Sub-panel 32: Geography and Environmental Studies
Subject Overview Report:

1. The Geography and Environmental Studies Sub-panel
1.1 A Geography and Environmental Studies sub-panel (sub-panel H-32) did not exist prior to the 2008 RAE, but was created by HEFCE, without consultation on this specific issue, apparently to allay concerns about the assessment of some environmental science submissions in 2001. It is likely that the existence of H-32 and E-17 (Earth Systems and Environmental Sciences) has been a source of some uncertainty for submitting institutions in 2008. For example, at least one Geography submission was split between these two panels, although some work was cross-referred to H-32; and at least one submission to H-32 included a significant element of geological work that had to be cross-referred to E-17. Some Environmental Science submissions to E-17 resulted in the cross-referral to H-32 of substantial numbers of social science outputs for assessment by H-32 although the recommended grades then needed approval by E-17 (which lacked a social scientist).

1.2 The Geography and Environmental Studies Sub-panel membership was constructed in the light of the title assigned to it, but without clear evidence of the nature of the submissions it might receive as a result. A collaborative consultation process about the membership involved the Royal Geographical Society-Institute of British Geographers, and the Conferences of Heads of Geography Departments and Heads of Environmental Sciences Departments. The eventual Sub-panel membership of 15 was a significant increase over that of the main Geography panel in 2001, which had 11 members plus a Sub-panel of users and a Sub-panel for Development Studies. The make-up of the 2008 Sub-panel was a rebalancing of expertise based on (a) a perception that physical geography was under-represented in 2001; and (b) that in 2008, there would be a need for more physical geography and environmental geography and environmental studies expertise because of the addition of Environmental Studies. This led to a balance of 5 physical geographers, and 10 human geographers, the latter group including two geographers with expertise in the social scientific aspects of environmental studies.

1.3 Tragically, in late 2007, Professor Mike Barnsley (Swansea) died after contributing much to the first phase of the Sub-panel's work (see Section 3). After a rapid but effective consultation process, again managed by the Royal Geographical Society-Institute of British Geographers, Professor Giles Foody (Nottingham) replaced him as a member of the physical geography group on the Sub-panel, and with broadly comparable remote sensing expertise.

2. The submissions received
2.1 Sub-panel H-32 received 49 submissions. It is difficult to compare this figure and the associated staff numbers with previous RAeS, since the Sub-panel has a different remit in 2008, and because data for 2001 include Category A and A* staff (the latter not being used in 2008). The Geography Panel in 1996 received 69 submissions, while in 2001 there were 62 submissions; however, 7 of these were for the Development Studies Sub-panel. The decline in the number of submissions from 2001 to 2008 was thus less pronounced than that from 1996 to 2001.

2.2 Interpreting these statistics requires caution because of the issues noted in 2.1 above. Those institutions not submitting to Geography and Environmental Studies in 2008 that did submit to the Geography Panel in 2001 include Birkbeck, Brighton, Coventry, East London, Huddersfield, Lancaster, Liverpool Hope, Northampton, Northumbria, Staffordshire, York St John and Ulster (about 140 individuals). Some of these institutions have submitted to Sub-panel E-17 in 2008. However, Chester, Edge Hill, Kingston, University College Plymouth, Swansea IHE and Westminster are new submissions to H-32 (adding 40 individuals). It appears that the number of staff submitted has remained relatively stable between 2001 and
2008, while the number of submitting institutions has declined, and therefore that there has been further growth in larger departments, and further consolidation.

2.3 The 49 submissions to the 2008 RAE included a total of 1,166 Category A plus 46 Category C staff (1,212 in total), while the 62 submissions in 2001 included 1,229 Category A/A* staff and 77 Category C staff (1,306 in total, including 140 submitted to Development Studies). The Geography submissions in 1996 included approximately 1210 Category A/A* staff. The reduction in Category C staff numbers in 2008 is likely to reflect the tighter definition for this category, with stronger evidence required of their integration. Otherwise, the numbers appear rather stable from 1996 to 2008.

2.4 There continues to be a very wide range of sizes of submission in the Geography and Environmental Studies field. The smallest five submissions had fewer than 5 staff, while the largest submission had 58. The modal group was in the 30-35 size range, with almost 25% of submissions. A notable aspect of the submissions, giving considerable grounds for confidence in the sustainability of the subject areas represented by the Sub-panel, is that 17% of the staff returned in the 49 submissions were early career researchers (207 in total). In some departments, the proportion of early career researchers was remarkably high, with one case of 47%, and six with 30% or more. There was a clear impression that these researchers form a fine resource for the disciplinary future. Many of them had remarkably strong esteem indicators (prestigious fellowships, awards, and experience at delivering international keynote lectures), and excellent or outstanding outputs.

2.5 A somewhat unexpected finding when the outputs were examined in detail (although to some degree prefigured in the Submission Intentions reported in 2007) was that the balance of the subject was not reflected appropriately in the membership of the panel. The number of outputs broadly classified as physical geography and environmental science was approximately 2,240, while those in human geography and social scientific environmental studies numbered about 2,380. This almost balanced state is far from the impression given, for example, by the Annual Conference of the Royal Geographical Society-Institute of British Geographers, and it has important implications for the future presentation of the disciplinary character of Geography. It seems likely that this balance has developed since 2001 by preferential growth in physical geography, and implies that Geography is making an important contribution to the environmental science research effort in the UK. This also implied that the workload of the Sub-panel was rather unevenly distributed, although there was a higher percentage of outbound cross-referral and specialist advice in physical geography (17% compared with 3%), largely necessitated by conflicts of interest and the issues noted in section 1.1.

3. The Criteria and Working Methods

3.1 The Sub-panel met on three occasions in 2005, in one-day meetings to develop and refine the Criteria and Working Methods. The third meeting in October followed consultation with the academic community, and the draft Criteria document was then adjusted to reflect some of the concerns revealed in consultation. This clarified the structure for assessment of the research environment, and defined more discriminatory descriptors of the grading levels for outputs, research environment and esteem.

3.2 The Sub-panel met in June 2007 to consider Submission Intentions, and to review the Criteria and Working Methods to ensure that all of its subsequent assessment practices would be entirely consistent with them. It might have been possible at this point to argue for additional physical geographers on the Sub-panel, but the Submission Intentions were often too aggregated to provide reliable evidence of this necessity. In December 2007, the Sub-panel dealt with the issue of adding Professor Foody, in order to ensure that he would be inducted into the working practices at the first meeting in 2008.
3.3 The Sub-panel met a further six times in 2008, on five of these occasions in two-day meetings. These covered allocation of outputs, assessment of environment and esteem, identification of cross-referral and specialist advice requirements, calibration of output grading, review of outputs, review of profiles, and drafting of reasoned cases and this subject overview report. Throughout these processes, the Sub-panel followed the published Criteria and Working Methods. All Sub-panel members read all submission documents and contributed to the grading of environment and esteem using the published methods and criteria. Outputs were allocated to the most appropriate Sub-panel member in terms of subject expertise, with sample grades being moderated by second markers. In addition, the international members of the Main Panel undertook sample moderations of graded outputs, and largely confirmed the standards being set and the consistency with the criteria.

3.4 The Sub-panel worked closely with the Main Panel to establish this consistency in criteria, working methods and grading standards. At its first meeting in 2005, the Main Panel established the weightings to be assigned to outputs (75%), research environment (15%) and esteem (10%), and all four Sub-panels agreed these weights. The Earth Systems and Environmental Sciences Sub-panel deliberately chose a weighting between those of the other Sub-panels in Main Panel E and the H-32 weighting, in order to enhance comparability. At Main Panel meetings during the 2008 assessment phase, it was possible to receive evidence of the progress of grading both within and between Main Panels, in the latter case through reports from meetings of Main Panel Chairs, and through evidence of active interventions by the RAE Manager. Nevertheless, the Sub-panel remained concerned throughout about the mechanisms for ensuring comparability amongst those several Main Panels that included disciplines with cognate interests and approaches (including Main Panels B, D, E, J and N).

4. The character of the submitted outputs

4.1 In total, Sub-panel members read 4,587 outputs, of which just over 3,950 were in a published form (journal articles) that enabled them to be made available to the Sub-panel digitally, either downloaded from a web-site or from a digital source created by the RAE administration.

4.2 These journal articles were published in a very wide range of journal outlets. Geography and Environmental Studies clearly encompass an enormously diverse range of research themes that warrant publication not only in narrowly defined, subject-based journals, but also in the journals of other, allied disciplines, and in inter-disciplinary journals. It is remarkable that almost 750 journals appear in the list of those used by the individual researchers submitting their best outputs in the period 2001-2007 to Sub-panel H-32. The journal with the largest number of submitted articles had just over 150; the journal ranked 50th had 17 articles, and that ranked 100th had 7. Almost 400 journals appeared in the list only once. This information shows that researchers in the fields covered by the Sub-panel are contributing to research agendas and to debates in many areas, and that definition of key journals (for example, in any future research assessment procedure) would be extremely difficult, divisive, and counter-productive in that it could stifle the rich diversity shown in the material assessed in 2008.

4.3 Although there are no dominant journals, in human geography, journals amongst those appearing most often include general disciplinary journals, such as the Transactions of the Institute of British Geographers, Geoforum, the Annals of the Association of American Geographers, and Area. More specialised journals include Urban Studies, the Journal of Historical Geography, Progress in Human Geography, Political Geography, Cultural Geographies, Social and Cultural Geography and the Journal of Economic Geography; and general social science journals such as Environment and Planning A, C and D, Antipode and Regional Studies. In physical geography the importance of particular specialisms is seen in the relative frequency of outputs in journals such as Quaternary Science Reviews, The

4.4 Members of the Sub-panel, representative of several sub-fields, commented that there was occasional evidence of relatively weak work published in journals with high impact factors, or that are otherwise deemed highly-rated. The converse is that some outputs in "lesser" journals, and books and book chapters that lack impact factors, were often assessed as showing quality that was world-leading or internationally excellent. They therefore caution against the ecological fallacy that assigns a mark of quality to a single output because it is published in a particular journal. Examples of this effect in physical geography arise when highly-rated science and geophysical journals restrict article length, while other journals permit more space to report in appropriate depth the context and wider implications of published research.

4.5 Notwithstanding the high quality of the outputs read (90% being of international standard, with over half being excellent or outstanding), Sub-panel members reported occasional evidence of "salami slicing" in some publication practices, especially when several members of a group produced multiple, repetitive and inevitably incremental outputs on closely similar topics. There was also some evidence of a rather formulaic structure to papers, and of repetition of work in journal articles and chapters in books published either before or after the articles. Some review papers that only reported material without developing a research agenda, occasional textbooks, and case studies without theoretical exegesis, also tended to be graded at the lower levels.

4.6 By contrast, however, there is evidence that substantial, book-length works of real quality were being produced and submitted, including some outstanding monographs in historical geography, and in conservation, environment and development. In total, over 200 monographs were submitted to the Sub-panel. After the 2001 RAE, some concern was expressed that there had been a decline in the number of monographs. There are no reliable data on the numbers submitted in previous RAEs, but the Sub-panel considered that 200 was a healthy number, and that the medium was unquestionably healthy in a qualitative sense, and probably also quantitatively. The Sub-panel agrees that it would be intellectually damaging if future research assessment procedures were in any way to marginalize this form of scholarship and accordingly precipitate a decline.

5. The content and quality of research outputs

5.1 It was reported after the 2001 RAE that the average awarded grade was higher than in 1996, with an increased proportion of submissions and research-active staff falling into Grades 4, 5 and 5*. In 2001, the 5* grade was awarded to submissions where "more than half of the research activity equated to attainable levels of international excellence, with attainable levels of national excellence in the remainder". In 2008, 90% of all outputs were assessed as international in standing with only 10% being national in standing; over 50% of all outputs were internationally excellent and outstanding. The different form of assessment makes direct comparison difficult, but this evidence suggests a significant increase in the assessed research quality. In 2008, there was evidence of very impressive work, suggesting that Geography and Environmental Studies had shifted up a gear since 2001.

5.2 Human Geography. The Sub-panel reviewed a substantial amount of internationally excellent and outstanding outputs across the whole range of human geography, with material
of this quality spread widely across many of the submitting departments. There was strong evidence of world-leading research by researchers working both singly and in collaboration, while inter-disciplinarity was evident in human geographers contributing significantly to a broader 'spatial turn' animating the social sciences, the humanities and beyond. The best research was notable for the sustained quality of its conceptual and empirical engagement, sometimes resulting in lengthy exposition in valuable monograph contributions, but always displaying commendable attention to both place specificity and spatial complexity.

5.3 The evidence shows that British human geography is world-leading in many of its activities. There are outstanding conceptual advances at the borders between geography, social theory and philosophy, particularly in re-thinking both nature-cultures and the relations between materialities, emotions and practices. At its best, it is producing theoretically-informed, methodologically-innovative and empirically-rigorous research, building upon long-standing scholarly interests in development, population, historical and urban geography, while illuminating the complex spatialities of economies, politics, societies, knowledges and technologies. Many outputs offer critical analyses of power, institutions, networks and mobilities at diverse inter-related spatial scales and with reference to a diversity of global places, the latter indicating a readiness to look outward to the wider world. Notwithstanding these qualities, some outputs risked being inaccessible even to a sympathetic readership; some were unnecessarily inflected by 'fashionable' concepts which detracted from their other strengths; while others tended to report local case studies lacking in context, generality and/or theoretical framing.

5.4 Methodologically, British human geography continues to provide world-leading contributions to quantitative analysis, with high-quality spatial modelling linked to precise substantive aims. This research has involved creating new databases and demonstrating new ways to analyse existing databases, with wide relevance both academically and in evidence-based policy circles. Some of the best qualitative research undertaken in any discipline is also to be found in British human geography, with an array of richly-textured 'thick descriptions' based on in-depth encounters, as well as innovative uses of interview, visual, textual, aural, participatory and activist methods. However, some quantitative work remains routinely empirical with no obvious conceptual or policy value, and some qualitative work remains 'thin' with insufficient critical, contextual and reflexive rigour.

5.5 Environmental Studies. In Environmental Studies the Sub-panel reviewed much excellent work, some from relatively small specialist units, and some from environmental groups in geography submissions; clearly there are overlaps with environmental geography. Environmental studies perspectives now play a fundamental role in environmental policy debates, and much work is innovative - theoretically, conceptually and empirically. It is reflected in the application of theories and concepts to areas such as rural development, agri-food studies, tourism, transport policy and management, and urban regeneration. Theoretical and conceptual contributions are also being made in areas such as society-nature relations, environmental governance, territorial and environmental justice, and environmental economics. A key strength of the best work is the challenging interfacing of spatial and governance questions in strategic environmental policy fields such as waste and water management, energy, food and climate change.

5.6 Inter-disciplinarity is one hallmark of much environmental studies work, with outputs often engaging with a range of social and natural science disciplines. Submissions displayed a growth in analytical empirical case studies, including innovative methodological work measuring environmental performance and risks. Weaker elements were sometimes repetitive and failed to engage productively with wider conceptual and theoretical issues. There is further potential to exploit large-scale spatial data sets, and to develop the relationships of spatial analysis, economics and sustainable resource management at different spatial scales. Some of the most outstanding work came in the form of research monographs, often based on interdisciplinary collaboration. Furthermore, although many excellent contributions were in established journals, others were placed in more recent
environmental journals where growth is apparent in both publishing demand and international readership.

5.7 Physical geography. Considerable breadth and quality was evident in physical geography, where outputs were often innovative, pushing at the research frontiers, and developing and exporting methods from and to a wide range of other disciplines. There were many truly agenda-setting papers, in physical and numerical modelling, in new sensor technology, in fluvial processes and hydrochemistry, in modelling aeolian processes, and in innovative work in ecosystem dynamics and biogeography. Sub-panel members identified several areas that have evidenced notable development.

5.8 Quaternary Science, for example, appears to have integrated more fully the important basic work of site-specific local studies with multi-disciplinary, multi-proxy work, including modelling, to create innovative attempts to link to global- and regional-scale climate change processes. Significant contributions are also being made in the development and application of geochronometric techniques that contribute to more robust chronologies of environmental change in the past. Geomorphology is being reinvigorated by the tensions generated by earth system science, as its established emphasis on surface processes and local-to-regional scales is supplemented by GIS-based modelling of large-scale and long-term landform development, with links to geophysics and global tectonics. Furthermore, there is increasing interest in identifying and developing modelling tools that can bridge the scale gap so frequently highlighted as an unresolved issue in geomorphology; cellular automata and other “reduced complexity” models that are robust in applications to landform change over relatively large areas and long timescales. This move is also evident in, and closely related to, similar developments in hydrology. Innovative remote sensing research contributed to the development of new sensors and operational data products, including the use of recently developed sensing systems such as Lidar, as well as to modelling research leading to improved understanding of major environmental issues. There is evidence that, despite the continued decline in the representation of descriptive climatology, climate science has begun to establish in geography, with some innovative work on regional scales of climate modelling, permitting the downscaling of data and its potential application in other areas of physical geography such as hydrology and ecology. However, it is equally interesting to note that, notwithstanding some outstanding work at the forefront of coastal modelling, coastal processes and geomorphology now represent a rather small sub-field. Given the obvious practical requirement for understanding of the consequences of sea-level rise, it is perhaps likely that the contraction this implies may soon reverse.

5.9 The physical geographers on the Sub-panel recognised as a hallmark of some of the best work they assessed the connections often being made explicitly between sub-fields of physical geography, with issues addressed that demanded integrated analysis of geomorphological, hydrological and ecological investigations, data and models. This experience of integrated analysis also gives physical geographers an interest in interdisciplinary working that pays off within the discipline as a whole, and encourages initiatives in which joint research involving human and physical geographers tackle difficult research agendas. Notwithstanding the quality of many outputs, some weaknesses were identified. Although numerical modelling outputs in physical geography were often excellent and even outstanding, sometimes they were repetitive and routine, with insufficient questioning of model assumptions and relevance. There was also some repetitious, incremental work that suffered by not justifying its importance as a component in wider research agendas.

6. Other developments in the unit of assessment

6.1 The Sub-panel believes that the submissions received reveal very healthy and research-active disciplines. The evidence for this is provided by the increased numbers of graduate students, the strength of graduate schools, and the evidence that graduate students are highly-valued as contributors to the research cultures of departments. In the RAE period,
there have been 1,648 PhDs and 338 research-based Masters degrees awarded, these figures implying 1.47 and 0.3 per research active Category A member of staff. These students were supported by 2,756 research studentships, including 681 OST/OSI Research Council studentships.

6.2 The evidence of research funding is equally indicative of the considerable strength of research activity. The submissions report a remarkable total of £196.6m in research funding, including £76.3m of OST/OSI Research Council funding, £26.6m of EU funding, and £53.8m of UK government funding. This amounts to over £175,000 per research active Category A member of staff. Comparison of research income in the 2008 submissions with that in 2001 suggests that increases of two- to three-fold have been the norm. This is indicative of a healthy research environment that may be expected to respond positively to the challenges of full economic costing.

6.3 Further evidence of the vitality of the disciplines is provided by the extensive evidence of investment in buildings, infrastructure and research facilities. This is sometimes based on SRIF funding, but also reflects institutional investment. In Scotland, it is closely related to such collaborative endeavours as the Scottish Alliance for Geosciences, the Environment and Society (SAGES), and membership of the Scottish Universities Environmental Research Centre (SUERC).

6.4 Finally, it is clear that institutions have sometimes made significant contributions to strategic changes in the management of Geography and Environmental Studies. The most successful examples are those in which central goals have allied with the aspirations of subject specialists, so that the changes are in part defined, and then supported, owned and driven from below. There are examples, fortunately relatively rare, however, where change is imposed, and managerial preferences for large departments lead to forced marriages of disciplines with divergent research aims and methods. This can have the effect of damaging staff morale and potentially of reducing research performance.

6.5 What comes across strongly in these institutional realignments, reflected in descriptions of the research environments, is the desire of both Geography and Environmental Studies research communities to maintain their disciplinary identities; and the value they attach to retaining integration of the human and physical dimensions of these disciplines, in order to sustain the intra-disciplinary synergies that result in some of the world's best research in these fields.

7. The Sub-panel and its secretariat

7.1 The Sub-panel worked extremely well as a team, with mutual respect and great commitment, always mindful of its responsibility to the wider research communities it has represented.

7.2 The Sub-panel wishes to place on record its gratitude for the exemplary contributions of its secretariat. This initially included Mike Hession (Salford; Secretary) and Neil Cox (Assistant Secretary; Leicester) in the first phase of the Sub-panel's work in 2005. Then, in the main assessment phase in 2007-2008, Mike Hession acted as Panel Adviser, and the Panel and Sub-panel Secretary was Susan Rothwell Smith (Dundee). They all contributed immeasurably to ensuring that a complex and arduous task was completed properly and in good time.

Professor Keith Richards
Chair, Sub-panel H-32 (Geography and Environmental Studies)
with the members of the Sub-panel
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