

FOREWORD

Physical geography is being reinvented. During the 1980s and 1990s, two developments made physical geographers start to feel increasingly uneasy about their discipline (e.g. Stoddart 1987; Slaymaker and Spencer 1998; Gregory 2000). First, the subject was becoming evermore specialized and in imminent danger of falling apart, the fragments being soaked up by related disciplines. Coupled with the fear that the subject would collapse was a worry that physical geography and human geography were moving towards opposite poles. The response to these perceived dangers was to announce a surprisingly unanimous message: refocus physical geography around a core of global-scale studies that looks at big and pressing environment issues. Such refocusing would at once bring specialists from the branches of physical geography back together and reforge closer links with human geography. *Physical Geography: A Human Perspective* is an attempt to provide a first-year undergraduate textbook structured around the 'new physical geography'.

SUGGESTIONS FOR THE NEW PHYSICAL GEOGRAPHY

What does the 'new physical geography' look like? This question is difficult to answer unequivocally as no fully-fledged structure has yet emerged. So specialized have the sub-fields of physical geography become that few 'physical geographers' take time to step back and consider the wider discipline of which they are part. In truth, the specialization has progressed to such an extent that very few all-round physical geographers are left. Gardner (1996) was probably right in comparing physical geography to a polo mint for, as a discipline, it is all periphery and no core. Gregory (2000, 278) agreed with this analogy, but insisted that each sub-field has its core and that there should be a focal point in the approach adopted by physical geographers. Slaymaker and Spencer (1998) too had a vision of physical geography in the twenty-first century. Gregory's and Slaymaker and Spencer's views are worth outlining as they both identify the potential shape of the new physical geography.

Slaymaker and Spencer (1998, xi) were worried that 'Contemporary physical geography is increasingly fragmented into the sub-fields of climatology and meteorology, geomorphology, hydrology, biogeography and soils'. Their solution was to place physical geography within 'a modern and timely context' (p. xi) by doing three things:

- 1 Showing how the pools, fluxes and budgets in established biogeochemical systems help show the complex interlinkages within the ecosphere.
- 2 Showing how the advances in reconstructing Quaternary environments made over the past fifty years have sharpened and heightened understanding of environmental change over various timescales.
- 3 Looking at regional case studies of environmental issues to illustrate the complexity of interlinkages.

In addition, they elaborated these ideas 'by considering the human responses to the risks, uncertainties and ethical issues posed by the threat of future global environmental change' and offered 'the principle of sustainability as a focus for twenty-first century physical geography' (Slaymaker and Spencer 1998, xi).

Gregory (2000, 287–88) set down eight 'tenets for the pursuance of physical geography', as guidelines rather than commandments, to 'stimulate thought, debate and reaction'. In our interpretation and words, the tenets are as follows.

- 1 Build up the spatial perspective.
- 2 Model the past, present and future.
- 3 Give due recognition to the history of ideas in physical geography.
- 4 Tackle big issues at regional and global scales, contributing to Earth system science and environmental design and management.
- 5 Promote physical geography as a composite discipline, in the sense of Osterkamp and Hupp (1996), without suggesting that it is some kind of umbrella subject.

- 6 Reap benefits of a discipline that takes in the totality of the environment and bridges the human and physical sciences.
- 7 Cultivate multidisciplinary and interdisciplinary research.
- 8 Make clear the specific objectives of physical geography and get them across to other disciplines, to decision-makers and (through the media) to the general public (and, we would add, greenhorn geography undergraduates).

Gregory submitted a provisory definition of modern physical geography, which, with all the emphases of the original omitted for clarity, ran:

Physical geography/Physiography focuses upon the character of, and processes shaping, the land-surface of the Earth and its envelope, emphasizes the spatial variations that occur and the temporal changes necessary to understand the contemporary environments of the Earth. Its purpose is to understand how Earth's physical environment is the basis for, and is affected by, human activity. Physical geography was conventionally subdivided into geomorphology, hydrology and biogeography, but is now more holistic in systems analysis of recent environmental and Quaternary change. It uses expertise in mathematical and statistical modelling and in remote sensing, develops research to inform environmental management and environmental design, and benefits from collaborative links with many other disciplines such as biology (especially ecology), geology and engineering. In many countries, physical geography is studied and researched in association with human geography. (Gregory 2000, 288-89)

Gregory's and Slaymaker and Spencer's visions have much in common. Inspired by their ideas, we have devised a structure for physical geography that is the basis of our book.

A STRUCTURE FOR THE NEW PHYSICAL GEOGRAPHY

Our starting point in giving shape to the new physical geography is a short definition of the subject that should help in discussing the nature of the subject and in identifying a subject core. The definition is this:

physical geography is the study of the form and function of the human sphere (anthroposphere), which is the zone of interaction between the ecosphere and the mental sphere. As with all definitions, this one begs further definitions, and in particular, an explanation of the terms 'ecosphere' and 'human sphere' are required. Although the use of the term ecosphere is disputable, it may be taken as the biosphere, atmosphere, hydrosphere, pedosphere and toposphere. Obviously, defined in this way, the components of the ecosphere are the objects of study of the traditional sub-fields of physical geography. Climatology and meteorology are the study of the atmosphere, biogeography is the study of life, hydrology is the study of the hydrosphere, pedology is the study of the pedosphere and geomorphology is the study of the toposphere. Variations on this theme could be suggested, for example, soils are sometimes considered part of biogeography or even geomorphology, but as a generalization, the connection between terrestrial spheres and sub-fields of physical geography seems acceptable. These variations begin to highlight the critical interconnections that are necessary to provide a deep understanding of the 'big issues' about human-environment interactions. The mental sphere (or noosphere) may be defined as the sphere of influence of the human mind, and may be regarded as the sum of the mental activity behind human impacts and conscious human planetary resource use, management and conservation. It engages cultural, social, ethical, economic and technological structures and processes.

Given these definitions, it may be argued that three spheres are therefore crucial to the subject matter of physical geography. First is the natural ecosphere (i.e. the small remaining portions of the ecosphere that are still largely unaffected by human activities) and its biological and physical structures and processes. Second is the mental sphere (noosphere). Third is the human-influenced ecosphere or human sphere (anthroposphere) that is the product of the other two. In our view, it may be useful to take the position that physical geography explores the interrelations between all the surficial terrestrial spheres as manifest in the form and function of the human sphere. In fact, such a 'holistic' view was taken by many nineteenth and early twentieth-century physical geographers, admittedly without a human focus, so the 'new

physical geography' is perhaps not so new as might be supposed.

A problem arises here, because global ecologists and Earth-system scientists also study the form and function of ecosystems and the anthroposphere at the global scale. So, have Earth-system scientists commandeered the role of the physical geographer? Have physical geographers missed that bandwagon and lost the wonderful opportunity of reclaiming their academic heritage? Many physical geographers, quite rightly, seem miffed that their rich and venerable tradition of studying the 'big environmental picture' has passed unnoticed by the Earth-system scientists. Slaymaker and Spencer (1998, ix) believed that the launching of their 'Understanding Global Environmental Change: Themes in Physical Geography Series' was urgent, partly because they were concerned with re-establishing the historical legitimacy of the physical geographic tradition within the academy. The big question then arises of whether the new physical geography has a distinct approach to studying the human sphere that sets it apart from global ecology and Earth-system science. We think that the individuality of physical geography lies in its interconnections with human geography. In particular, we think that physical geography may claim as its core the human sphere and that its individuality lies in an approach boasting two patent geographical foci: the interconnectedness of environmental and human factors and the significance of local, regional and global scales.

Our view of physical geography fits with some recent ideas that emphasize the subject's innate and traditional link with human geography. It seems undeniable that, in physical geography, 'the emphasis on sub-fields has loosened the links with societal application and human geography . . . in spite of a strong intellectual tradition within physical geography that has explicitly engaged with such questions over the last 150 years' (Slaymaker and Spencer 1998, xi). Many big names in British geography have lent their weight to the case for keeping human geography and physical geography together (e.g. Johnston 1986; Goudie 1986; Douglas 1986). Douglas was one of the most outspoken commentators in arguing that 'Some of us must escape from the narrow research followed to gain PhDs and broaden our horizons to explore the greatest challenges to our discipline, those big, fundamental, important issues in which the unity of

geography is obvious'. Likewise, Stoddart (1987) vigorously argued that 'Land and life is what geography has always been about' and 'that it is time we got out again into the great wide world, met its challenges . . .'. Slaymaker and Spencer (1998) saw social connections as important too. In their Series preface, they said that 'in common with many thoughtful persons of goodwill, we are still impressed by the recklessness with which the natural spheres of Earth continue to be exploited and believe passionately that we are accountable to subsequent generations for the way in which we respond to both biogeochemically and societally induced global environmental change' (Slaymaker and Spencer 1998, ix). Newson (1992) argued that, as society is likely to draft geographers to the front line of environmental management, then geography should have an unambiguous disciplinary label. Furthermore, geographical practitioners should 'use a wealth of experience with natural systems analysis and a contemporary research familiarity with some of nature's surprises to develop a more enthusiastic, socially responsible and committed physical geography' (Newson 1992). This feeling is echoed by the tendency for geographers to make significant contributions to such professions as planning and to wider development policy. Indeed, planners are increasingly charged with the responsibility of delivering a framework through which the principles of sustainable development may be promoted and maintained. In view of this, it is important that students aiming for these professions should gain a full appreciation of aspects of the physical and human realm, particularly at their interfaces.

The structure proposed in *Physical Geography: A Human Perspective* has people and environment interactions at its heart. Of course, we are aware that any attempt to reunite human and physical geography is full of potential pitfalls. Johnston (1997, 344) allowed that connections had been made between human and physical geography, but that no integration of the study of physical and societal processes had yet emerged, and he rightly pointed out that, for human geographers, links with other social scientists were still very much more secure than those with environmental scientists. Harman *et al.* (1998, 277) pinpointed the special problems that arise when human geography meets physical geography: ' . . . many environmental problems present us with very difficult choices today. Whether

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the issues be regional (e.g. aquifer depletion, land use zoning, river management) or global (climate change), much of this difficulty stems from the combination of scientific, economic, and ethical

uncertainly entangled in the details'. The challenge in reuniting geography is enormous. *Physical Geography: A Human Perspective* is a small step in that direction.

