises, as it had to be agreed by governments of many different countries with very different needs... not taking into account, for example, the issue of poverty and inequality between and within countries." (evaluation comment)

The series evaluations sought confirmation about definitions of sustainable development and seven of nine respondents were agreed on the necessity of variations in definitions of the central concept. Some replies affirmed that probing definitions is part of the ESD endeavour and two of these emphasised that ESD is

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<sup>9</sup> Examples emerged of more and less fruitful endeavours to develop modules and multidisciplinary research projects on sustainability issues, providing indications of 'what works' (and the opposite), though it was not often clear whether distinctions could be made between interdisciplinarity in general and the interdisciplinarity that characterizes 'ESD'.

<sup>10</sup> From the 'Brundtland report' of 1987 (World Commission on Environment and Development), this reads: 'development that meets the needs of the present without compromising the ability of future generations to meet their own needs'.

most clearly understood in terms of its mode of educational intervention. During these discussions, participants illustrated the pedagogical value of definitions: examples were given of students being encouraged to generate their own definitions or to analyse 'policy-loaded' definitions in current use<sup>11</sup>. ESD, that is, necessitates reflective learning.

The UNESCO 2002 articulation<sup>12</sup> received the most positive comment as a useful definition of sustainable development, due to its inclusion of social justice, health and poverty dimensions. The resulting formulation for the UN Decade of ESD reads as follows, positioning ESD'as:

“a dynamic concept that encompasses a new vision of education that seeks to empower people of all ages to assume responsibility for creating and enjoying a sustainable future”.

The UNESCO sustainable development principles were considered to have the potential for a more coherent framework for ESD, yet there was insistence that inequities between the perceived needs of different communities are generally under-articulated and a source of persistent controversy<sup>13</sup>. It was remarked that the academic 'sustainability' agenda has also widened during recent decades, from scientific and technical concern about environmental damage and resource use, to the incorporation of a broader cultural perspective on poverty, justice and exclusion.

This concern with inequalities underlined the general agreement among the group that an interdisciplinary approach, combining human, economic and scientific analysis, is a necessity for ESD<sup>14</sup>. Just how many analytical approaches a student – undergraduate (UG) or postgraduate (PG) – might be expected to master remained an open question. This provoked debate on the challenge of breadth versus depth: some participants viewed a thin spread of new perspectives as more valuable for ESD than a deep engagement with just one or two subjects. A related question was also raised: is interdisciplinarity best developed via teamwork or through individual efforts? The group showed a general orientation towards

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<sup>11</sup> In evaluations, two participants offered their own definitions of ESD and one mentioned the usefulness of the UK Sustainable Development Education Panel definition. A related point that emerged was that participants felt under-informed about the mass of policy documentation on sustainability; they saw this as a substantial pedagogical resource, if only there could be a coherent way to access it. There is a strong case for the development and maintenance of a web portal.

<sup>12</sup> From the Johannesburg 2002 Summit which proposed the Decade of Education for Sustainable Development 2005-2014, this affirmed 'three interdependent and mutually reinforcing pillars' for sustainable development: economic development, social development and environmental protection (the 'triple bottom line').

<sup>13</sup> For example it was noted that prominent companies might readily be able to claim affiliation to these loose definitions of sustainable development, leaving participants unwilling to align with the same articulations.

<sup>14</sup> One basic organising framework proposed was ecology, ethics and economics; similar configurations exist in the curricular initiatives already running via a number of UK HEIs, for example the prominent programme at South Bank University.

working in multidisciplinary teams to share expertise, thus generating interdisciplinary conclusions. This applied both to the delivery of learning and to the reception of it by students (an example was provided where students' teamwork skills are subject to assessment).

The issues regarding divisions in intellectual practice and 'contested knowledges' were tabled during these discussions: one view was that the decisive boundary is between the pure and applied disciplines<sup>15</sup>. Others argued that the qualitative/quantitative division is still rife and has particular significance in relation to ESD, for the analysis of the 'value stamps' applied by different groups to available 'scientific facts'. The case was argued a number of times for a stronger voice from the human and social sciences throughout academic life, in order to understand the effects of belief and behaviour on the use and misuse of technology and resources<sup>16</sup>. In this respect, economics was pinpointed as requiring more substantial reconnection to ecology and to the human and social sciences, to create knowledge 'fit for purpose', in other words to understand sufficiency and to counter tendencies towards econometric analyses aimed primarily at understanding growth<sup>17</sup>.

### **3.2 ESD & INTERDISCIPLINARITY: DISCIPLINES & THRESHOLDS**

The need to check 'disciplinary triumphalism' was emphasised at many points, in relation to the question of whether certain disciplines had become more or less fertile arenas for exploring sustainability issues. Questions were raised about the control of interdisciplinary sustainability analysis; signs of disciplinary control and migration were particularly interesting in relation to the 'inter-disciplines' where human and natural sciences interact (for example, archaeology, geography and anthropology). It was acknowledged that geography has been perhaps the most identifiable disciplinary 'home' for sustainability, but one that has often been isolated, an 'existing island'; more recent growth in human and social geography was understood to be changing this tendency. There was also insistence that while a focus on 'local' contexts is important pedagogically, and at the level of institutional strategy, the constraints of global power systems must not be flattened out of the analysis. One issue that was raised, but unresolved, related to the place and role of area studies as an interdisciplinary means of carrying out local and global analysis.

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<sup>15</sup> For example, it was considered easier to envisage ways to implement ESD for professionally-oriented planning or engineering courses, but harder to see how it might be delivered in a meaningful way to students of quantum physics.

<sup>16</sup> A case was cited of an interdisciplinary research project where social-scientific interview data with farmers had been sidelined and devalued by quantitative scientists.

<sup>17</sup> The case was made for developing qualitative evaluation tools to be made available to support local government project evaluations as a bulwark against the trend to narrowly-conceived performance evaluation models.

The general view of the group was that an opportunistic approach to synergies was required of all disciplines<sup>18</sup>; the contested nature of sustainability issues should encourage academics to capitalise on creative connections arising from the analytical problems in their particular disciplinary inquiries. It was understood that such an opportunistic approach required considerable flexibility on the part of HE institutions. It was noticeable during discussions of the 'ideal' methods and components for interdisciplinary ESD that flexibility and diversity were repeatedly affirmed. There was incongruity, in that a stronger 'qualitative' or 'human' voice was emphasised, yet there were recurring concerns about the perceived difficulty of science and the general weakening of scientific and statistical literacy (see Section 3.3).

At many points during the series, discussion was prompted on the ways that a national 'ESD agenda' for HE might be conceived and delivered. Ideas for flexible and 'porous' interdisciplinary programmes at UG and/or PG levels were popular (where 'porosity' was envisaged as flexible learning, multiple entry levels and modular choice). Scottish models (the BA general and the four-year UG programme) and the former foundation year at Keele University were cited as good models for interdisciplinarity, as were Liberal Arts ideals, deriving from an understanding of the map of knowledge developed in the 16<sup>th</sup> and 17<sup>th</sup> centuries and found in the Liberal Arts colleges of the USA, including both humanities and natural sciences.

The idea was mooted that conversations about sustainability and knowledge are in essence an opportunity to articulate 'the ideal' in terms of changes to the education system as a whole. Interdisciplinary endeavours are often triggered by 'applied' concerns and in this aspirational respect, ESD forms a *locus classicus* for interdisciplinarity. A related notion that arose during the debates on definitions was the possibility of understanding 'sustainability' as a 'threshold concept'<sup>19</sup>. This notion points to the potential significance of the term in relation to the variability of ESD and its disciplinary range, both as a matter of public concern and as a topic for academic programmes. Those who viewed ESD as research terrain with particular problems and those who viewed it in terms of a 'Lifelong Learning' agenda were both illustrative of this 'ideal' educational quality.

On the pre-circulated personal profiles, we had invited participants to name significant interdisciplinary theorists, as a means of establishing whether older or more contemporary theorists would be cited (see Appendix C). This revealing list

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<sup>18</sup> For example, one participant noted that generating connections to other disciplines only from the established base within geography might leave its assumptive position unchallenged.

<sup>19</sup> Threshold concepts are transformative but pedagogically challenging 'gateway ideas' that generate new understandings of factual and conceptual material, and can at times be seen as the 'property' of certain disciplines. For further discussion see Meyer, J.H.F. & Land, R. (eds) (2006) *Overcoming Barriers to Student Understanding: Threshold Concepts and Troublesome Knowledge* Routledge: London & New York . There is scope for connecting the exploration of threshold concepts to ethical issues around ESD, particularly with input from philosophy on the relationship of normative ethics and meta-ethics.

highlighted contributions from Aristotle, through prominent 18<sup>th</sup> and 19<sup>th</sup> century thinkers such as Adam Smith and Charles Darwin, to earlier 20<sup>th</sup> century writers like Gregory Bateson and Sergey Shirokogoroff, plus contemporary intellectuals and activists such as Amartya Sen and Vandana Shiva. The historical range of these nominees and the fact that their writings cover various topics pointed to participants' appreciation of their lasting value in furthering interdisciplinary understanding of the human species.

Consideration was also given during these discussions to the 'hidden curriculum' and those disciplines engaged with analyses that might be understood as potentially significant, but often implicit, contributions to 'ESD'. The historical disciplines were mentioned, since they often unearth instances of sustainable and unsustainable practices in the human record (and reach out to forge novel interdisciplinary connections), yet they do not always articulate this as 'ESD'<sup>20</sup>. The role of implicitness, and the question of whether the implicit should be made explicit, requires further consideration in relation to processes of academic innovation; the emergence of the interdisciplinary field of human ecology would be an interesting case in point.

These points lead to the rather obvious conclusion that questions of relevance for human survival have been asked and answered in various ways at different historical moments. If there is indeed 'nothing special' about ESD, and 'sustainability' is a permanently shifting threshold concept, both disciplinary and interdisciplinary understandings of it will continue to be useful. The group shared a sense that to complete these investigations would require further work, to generate a more comprehensive and academically credible view of disciplinary contributions<sup>21</sup> and the ways that these can be realised in interdisciplinary programmes geared to ESD (see recommendation 6.3).

### **3.3 ESD DELIVERY: PEDAGOGY & VALUE CONFLICTS**

As discussed in Section 3.2, differences of opinion were expressed about the balance of breadth and depth, and the appropriate degree of student involvement in specifying programmes of study for interdisciplinary ESD. Merely extending the range of student choices was not considered to be a particularly fruitful avenue, though it was clearly one that offered apparent advantages. Various potential strategies for ESD delivery were discussed:

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<sup>20</sup> The process of making connections explicit often depends on the efforts of innovators who develop analysis of research terrain which has identifiable linkage with pedagogical and political developments such as those surrounding ESD. An example from archaeology would be: Albarella, U. (2001) *Environmental Archaeology: Meaning and Purpose* (Kluwer Academic Publishers: Dordrecht).

<sup>21</sup> At the final meeting, consideration was given to disciplines not strongly represented in the series: physicists, biologists, lawyers and medical/health professionals were highlighted – 'applied' professions were identified as a distinct absence. Another weakness in the composition of the group was the relative lack of expertise in business subjects and the need for more contributions in relation to education (which formed the focus for one interesting proposal for further work).

- specialist interdisciplinary ESD centres in HEIs, co-ordinating input from all departments;
- making ESD values inherent in all programmes, via assessment techniques, for example;
- compulsory ESD modules common to all programmes within a HEI;
- ESD as a strategic corporate commitment and/or collegial ethos;
- implicit ESD or the ‘hidden classroom’, not made explicit as ‘ESD’ in course outlines.

The diversity (its benefits and its dangers) was evident in four small groups tasked with envisaging an ESD initiative on the second day: Group 1 had a strong rationale for an interdisciplinary Masters programme; Group 2 planned strategic change across one HEI; Group 3 discussed ethical reorientations required at sector level; and Group 4 could not reach agreement on an intervention since their debates on interdisciplinary content and purpose stemmed from highly disparate positions. These outcomes revealed further complexities in exploring how interdisciplinary ESD relates to disciplines: whether it draws from them or bypasses them, whether it builds on student expertise or inexperience. They also provoked questions about how interdisciplinary ESD relates to HEIs: whether it functions as ‘glue’, suffusing institutional strategies, or instead supplants strategies, serving as a catalyst for setting new priorities. The group recognised its common commitment to the importance of ESD, as well as the need to engage in dialogue with those in HE who have reservations about this type of agenda and its normative dimensions.

In discussions of delivery, attention shifted frequently from content (disciplinary particulars and interdisciplinary combinations) to pedagogy and skills development: critical thinking and reflexive, democratised, and, crucially, experiential learning. This skills orientation and insistence on active learning prioritised an applied focus, aiming to strengthen links between HEIs and local communities, thereby enhancing the ‘public service’ dimension of HE. ‘Active’ or ‘engaged’ learning was noted as a significant enticement to students seeking to gain experience and enhance their employability, for example in relation to Local Agenda 21 or EU ‘Sustainable Cities’ initiatives. Much thought was directed towards supporting students’ skills development, using Personal Development Planning and bespoke approaches to the provision of careers advice. Placements and work-based learning were highlighted as significant for this type of skills development<sup>22</sup>, as were Regional Development Agency (RDA) initiatives and work with local councils<sup>23</sup>. It is important to understand the ways in which ESD fits into, benefits and benefits from, other educational and social priorities.

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<sup>22</sup> For example, the value of studentships with community stakeholders was noted, such as the CASE PG scheme ‘Collaborative Awards in Science & Engineering’ (which is not restricted to the natural sciences).

<sup>23</sup> Comments were made that collaboration with RDAs was often easier than with local councils; education and museums departments were flagged as comparatively accessible points of connection within local councils.

Section 3.1 charted the unresolved debates about how ESD (and its interdisciplinary remit) might be distinguished from other interdisciplinary agendas; the same question was applied to other 'ethical' and 'applied' agendas at sector level. There was recognition that ESD is broadly perceived as a 'good thing', but unavoidable differences in academic agendas can thwart clear enunciation of its remit and purpose. The group was in agreement that it is not sufficient, though it can be tempting, for it to remain an unexamined 'good thing'. This related to the intellectual issues around interdisciplinarity, and to the various stakeholders implicated in ESD design and delivery. There was acknowledgement of the need for a plural approach to synthesise the goals and values of educators, students, employers and the public generally, in the context of globally and ethnically diverse university communities<sup>24</sup>. Emphasis was given to the need to include professional perspectives in ESD, to enhance understanding of the potential tension between graduates as citizens and graduates as employees, since disciplinary values transmute into plural professional values on graduation. Complex conflicts of values were experienced by academics (between personal values and those encountered in colleagues, universities, and disciplinary or professional subcultures). Some ventured the opinion that seeming clashes of disciplinary remit or practice could mask what were in fact divergences in personal or cultural worldviews, which added to the call for closer analysis of the role played by belief systems and their associated ethical principles.

This recognition of the significance of values was related to discussions about how far the ethical dimensions of ESD stood in distinction to the scientific and was acknowledged by all participants, regardless of disciplinary background. Some commented that ESD is firmly (and rightfully) connected to the emancipatory 'mission' of science and education. Scepticism about science was directed towards corruption of its principles by commercial interests operating on government and resulting in unsustainable policy initiatives presented under the banner of sustainability. This view was broadly shared among the group and generated comments to the effect that ESD is fundamentally and inevitably countercultural in approach, since it is perpetually challenging to mainstream interests. In this, ESD might be seen as following in the time-honoured tradition of HE, continually asking the question 'do things have to be thus?' The question of how closely the 'mission' of science was allied to unrestricted economic growth and unequal global development was related to the need to educate for principles of deceleration, sufficiency and equality.

'Preaching values' was considered problematic, but the necessity of a pluralist, critical approach was an obstacle to agreement on how 'preaching' might be identified and managed. This remains an issue for personal judgment and, crucially, an issue for pedagogical practice. The implications for interpersonal skills

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<sup>24</sup> Particular problems were noted in relation to culture clashes and the issue of grounding international students in the local settings and the community identities of the universities they attend.

were evident, not only for students, but also for academics seeking to provide such learning encounters and to encourage participatory solutions. There was agreement that integrating disciplinary knowledge, sustainability analysis and ethical pluralism affects the remit for academic Continuing Professional Development (CPD) and student Personal Development Planning (PDP). The ethical dimension of ESD was highlighted as a potential focus for assessment, since the ability to work with diverse perspectives is a widely applicable transferable skill.

It was noted that problems with disciplinary silos and segregated conceptual worlds could also be mediated by focusing on concepts such as 'social responsibility' or 'global citizenship': some went so far as to suggest that the terminology of sustainable development could be relinquished altogether<sup>25</sup>. Such a move, harnessing notions of 'service' to skills agendas, was viewed favourably in terms of student engagement and recruitment<sup>26</sup>. Discussions of public service were also related to academic careers: concern was expressed that in UK HEIs, 'service' is not considered valuable for career progression, which is a sizeable disincentive for ESD (or indeed any 'ethical' agenda). Emphasis on the interpersonal skills academics would need, in addition to their subject knowledge, for CPD geared to ESD, led to an important series of comments about notions of expertise in academia. The group articulated the need for academic 'experts' to be able to 'de-footnote' their practice: to exercise caution with jargon and to be able to explain their disciplinary practice to other professionals and lay people. There were calls for academics to disseminate knowledge with greater speed and via repeated iterations, rather than seeking definitive analyses. Members of the group also raised concerns about the limits of their own disciplinary backgrounds when tackling interdisciplinarity; again, the usefulness of multidisciplinary collaborative teams was noted.

Debates about the delivery of ESD were underwritten by concern that the mode and timing of it must relate to students' educational backgrounds, particularly when considering the necessary intellectual preparation for interdisciplinary learning. Participants generally agreed that they lacked sufficient information about student preferences and educational backgrounds, for example on national trends in combining science and humanities at 'A' level<sup>27</sup>. However, some were of the view

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<sup>25</sup> There was a sense (though without a clear evidential basis) that students are drawn to programmes geared to ideas of 'sustainable' or 'global citizenship'. The example of Leeds Metropolitan University was given, where a Global Citizen award scheme operates for students and contributes to a broader cultural ethos geared towards ESD within the institution.

<sup>26</sup> The rising interest of students in these issues, and the fact that graduates consider ethical profiles when choosing employers, has been confirmed by research carried out for the HE Academy ESD Project by StudentForce for Sustainability. See report to the HE Academy, February 2008 *Employable Graduates for Responsible Employers*.

<sup>27</sup> There was no clear knowledge among the group as to whether students are increasingly taking a mixture of subjects; nor indeed whether the necessary intellectual synthesis is taking place at pre-HE level even if this is the case. Merely expanding choice and combinations at A-level might not provoke deeper learning and greater analytical prowess.

that apposite pedagogical approaches to introduce ESD learning might overcome deficiencies in formal educational experience. There was a shared sense among the group that students entering HE are generally ill-prepared for interdisciplinarity and therefore the potential for interdisciplinary ESD was seen to be greater at PG level.

In addition, there were concerns that there is insufficient UK programme provision to match student interests in sustainability, or that existing provision is not marketed effectively, due to a lack of information about the vocational needs of students and employers. There was uncertainty about student interest in sustainability: the experience of participants was largely that the level of interest is significant, but that awareness of career opportunities on completion of UG degrees is not supporting or channelling that interest (particularly for interdisciplinary ESD). The need to engage students seeking professional specialisation was seen as a priority, in tandem with emerging skills requirements of regulatory professional bodies. The introduction of tuition fees was considered pertinent; students need to generate solid earnings, but the group recognised potential tensions in relation to their need to challenge 'mainstream behaviour' in students' vocational and economic choices. Enabling equitable educational access in this climate was one of the significant prompts behind suggestions for flexible 'porous' programmes that engage students with different backgrounds, domestic and professional needs<sup>28</sup>.

### **3.4 SECTOR ISSUES & ORGANISATIONAL CULTURE**

The aforementioned discussions around ESD delivery and student trends highlighted the need for further information, persuasion and change at organisational and sectoral levels, to enable further progress on interdisciplinary ESD. While there was sympathy for the pressures affecting senior HEI management, the contrast was drawn between universities modelled primarily as commodities or as social enterprises: 'inspired leadership' was seen as essential. Problems were repeatedly aired over the commodification of HE and inconsistencies between prevailing business models and strategic priorities for ESD<sup>29</sup>. However, there was pragmatic insistence on acceptance of the present climate: the case was made for academics to become increasingly entrepreneurial in their modus operandi, as a means of achieving 'reformation' on this issue. Comments at the second and third meetings urged the identification of suitable

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<sup>28</sup> The 2006 Levett-Therival consultation for HEFCE has underlined the issues around fees and admissions policies, framing fair educational access as a key tenet of sustainable development. See: *Sustainability carrots and sticks: the benefits and risks of sustainable development for HEIs* (Levett-Therival consultancy report to HEFCE, October 2006).

<sup>29</sup> A warning was sounded in relation to 'turf wars' over the increase of funding for sustainability initiatives within HE: this was seen as a temptation for HEIs to seek finance for initiatives with narrowly-defined remits that could most easily generate evidence of success and the illusion of comprehensive expertise on sustainable development.

business partners, professional bodies and potential employers<sup>30</sup>, to influence HEI senior management and to inform curriculum design. These parties, together with those occupying senior non-academic functions within HEIs, were noted as the 'significant absences' from this series, indicating the move within this group towards a broader understanding of the role of professionals and other stakeholders (e.g., university registries and the 'quality assurance sector') in relation to interdisciplinarity and ESD.

By the end of the series it was clear that mixed views were emerging on the relationship of academia to commercial realities. Conversations about the value of enterprise also prompted comments about tendencies within HEIs (and UK culture in general) towards risk-aversion. Some participants noted the need for universities to adopt business models more conducive to academic collaboration, for example using participatory budgeting to ward off segregation and competition both within and between departments and institutions. There were comments that interdisciplinary innovation has been crippled by QAA<sup>31</sup> and RAE processes, yet acknowledgement that disciplinary communities can be complicit in the development of such constraints. The need to influence senior disciplinary gatekeepers was noted, for example at revalidation or where there is a particular desire to apply pressure (e.g., in revising economics benchmarks)<sup>32</sup>. The collapse of interdisciplinary benchmarks was noted as a negative factor, and whilst some interdisciplinary programmes have been established via the Research Funding Councils, there was a general sense that the RAE still works against those conducting interdisciplinary research of relevance to ESD. Again, concerns were raised about the adequacy of academics' own intellectual backgrounds and the need for team-based expertise, for example in the selection and operation of expert panels<sup>33</sup>.

Given the speed and scale of change affecting HEIs in recent decades, it was agreed that organisational change must be managed tactically, rather than with radical revisions that might generate resistance. Building on existing employability and skills initiatives was considered to be not only an effective recruitment tactic, but an intellectually and pedagogically justified one. It was also considered highly pragmatic, since many HEIs have already instigated strategic changes which might

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<sup>30</sup> The role of emerging business and professional networks was noted, such as 'Natural Change' and the Professional Partnership for Sustainable Development. It was acknowledged that it can be comparatively easy to engage certain professions, such as the environmental and heritage industries, but other professions may be less accessible.

<sup>31</sup> One participant commented on the lack of terminology relating to 'society' in the disciplinary benchmarks for engineering, signalling deficits in the applied understanding of the technical knowledge. This, however, contrasts with the activity of the Royal Academy of Engineering in the development of sustainability criteria within professional regulations, and supportive of academic and curricula developments to further the appropriate skills agenda.

<sup>32</sup> There were reminders about the possibilities for change via representative bodies such as QAA; the shift to a quality 'enhancement' era was seen a positive development in this respect, particularly in the Scottish context.

<sup>33</sup> Related comments were directed towards the development of young interdisciplinary researchers and the difficulties of identifying suitably qualified examiners for interdisciplinary research degrees.

serve as platforms for further developments on ESD. Since recruitment patterns are a central consideration for enabling senior HEI managers to support and market ESD, it was thought that interdisciplinary ESD would be most effective by being responsive to market needs. The engagement of potential employers was foregrounded, since market needs can sway inherent conservatism in disciplines and existing barriers in institutions. In this light, the impetus towards 'Lifelong', flexible and distance learning, short courses and professional training were all viewed as sites for fruitful development. Considering recent developments in the national skills agenda, an employability focus and collaborations for 'off-campus' learning were highlighted as essential for engaging students and HEI management in the operational implications of interdisciplinary ESD. It remains a question as to how far the Leitch report<sup>34</sup> provides a context for the high-level analytical skills required to master the interdisciplinary complexity and contested nature of so many of the issues surrounding 'sustainability'. An investigation of ESD in FE would be extremely valuable in enabling a connection to be made with the Leitch work.

At the second meeting, it was noted that institutional strategies and commitments tend to be ineffective without a supporting mechanism, leading to suggestions that vice-chancellors might seek the support of funding councils to enshrine sustainability objectives. A number of participants were of the view that specific centres or members of staff with dedicated contractual time would be necessary to catalyse institution-wide (and therefore interdisciplinary) ESD developments<sup>35</sup>. The final meeting unearthed concerns about academic career progression and the need to engage 'flexible thinkers' at either end of the scale of career seniority, including those on the threshold of senior management. There was a sense that devolved financial management reduced the scope for strategic institutional leadership; the developmental, discretionary funds available to many provosts in institutions in the USA provide an interesting example of what might be required. Work recently commissioned by HEFCE has outlined the strategic benefits for HEIs engaging with ESD and it was suggested that further interaction with UUK would be valuable on this front<sup>36</sup>. It was noted that in pressing for sector level change, Wales and Scotland may prove to be useful models for funding strategies conducive to a more collaborative climate.

At the final meeting, further consideration was given to skills development and subject content in the wider educational sphere. As mentioned in Section 3.2, there

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<sup>34</sup> *Prosperity for all in the Global Economy: World Class Skills*, Lord Leitch, December 2006.

<sup>35</sup> These points are supported by the findings of a study of multidisciplinary programmes in environmental studies in the USA and their relative intellectual and pedagogical coherence. The study found that these challenges, plus the potential for normative conflict and planning difficulties, were effectively mediated where institutions linked the creation of effective programmes to tenure, promotion and pay. See Maniates, M.F. & Whissel, J.C. (2000) "Environmental Studies: The Sky Is Not Falling", *Bioscience*, June 2000, Volume 50 Number 6, pp509-517.

<sup>36</sup> *Sustainability Carrots and Sticks: the Benefits and Risks of Sustainable Development for HEIs* (Levett-Therival consultancy report to HEFCE, October 2006). There were also prompts to explore earlier work carried out and published under the auspices of CVCP in relation to HE and sustainable development.

was uncertainty as to the level of student preparation for interdisciplinary work, and it was thought that HE ought to be directed towards bridging this gap. Since pre-HE teaching often relinquishes such goals in favour of subject focus, the rightful place of interdisciplinary education was thought to be at HE level. It was affirmed that the transition to HE should involve the shift to independent learning and the production of 'critical graduates' (a notion which might be considered to encompass 'sustainability literacy'). By revisiting the trammelling of subject knowledge at school level and its reflections in academic disciplinary terrain<sup>37</sup>, HE would be able to contribute effectively to the development and synthesis of coherent, interdisciplinary 'sustainability literacy' across the sector<sup>38</sup>. On the other hand, it was recognized that a number of initiatives, both in the curriculum and in the physical setting of education (e.g., the Sustainable Schools initiative) might, in the medium term, raise students' expectations and confidence considerably.

#### 4. FACILITATION REFLECTIONS

The seminar series was a challenging enterprise, due to the diversity of orientations among the group and the breadth of the topic. In terms of the overall degree of penetration on the issues, the success of this series can be understood at different levels. We had anticipated difficulty in holding a shared focus and this was probably unavoidable: there was an almost boundless scope to these discussions once all the salient factors were under consideration. This meant that in many areas, debates were inconclusive and progress on the specifics of the interdisciplinary terrain (and its implications) was limited, which was the main weakness of the series and perhaps its most significant finding. One striking feature was that participants sometimes felt unwilling to speak as representatives for their disciplines, underlining the need for a nuanced portrayal of disciplinary contributions and broader interdisciplinary engagement. Any lack of focus was certainly not due to lack of engagement; those who attended were uniformly well prepared and enthusiastic, having thought about the issues and their own perspectives, and having a willingness to engage constructively with one another<sup>39</sup>.

Limits on the level of penetration that could reasonably be achieved over three meetings also related to the degree to which we as facilitators could 'manage' this

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<sup>37</sup> At secondary level, geography was still viewed as the site for most active consideration of issues relating to sustainable development; other areas of the national curriculum were viewed as currently less fruitful arenas. The more recent inclusion of citizenship at pre-HE level might be used to encourage consideration of sustainability issues, but it will be some time before synergies and transfer can be embedded between school education and university curricula. It will be seen that ESD depends upon, and provokes, active and questioning learning.

<sup>38</sup> For example in dealing with the problems facing science education as well as the need articulated by this group for stronger public understanding of the value of human and social scientific inquiry.

<sup>39</sup> Whilst most of the exercises were undertaken in small groups with mixed disciplines, participants noted that it would also be helpful to engage in group work with kindred disciplines, for example in groups of social, historical or natural sciences.

remit. The basic format for each day appeared to work well; however, the tensions between our two key aims were often problematic, as was the tension between the ideal and the actual. It is probable that the sheer depth of these matters and the need for multiple views (across and within disciplines), together with the need for practical parameters in a three-day series (and our decision to do this by keeping the contextual focus), ultimately set the boundaries for our progress. It is also important to note that all participants, however diverse in so many ways, shared a commitment to the importance of ESD as an educational and a public issue. Direct engagement with others not sharing such a commitment ought to be extremely interesting, not least in the exploration of their political and psychological dimensions. In these meetings, a number of comments, for example about institutional, disciplinary or employer indifference, necessarily but unfortunately went unanswered.

The most successful aspects, from our observations and informal feedback, were those exercises where participants were encouraged to narrate experiences of interdisciplinary or ESD projects and activities. The space to reflect on previous experiences (in the company of attentive listeners) proved popular and informative, to the extent that we were asked to repeat a similar exercise on the final day. Opportunities for this type of conscious reflection are rare under habitual workload pressures and the chance to do this face-to-face seemed to be an important part of this process. The process was enhanced by the fact that these were supportive colleagues, seeking to extract issues and lessons and able to provide constructive counterpoint due to their different perspectives. Academics need to discuss complex issues in this manner and it could be argued that this type of activity is persistently sidelined under the current pressures of academic life and practice.

Comments on the limits of the series and its design were constructively critical, with recognition of the scale of the debate and the exploratory nature of these initial meetings. As noted in Section 1, our orientation was pragmatic and contextual; we urged participants to relate their thinking to 'delivery' and 'implementation', to gradually unpack the possibilities and scope of the topic. Some resistance to this approach was expressed, due to an understandable insistence that we should clarify our intentions<sup>40</sup> and due to the tension inherent in the twin aims of intellectual expansion and the contextual focus. For example, at the second meeting we set a task involving elements of both, which participants found overly complex and somewhat unclear in purpose: this was probably the least successful exercise. At the same time, this was the mid-way point in the group process, and the difficulties encountered only served to highlight the need for further substantial research and development in order to achieve credible, close analysis of the intellectual terrain.

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<sup>40</sup> For example one participant expressed concern that we might be in danger of trying to create a comprehensive change plan for the sector during these three meetings. Against that, it could be argued that such a comprehensive change was precisely what HEFCE at least had in mind when taking up the Government's challenge on ESD and sustainability literacy.

At the end of the series our main concern was for participants to feel as comfortable and as confident as possible about the outcomes, even where they may have fallen short of our aims. This group was oriented to understanding 'successes' and 'failures' as equally valid, which included acknowledgement of where our aims (as facilitators and as participants) may have been unrealistic or limited by influencing factors in the present climate. We worked with the tensions in the hope that the series would not leave participants feeling discouraged, but rather with a sense of how to identify institutional opportunities, potential alliances, plus new ideas and tactics to progress the issues of most concern to them. The series evaluations were qualitative and open-ended: following the final meeting we circulated an email seeking clarification on matters of definition and asking evaluative questions about the series<sup>41</sup>. Of nine formal responses, four rated the diversity and networking as the most useful feature of the series, while another three agreed, but highlighted the fact that the diversity meant that focus had suffered. The tension between the two main aims was noted in our facilitation style, which generated both positive and negative comments. This was not surprising, since creative, intelligent individuals often need 'soft' management, but this inevitably conflicts with the need for tighter management with such a diverse remit and group.

In relation to changes in their understanding of ESD, four stated that the series had not changed their views, but three had gained perspective on the breadth of the ESD terrain and two had gained a sense of context for their own expertise. In addition, three noted that the series had informed them about UK-wide ESD initiatives and one person had relinquished their prior expectation of finding an agreed definition for sustainable development. The evaluations and the informal feedback emphasized that the main benefit of the series was the chance to discuss ESD with a highly diverse group; the 'space' generated by the meetings was viewed as a sound platform for further developments. Additional comments highlighted the benefit of the mix of backgrounds, in that participants were able to contemplate these issues beyond the constraints of professional boundaries and competitive pressures in their own institutions and disciplinary communities.

The series was likened by one participant to an extended focus group process, exploring intellectual and professional issues involved in furthering interdisciplinary developments related to 'ESD'. While the outcomes of these discussions may affirm points that are familiar to those with experience of the ESD arena, the fact that they were sourced from this diverse, interdisciplinary group of academics adds additional significance. Therefore, these findings could readily be assessed and applied as the results of a substantial focus group with experts in a process of critical engagement.

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<sup>41</sup> Nine responses were received from 27 participants (as well as additional informal comments by email and verbally).

## 5. CONCLUSIONS

As one participant stressed, if recent scientific predictions are correct, moving the academic ‘oil tanker’ forward is an urgent matter for survival of the species. ESD developments will continue, but the process of stakeholder engagement and academic innovation should be hastened during the UN Decade for ESD. As facilitators, we understand the main achievement of this series to be the fact that cogent debate has taken place across difficult boundaries and in a challenging sector climate. This has provided the HE Academy’s ESD Project and other interested parties with parameters and insights to inform future strategies on interdisciplinary ESD. Finding space and time for extended discussion on an inter-institutional and interdisciplinary basis is not easy, but that space and time has to be found. An interdisciplinary network of colleagues has been formed, with whom suggestions and issues can be discussed further<sup>42</sup>, and a number of project ideas were generated by participants wishing to apply these debates to future activities within their institutions and disciplines. The cost of providing such funding is extremely small; the potential, especially for giving context and authority to local developments, is considerable.

Significant differences of orientation exist in the remit and definition of ‘sustainable development’ and of ‘ESD’, not to mention the nature and role of interdisciplinarity in ESD. These discussions revealed considerable commitment to ESD and its complexities, with indications that certain disciplines require further provocation to clarify and operationalise their contributions. The ‘real world’ orientation of the group raised questions about study outside the limits of disciplines, which is not necessarily ‘interdisciplinarity’, though it may take interdisciplinary forms. Their shared view is based on insistence that disciplines are necessary, but not sufficient, for plausible ESD. They also evidence an approach to interdisciplinarity connecting academics, students, employers and policy-makers, widening notions of ‘interdisciplinarity’ to include professions, industries and communities.

One of the most clearcut outcomes of the series is the need for consolidation of existing work concerning disciplinary contributions and interdisciplinarity in ESD. At present the picture is incomplete; many Subject Centres have explored the terrain<sup>43</sup>; some have yet to do so, and there is a need for synthesis. Participants underlined the need for this to be an academically credible project to situate sustainability and ESD in relation to the broader terrain and other developments in research and teaching. The creation of a significant resource on this topic would

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<sup>42</sup> Participants were keen that such a network should continue to develop and to interact; their academic autonomy and their diversity would enable them to ‘think the unthinkable’, keeping the ESD concept critically sharp and avoiding being co-opted for other purposes or swayed by disciplinary bias.

<sup>43</sup> Some findings from initial Subject Centre explorations were reported in Dawe, G., Jucker, R. & Martin, S. (2005) *Sustainable Development in Higher Education: Current Practice and Future Developments*, though further projects were completed after that report was compiled and new collaborations have since developed across Subject Centres.

assist in building confidence among academics to develop curricula initiatives and would stimulate further dialogue on ways of engaging with ESD across the sector, the interplay between disciplines, professions and interdisciplinary ESD, and the nature of interdisciplinarity itself.

Personal and interpersonal qualities featured prominently in discussions of skills throughout this series. The need to challenge beliefs and behaviour was a significant point of focus in pedagogical terms, to enable educational interventions that result in graduates who can generate coherent strategy and policy in the future deployment of science and technology<sup>44</sup>. The need for both academics (as citizens and educators) and students (as citizens and future employees) to be able to handle increasing and persistent rates of change and complexity was emphasised as perhaps the essential skill that will be required over coming decades. The issue of what exactly is meant by 'sustainability literate graduates' would be well served by further exploration of the connections between the points raised here about skills and interdisciplinary ESD. A clearer picture is also needed of the market for 'sustainability-literate graduates'. Our explorations indicated that student engagement with sustainability is not what it might be; participants seemed to ascribe this not to lack of interest but lack of conviction or awareness about employability prospects related to sustainability programmes. It was clear that further information is needed about the views of students choosing interdisciplinary sustainability programmes and their educational backgrounds. Input from employers is also crucial at this stage, with regard to career possibilities and the development of professional skills requirements that connect with interdisciplinary ESD<sup>45</sup>.

At sector level, one of the most interesting elements of this debate concerned the degree to which HE might harness a culture of enterprise. Whilst being critical of unrestricted economic growth and conscious of the barriers that can arise, those present considered various ways that they might seize opportunities linked to market demands in order to enable change within academic culture. Here we note the group's significant interest in extending the responsibilities of HE and its personnel to include public issues in their remit more openly. That would imply, too, explicit recognition of 'service' among the career progress paths for academics. There was a sense of the possibility of further freedoms to be accessed beyond academia, enabling ESD developments that satisfy intellectually and ethically, while also responding to student needs.

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<sup>44</sup> It is entirely feasible to imagine the scenario proposed during the series, of a multidisciplinary team of students helping a local authority to develop strategy on a particular issue, sharing disciplinary expertise to reach informed decisions, while confronting uncomfortable trade-offs, risk and uncertainty, and inadequacies of evidence and information.

<sup>45</sup> Research by StudentForce for Sustainability has indicated growing demand for interdisciplinary skills in graduate recruitment; this merits further investigation with Sector Skills Councils. See: See February 2008 report, *Employable Graduates for Responsible Employer*'. A useful survey by the Environmental Data Services (ENDS) discusses the challenge of staffing this expanding sector – see: <http://www.endsdirectory.com/index.cfm?action=articles.view&articleid=200601>

It may be suggested that there is a gap between the most local of educational activity – the scope of a particular module – and the more general, whether at institutional or sector level. Bridging that gap is an important task. HEIs need autonomy to develop various modes of interdisciplinary ESD linked to research and to engage external communities at all levels. The series has underlined the fact that interdisciplinary ESD will vary in its content, composition, explicitness and mode of delivery. However, academics will continue to find common ground in the analysis of regional sites and particular topics, and in the implications of ESD for academic skills and professional expertise.

## 6. RECOMMENDATIONS

The following recommendations are made for future resource and capacity development and we welcome the assistance of the HE Academy and the higher education funding councils in furthering these objectives.

### **6.1 Capacity Building: project grants for interdisciplinary ESD**

Small project awards are perhaps the most significant means of investing in materials curriculum development within and between HEIs and disciplines. The first 15 small grant awards made by the ESD Project are due to submit their findings and participants in this interdisciplinary discussion series generated a number of new proposals. The findings of these projects could inform the resource development project suggested in recommendation 6.3.

### **6.2 Capacity Building: interdisciplinary ESD networking**

Events bringing academics together on matters relating to sustainability teaching and research will continue to generate fruitful collaborations and participants specifically requested such continuity and development of the interdisciplinary ESD network<sup>46</sup>. A network of interdisciplinary PG students is being encouraged via the C-SAP Subject Centre, though further funds would be necessary to develop capacity at this level.

### **6.3 Resource Development: disciplinary & interdisciplinarity in ESD**

Given further funding, the ESD Project could integrate existing work across the Subject Centres on disciplinary perspectives and the emergent interdisciplinary contexts for ESD. Where necessary, buying out the expertise of discipline-based academics to make contributions would add intellectual credibility and ensure effective linkage between research and pedagogy<sup>47</sup>. There is potential

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<sup>46</sup> The network could expand to include European participants, e.g., with support from the European Science Foundation.

<sup>47</sup> The aforementioned Levett-Therival consultation for HEFCE (2006) noted the potential for research concerning the impact of the environmental movement on academic disciplinary terrain, which would be a valuable element of such a project.

for a team publication and for a significant electronic curriculum resource<sup>48</sup>, including good practice examples and related conceptual and professional issues.

#### **6.4 Resource Development: sustainability policy & funding digests**

The creation of a resource to guide academics and students around the range of sustainability-related policy available would be an invaluable tool for HE, as well as for the broader education community. This might include local, national, European and global policy digests, plus reports from educational and political organizations. Information is also needed about sustainability-related funding for academic and partnership work from HE sectoral bodies, third sector, governmental and international sources.

#### **6.5 Stakeholder Dialogue: further workshops and events**

One of the most important outcomes of this exploration has been the need to progress the discussions on interdisciplinarity by connecting them to the views of other stakeholders. The next step would be to organize events to engage parties identified during the discussion series and through other ESD Project activities: HEI senior managers; professional organisations and business networks; careers and admissions staff; student and community organisations; representatives from HE sectoral bodies and from relevant initiatives in pre-HE education.

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<sup>48</sup> Collaboration with the HE Academy's Interdisciplinary Teaching and Learning Project and relevant CETLs would be useful on this proposal; a subsequent web portal could be conceived as a development of the existing ESD Project website.

## Appendix A: Structure of the Discussion Series

### DAY 1: LEEDS

- 10.00 Welcome and coffee
- 10.30 GROUP DISCUSSION: What is ESD and what ought it to be?
- 11.30 SMALL GROUP TASK: What is the ideal ESD programme and what do students need? What should the content be and how should different analytical elements be combined?
- 12.30 Lunch
- 1.30 SMALL GROUP TASK: Narratives of experiences of interdisciplinary collaborations –successes/failures, conditioning factors, obstructions/allies, identifying commonalities
- 3.00 Tea and refreshments
- 3.30 CLOSING SESSION: Group discussion on points arising and plans for Day 2, 4.30 End

### DAY 2: YORK

- 10.00 Welcome and coffee
- 10.30 GROUP DISCUSSION: What have we provoked so far and what is contested terrain? Use of the pre-circulated discussion document to unearth questions for further exploration.
- 11.30 SMALL GROUP TASK: Planning curriculum developments for ESD – choosing a level at which to pitch an interdisciplinary intervention.
- 12.30 Lunch
- 1.30 SMALL GROUP TASK: Continuing the task above – role-playing debates among different disciplines and staff members to troubleshoot potential routes towards implementation.
- 3.00 Tea and refreshments
- 3.30 CLOSING SESSION: Group debate on definitions, politics/ethics and issues for Day 3, 4.30 End

### DAY 3: BIRMINGHAM

- 10.00 Welcome and coffee
- 10.30 GROUP DISCUSSION: What are the intellectual and pedagogical parameters of the motto ‘think global, act local’? Which areas and issues need further exploration?
- 11.30 SMALL GROUP TASK: ESD success/failure stories – where are the bottlenecks?
- 1.00 Lunch
- 2.00 SMALL GROUP TASK: Where are the targets to hit and stakeholders to engage for further progress on ESD? Who are our allies and what are the obstacles?
- 3.30 CLOSING SESSION: Summary and thanks; ideas for future activities and networking, 4.30 End

## Appendix B: Interdisciplinary Experiences

This appendix contains the list of positive and negative features generated during an exercise to reflect on participants' narratives of previous interdisciplinary collaborations and the influencing factors encountered. These materials can be applied to further consideration of the relationship between interdisciplinarity and ESD and the attempt to understand whether there are particular characteristics to interdisciplinary ESD.

### **POSITIVE FACTORS:**

*Discussion and 'process' approaches:* effective listening plus 'banging heads together'; the power of genuine collaboration; use of hindsight and reflection; open-mindedness

*Excitement and personal risk-taking:* 'bloody-mindedness', charisma, provocation; innovators who are identified and easily contactable; personal research development and growth through project challenges

*Diversity and inclusion in work teams and groups:* particularly the involvement of professions, community, NGOs and other partners; 'bottom-up' inspiration and drivers with real life stimuli and applied outcomes

*Freedom in project parameters and operations:* space and time; 'guerrilla actions'; ownership; seed funds to take risks but under the control of participants; 'renaissance' and 'holistic' ideals on arts/science

- *Senior/corporate support:* HEI-level recognition in planning; funders supporting and specifying interdisciplinarity; opportunities and benefits clearly identified.

### **NEGATIVE FACTORS:**

*Rigidity and pre-set outcomes:* formal decision-making beyond participants' control; subversion from partners and target groups; lack of process and static approach unresponsive to shifting goalposts

*Reality versus rhetoric struggles:* easier to imagine/discuss than to DO; problems with existing workloads and unmanageable project remits; lack of follow-through and reflection processes

*Personal and professional troubles:* ego battles and lack of humility; lack of collaborative commitment to interdisciplinarity, often in more traditional disciplines; career worries for students or professionals

*Conflicting agendas:* no coherent forum for joined-up thinking/debate; lack of reflection on commonalities; lack of intellectual foundations for interdisciplinarity; 'middle ground mush' and missing marketable niches

*Lack of senior support and coherent leadership:* competition, risk and threat between experts/resources; centralised bureaucracy preventing collaborations; lack of craft/skill in project leadership

*Sector pressures:* policy climate limits chances for interdisciplinarity; RAE structures and segregation; obvious market drivers threaten interdisciplinarity in hard times; lack of interdisciplinarity precedents

## Appendix C: Notable Interdisciplinary Theorists

*This appendix lists names and associated comments from participants when asked to nominate on their personal profiles a significant interdisciplinary writer or theorist whose work they respect and find valuable.*

*Aristotle: 'The trained mind only expects that degree of certainty that is suited to the subject' (Ethics)*

*Gregory Bateson: Anthropologist, cyberneticist, psychiatrist, writer – does not easily come more multidisciplinary than this!*

*Urie Bronfenbrenner: Who proposed a model for locating research and understanding within macro, meso and micro environments. Each level of analysis implicates different disciplinary expertise.*

*Herman Daly: For his development of an economic model that calls for a steady-state economy. He developed a convincing economic theory to show that this is possible. He argues that if everyone in a society has reached a high standard of living it becomes futile to try to increase the size of the economy by doing harm to the environment and the social wellbeing of members of society... His work is crossing disciplinary boundaries within the social sciences and humanities.*

*Charles Darwin: A highly original scholar of the natural world in the wide sense, including humankind.*

*Herbert Girardet: Has written for many years about sustainable cities as the setting for human interaction and activities. His approach touches on all aspects of life from agriculture to energy generation and makes it clear how all aspects are interlinked and interdependent.*

*Christopher Hamlin: Detailed and meticulously researched writing on the Victorian environment drawing on the histories of science, technology, public health and public administration. An exemplar in *Public Health and Social Justice in the Age of Chadwick* (1998).*

*Tim Ingold: In his book *The Perception of the Environment* (2000), "Ingold has attempted to replace traditional models of genetic and cultural transmission, founded upon the alliance of neo-Darwinian biology and cognitive science, with a relational approach focusing on the growth of embodied skills of perception and action within social and environmental contexts of development."*

*Peter Kropotkin: Anarchist and visionary theorist, whose works (especially *Fields, Factories and Workshops* (1899), *Mutual Aid* (1902), and *The Conquest of Bread* (1906)) presage many current ideas about sustainable development and challenge many of the basic tenets of conventional economics.*

*Richard Layard*: A recent favourite of mine – and his book on happiness. A thoroughly readable attempt by a respected economist to point out that human welfare depends on a variety of factors, some of which are economic.

*James Lovelock*: Arguably one of a group of authors who has profoundly tried to educate on the need for sustainability (I know this might seem a strange or contentious choice!).

*Chris Norris*: His work ranges from metaphysical interpretations of science (especially quantum theory) to cultural interpretation. Very relevant for the understanding of the range of adequacy of interpretation necessary for successful interdisciplinarity. He has engaged critically, but appreciatively, with postmodern theories.

*Tim O’Riordan*: For his long-standing and pioneering work which combines interdisciplinarity, policy and political relevance without losing sight of the radical and transformative potentials of sustainable development; and commitment to citizen-centred knowledge production.

*David Orr*: His work crosses many boundaries, from those of design and the built environment to education, politics and social change.

*Christian Pfister*: Historian who successfully crossed the boundary between history and climate science.

*Isaac Prilleltensky*: Although not too hot on feminist analyses, is good on understanding of power and contextualised thinking re: social change that emanates from and is in the interests of those most excluded.

*Amartya Sen*: Sen’s work on the centrality of ethics has contributed enormously to re-framing attitudes to development as being simply equated to growth. His *Development as Freedom* brings together much of his work. His work on capability and entitlements, which spans so many disciplines.

*Sergey Shirokogoroff*: Early 20<sup>th</sup> century ethnographer with an interdisciplinary and ecological approach. Developed social ecology based on mathematical formulae. Apparently later copied by Fredrik Barth who seems to have forgotten to refer to Shirokogoroff!

*Vandana Shiva*: I am just reading *Water Wars* and the perspectives, wisdom and universality of this writer are unique. She rejects the western economic- and science-based mindset and challenges us to face what a truly compassionate worldview would encompass.

*Adam Smith*: For crossing one of the boundaries, with the *Theory of Moral Sentiments* and the *Wealth of Nations*.

*Ken Wilber*: Key thinker in the emerging Integral Philosophy (of Development) movement.

#### **TEAM PUBLICATIONS & OTHERS CITED:**

“An interesting starting point is *Green Logic*, where Robert Isaac clearly articulates the case for ‘eco-preneurship’. I would also include Victor Papanek’s *Green Imperative*, Robert and Brenda Vale’s *Green Architecture* and Meadows (*et al*) *Limits to Growth/Beyond the Limits*; still relevant warnings.”

“Amory Lovins, Mayer Hillman and Aubrey Meyer: *Contraction and Convergence*, because they ‘walk the talk’ so much better than I do. Also, human ecologists, and policy analysts, as two ‘species’ whose work is inherently interdisciplinary.”

“The authors mentioned above (Bonaiuto *et al.*, 2002; Uzzell *et al.* 2002) approach the issue of sustainability from an interdisciplinary perspective that includes environmental concern and psycho-social processes in the debate on human needs and environmental protection.”

“I don’t have a favourite but do keep returning to writers such as Sen (economics/development) and Ravetz (philosophy of science) as sources of inspiration. I admire their ability to provide elegant and reasoned critiques which unpack many intellectual orthodoxies which seem to have negative social and environmental consequences.”

“If I am honest I have to say that my ongoing inspiration comes from Jesus of Nazareth and those who have written up and lived out his principles of costly love, responsible stewardship and priority for the poor.”

“*Philosophy in the Flesh: the Embodied Mind and Its Challenge to Western Thought*, Johnson & Lakoff; *Beast and Man*, by Mary Midgley; *The Spell of the Sensuous*, by David Abram; *Coming to our Senses*, by Morris Berman. All good philosophical writers are interdisciplinary? These works spell out the deepest and most essential message in relation to sustainability. It is only secondarily about curbing carbon emissions or using human cleverness to ‘solve’ the problems of our environment. Because, ultimately, human beings have to understand that they are inseparably connected to the environment and that the environment is not a separate ‘thing’, the fundamental and primary challenge is to make human beings think in a less detached and a more relational manner. Rationality itself needs to be extended and re-defined to embrace the bedrock truths of relationship and interconnectedness. Any new ‘green’ science that may be emerging should start by acknowledging the objectivist age of Bacon and Descartes is over... nature is not to be tamed and controlled.”

## Appendix D: Proforma for Personal Profiles

### ESD DISCUSSION SERIES: PARTICIPANT PROFILES

NAME & POST:

DEPARTMENT/INSTITUTION:

TEACHING/COURSE DESIGN:

RESEARCH INTERESTS:

RELATED PROFESSIONAL/CONSULTANCY EXPERIENCE:

DISCIPLINARY EXPERTISE:

*(please indicate all disciplines you have trained in or currently work with)*

KEYWORDS:

*(regions, topics, methods, historical eras – we may use this when creating small groups)*

POSITION STATEMENT:

*(please use this space as you wish, to flag up issues, challenges or problems you feel particularly concerned with, in relation to sustainability and interdisciplinarity)*

SIGNIFICANT SUSTAINABILITY PUBLICATION:

*(please name a publication you consider to be significant on issues connected with sustainable development – and say briefly why)*

SIGNIFICANT INTERDISCIPLINARY WRITER/THEORIST:

*(please name a favourite writer or theorist – past or contemporary – whose approach crosses academic disciplinary boundaries – and say what you find valuable about them – this could overlap with your publication above if you wish!)*