Questions Regarding "Specialization in the Structure and Organization of Geography": A Reply

This response to Anne Buttimer, Anthony Gatrell, Melvin G. Marcus and James O. Wheeler allows expansion of arguments presented in "Specialization in the Structure and Organization of Geography" (Goodchild and Janelle 1988), clarification of points about the analysis, and consideration of additional questions. The order of discussion is: (a) commitment to specialization, (b) alternative formulations and interpretations of the Shannon-Weaver measure of diversity, (c) productivity versus quality, (d) the core(s) of geography, and (e) extending the research agenda.

Commitment to Specialization

Our analysis of Specialty Group membership records raises the question of the significance of the annual box-ticking exercise, as Buttimer rightly points out. But unlike topical/areal proficiencies, Specialty Groups are identified by more than a simple title. As Marcus observes, they have elected officers, sessions at the Annual Meeting, prizes, newsletters and in a few cases meetings of their own. And for some there is the additional commitment of a small fee.

We suspect that the level of commitment reflected in membership varies dramatically from one Group to another. For some the annual business meeting is a formality attended by a few dedicated individuals; for others it is a real exercise in scholarly politics. For some Groups, membership may indicate a desire to learn, and thus reflect a lack of past commitment to the field. But what do we make of the 43 percent of Association members who choose not to belong to any Specialty Groups? Is this driven by personality or philosophy? What is the structure of specialization of these geographers? These would be fascinating questions for research with the appropriate data.

Variation in level of commitment by Specialty Group would be a key indicator to any body charged with monitoring the state of the discipline and the success of Specialty Groups at fulfilling the original conception of the Long Range Planning Committee. Clearly, as Marcus points out, the specialty-group structure has helped physical geographers in resolving acute problems of identity. However, as Gatrell observes, physical geographers have not recently shared positions of authority within the Association (Marcus excepted) commensurate with their numbers. This may be related to the peripheral locations of physical Specialty Groups on our multidimensional scaling (Figure 2), or, as suggested by Gatrell, to the possibility of strong linkages with other disciplines. But this needs further investigation, possibly in a behavioral context based on actual communication commitments—a strategy that probably would appeal to both Buttimer and Gatrell.

While accepting the key influence of commitment, we wonder if Buttimer may not have misinterpreted our analysis somewhat. Her comments about Tables 2 and 3, and references to "special interests" rather than Specialty "Groups," fit an analysis of topical proficiencies much better than the Specialty Groups on which the core of our analysis, in Figures 2 and 3, is in fact based. We recognize that the general level of commitment to Specialty Groups may be much less than to departments of doctorate or employment, for example, but it is certainly greater than to topical/areal proficiencies. Our limited use of the proficiency data to look at possible trends was approached with caution, and readers were alerted to the problems described by Buttimer. Her plea for "temporal depth" could not be achieved with such weak data; however, as illustrated by our analysis for 1984, the annual accumulation of information on Specialty Group affiliations and activities provides a foundation for building on her four interrelated planes of tension (substantive, conceptual, structural, and societal) and for monitoring their future transformations. Historical depth requires alternative data sets and approaches; some are suggested in the commentaries by Buttimer and Gatrell, and others appear in the conclusions of our paper.

Measuring Diversity

Both Buttimer and Wheeler comment on our interpretation of the Shannon-Weaver measure of diversity. Like all numerical indices, it has been designed to satisfy certain properties, including a minimum of 0 for concentration in one class and a maximum for uniform partition. Its domain has no unique mapping to adjectives such as "very high," "good" or "bad." However, it is certainly meaningful in an ordinal sense; 3.409 is less diverse than the maximum of 3.555, but more diverse than Buttimer's example of 3.376. We regret our choice of "very high."

Wheeler raises a significant point regarding the maximum of the diversity index, and reinterprets the data in an interesting way. If the number of members in a department is small, so that only a limited number of Specialty Groups could be chosen, then the maximum of ln 35 is clearly unobtainable. From Gatrell's calculations, the correlation between H and the size of departments is strong, and is restricted by the number of Groups one may choose.

In Wheeler's interpretation, m is the number of Groups actually chosen by the members in a department, rather than the maximum number they might have chosen had they all chosen different Groups. We believe that the latter measure of m is preferred, but it would be difficult to calculate since members may have exercised their option not to select the full three Groups and some may have chosen none. To illustrate, suppose that 35 choices were made by the members of a department. According to Wheeler's interpretation, if these were made as 7 votes for each of 5 Groups, the normed diversity index would be 1; it would be 1 also if 5 votes were made for each of 7 Groups, or 1 vote for each of 35 Groups. The original, unnormed index would give 1.609, 1.946 and 3.555 respectively. Thus we interpret Wheeler's normed results as indicating that within the Groups they choose, members tend to distribute themselves approximately uniformly in all departments. This is not quite the same as saying that diversities are similar in all departments. It seems to us that the real upper limit on the number of Groups lies somewhere between m and 35, but that it would be difficult to devise any fully satisfactory estimate. Both normed and unnormed indices give interesting results, but both seem to require careful interpretation.

Marcus raises an important issue about the interpretation of diversity. He alerts us to the danger of an ecological fallacy that would equate high H values at departmental levels with broad individual intellectual horizons. Although opportunities for breadth of training are clearly available in such departments, the high H reflects a compartmentalization of interest that may be paralleled in the training of students. In contrast, however, when H is measured at the level of AAG Specialty Groups, the values are suggestive of interconnections based on overlapping membership patterns. Marcus's point has bearing on how we define the quality of our programs and the core(s) of our discipline.

Quality and External Factors

The quality of Ph.D.s is rightly identified by Wheeler as a key issue, one that we did not address. Productivity of U.S. departments is clearly not an adequate surrogate, as he points out, but we suggest that this is complicated further by the significant number of non-U.S. Ph.D.s currently exerting an influence on the American discipline and by pressures from outside the discipline. How and why this has happened in a period of rapid growth in American geography requires exploration. Do they share the same structure of specialization as Ph.D.s trained in U.S. institutions?

An additional external factor is stressed by Gatrell. Pressures by government or industry and from within universities may encourage some specializations over others. The funding preferences of research sponsors and the hiring practices of employers need consideration as important forces that structure specialization in geography and condition the relative standings of academic programs.

The Core(s) of Geography

Wheeler gives an interesting dynamic interpretation of the MDS plot of Specialty Groups (Figure 2); he speculates that the spatial tradition reentered the discipline in the urban-economic periphery but has come to dominate the core. Whereas we identified three clusters of

Specialty Groups as cores, each having distinctive patterns of shared cross-memberships (representing the man-land, earth-science, and spatial traditions), he adopts a broader interpretation of the core. Others have suggested that the MDS space may be differentiated by physical-human and conservative-liberal axes, and no doubt readers have uncovered additional and possibly equally provocative meanings.

Wheeler's point about the need to combine regional expertise with analytic techniques deserves comment. To us, the key conclusion regarding regional geography is that there is no evidence of a paradigm in the sense of Fenneman; while spatial analysis, earth-science and man-land relationships can all be identified with clusters of shared interests, regional specialties are scattered. While Wheeler's solution will provide a steady supply of geographers with interests in specific regions, it will not draw out a commonality of interest in a regional paradigm. Foreign field expertise is a skill at least as valuable as remote sensing or quantitative methods, but it is unlikely to provide the basis for a renewed regional paradigm. Neither view denies the legitimacy of regional specialization. While Wheeler's prescription may enrich the practice of regional geography, we suspect that some would lobby hard for other methodologies to bolster regional expertise.

The Research Agenda

We agree completely with commentaries that our analysis merely hints at answers to the questions raised in the conceptual introduction. While our conceptual framework addresses the relations among the five sets discussed by Gatrell, the analytic evidence covered less ground. Furthermore, while we believe our conceptualization captures the four planes of tension of Buttimer's adverbial schema, the empirical focus on "adjectival geography" has been limited by the constraints of the membership data.

Other more specialized and more sensitive data will be needed to answer many of the interesting questions raised by the commentaries. We have illustrated a basis for monitoring some important aspects of disciplinary structure with the emerging record of Specialty Group affiliations and activities. But, surely, the records of the past hold secrets of such structure and clues to the social dynamics that have influenced present conceptualizations in geography. Time series of Ph.D. comprehensive examinations, membership records in organizations, cross-citations, and correspondence among scholars and with agents outside the discipline could be combined with innovative approaches to reconstruct the paths that have led us to where we are today.

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References

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