

David J. Rutherford tied for First Place in *RGE*'s Early Career Scholar Paper Competition. His winning paper is below.

Disciplinary Divergence and Convergence in the Content of Introductory Undergraduate Coursework in Geography

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Abstract

While some geographers assert that the variable, diverse, and wide-ranging content focus of geography produces a problem of disciplinary disunity and lack of coherence, many geographers argue that geography is a discipline of synthesis whose content focus is of secondary importance to its unifying perspectives. This tension between diverse content focus and synthesizing perspectives appears particularly noticeable in introductory undergraduate courses in geography. While observers have noted widely differing content foci across the three most widely taught introductory undergraduate courses (human geography, physical geography, and world regional geography), no systematic empirical research has documented the differing content foci of these courses or identified the extent to which these courses may incorporate synthesizing perspectives. The research reported in this paper utilized a theoretically informed empirical approach to identify the content foci and synthesizing perspectives that were present in these introductory courses during the mid-2000s in the United States. Formal curricula, in the form of course syllabi for the three introductory courses were subjected to a rigorous and replicable content analysis that identified subject matter content and synthesizing perspectives in these three courses. Overall results show the existence of (1) limited commonality of subject matter across the courses, particularly between physical geography courses and the human and regional courses, and

(2) a small set of subject matter items and disciplinary perspectives that are common across the courses. Detailed results provide nuance to these overall results and additional insight. The results suggest ways that instructors can not only teach the specific content focus of each course but also introduce students to perspectives that can serve to unite geography as a coherent disciplinary approach. In addition, by drawing from theory, this paper suggests ways that these results can contribute to overcoming the divide that exist across the overall discipline of geography and help to “engineer the synergies that are now latent” in the discipline (Abler, 1992, p. 224).

Keywords: Geography education, undergraduate, introductory courses, synthesis, fragmentation

Introduction and Purpose

The discipline of geography demonstrates considerable potential to provide needed answers to many pressing problems in the contemporary world (Cutter, Golledge, & Graf, 2002; National Research Council, 1997; Richardson & Solis, 2004). Many observers, however, believe that disunity across geography’s sub-disciplines inhibits realization of this potential and jeopardizes the health and status of the discipline (Abler, 1992; Murphy, 2006; Rhoads, 2004; Sheppard, 2004). Some have advanced the idea that synthesis, or integration, across the diversity of geography’s sub-disciplines can provide an approach to realization of the discipline’s potential contributions along with advancement of its status in the academy (Abler, 1992; Gober, 2000; Haggett, 1972; Turner, 2002), and such an approach dovetails well with contemporary trends toward interdisciplinarity across academe (Collins, 2002; Committee on Grand Challenges in Environmental Sciences, 2001; Richardson & Solis, 2004; Skole, 2004). However, this idea that geography can serve as an integrative discipline of synthesis has been difficult to realize (Kwan, 2004; Wolman, 2004).

Foundational courses in undergraduate geography education offer an opportunity to advance the understanding of geography as an integrative discipline of synthesis, but the extent to which these courses contribute to advancing such understanding is unknown. The discipline offers several foundational courses at the undergraduate level, and these courses are referred to collectively in this paper as “introductory, undergraduate coursework,” or more succinctly as “coursework.” This coursework overwhelmingly consists of the three courses titled human/cultural geography, physical geography, and

world regional geography, while the course titled Introduction to Geography is poorly represented (Figure 1) (Jones & Sambrook, 2000). Boehm (1998; 1999) presented an argument that highlighted the variability of content that exists not only across the three primary courses but also between sections of any one of the courses, even within a single academic department. A study conducted by Malaney (1986) found that coursework across geography's sub-disciplines varied with respect to more than content, with substantial variation exhibited on both the hard/soft and pure/applied disciplinary dimensions that are defined on the well validated typology developed by Biglan (1973a; 1973b).¹ This suggests that the three introductory courses may be presenting divergent ways of thinking as well as differing content.

Beyond the papers by Boehm and Malaney cited above, little published research can be found that considers the subject matter content or the disciplinary perspectives presented in geography's introductory coursework. This lack of knowledge about these courses raises several related problems. While divergence of subject matter content across the three courses is anecdotally assumed, we have no specific empirical understanding of the extent to which

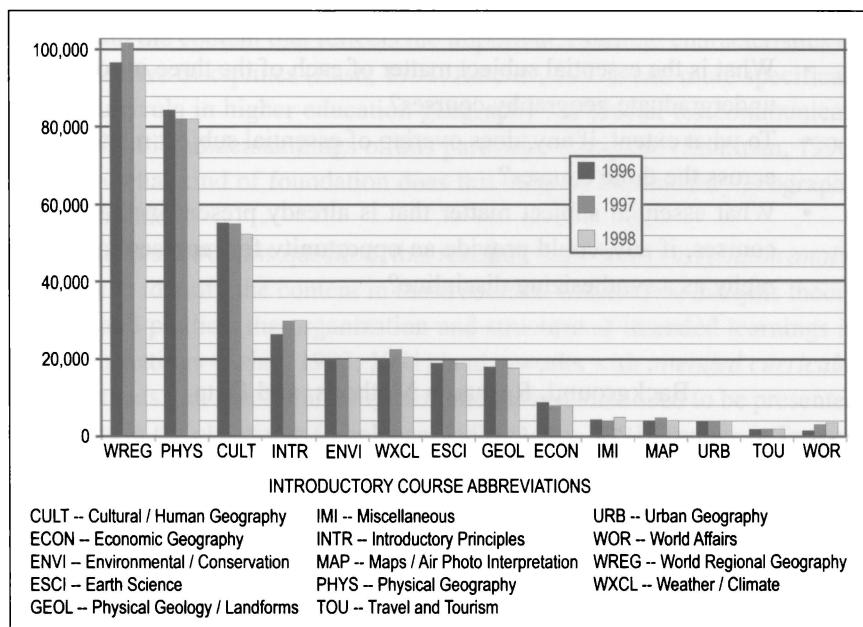


Figure 1. Total students enrolled in introductory geography courses at colleges and universities across the United States during 1996, 1997, and 1998, the most current years available (Jones & Sambrook, 2000).

overlap of content, if any, exists across these three courses. Likewise, knowledge of the existence of potentially synthesizing perspectives in these courses is also lacking. Because introductory courses in higher education are considered foundational to their respective disciplines (Eash 1991; Ratcliff 1997), our lack of knowledge about geography's introductory coursework means that we have little idea about what these courses are contributing to student understanding of the discipline. It would be helpful to know the understanding of geography that both non-majors and geography majors are likely to obtain through this introductory coursework: for non-majors by taking only one of these courses to fulfill a general education requirement and for majors who may take two or three of these courses. Are students internalizing any convergent, synthesizing geographic framework from one or more of these courses or are they merely acquiring a compilation of content knowledge about particular component(s) of the discipline?

To rectify this gap in knowledge about the content and perspectives of the three primary introductory undergraduate geography courses, the research reported here used a theoretically informed empirical approach to identify the essential subject matter and synthesizing perspectives present in these courses. The research sought to answer three questions:

- What is the essential subject matter of each of the three introductory undergraduate geography courses?
- To what extent, if any, does overlap of essential subject matter occur across the three courses?
- What essential subject matter that is already present in these three courses, if any, could provide an opportunity for representing geography as a synthesizing discipline?

Background, Research Methods, and Data

Most geographers recognize three major divisions within the discipline of geography. Two of these have been identified as physical geography and human geography, and exemplary descriptions of the generally held view of the division between them are “the human geography — physical geography divide” (Abler, Marcus, & Olson, 1992, p. 393) and the “gulf between human and physical geography” (Gaile & Wilmot, 1989, p. xxxi). Numerous other scholars have also commented on these two well-recognized divisions of the discipline (Goudie, 1986; Norton, 1989; Rhoads, 2004; Stoddart, 1987; Taylor, 1986). The third component of the discipline is regional geography,

and although this component of the discipline has been held in some disfavor by academic geographers for over fifty years (Abler, 1992; Augelli, 1968; Farmer, 1973; Gregory, 1995; Robinson, 1976; Walter & Bernard, 1978), it still “persists as a continuing heritage in geography” (Abler et al., 1992, p. 392). Moreover, regional geography reappeared with a renewed focus within the discipline of geography in the 1990s and continues to grow even today (Entrikin, 1996; Gerrard, 2003; Murphy, 1991; Thrift, 1991).

These three major divisions of geography are reflected in the three introductory undergraduate courses of human/cultural geography, physical geography, and world regional geography. Because of the pervasive influence that this three part division of geography has had on the discipline and its introductory coursework, it seems highly probable that such a division is conveyed by faculty who teach these courses that provide a fundamental part of undergraduate geography education across the United States. These courses account for the highest student enrollment of all introductory geography courses (Figure 1) (Jones & Sambrook, 2000), and they are required as introductory courses for the bachelor’s degree in geography at the highest numbers of geography programs in the country (Figure 2) (Rutherford, 2001). Prior research indicates that individual, introductory courses in higher education contain the content that reflects the important, essential characteristics of their respective disciplines (Eash, 1991; Ratcliff, 1997), and more specifically, that curricula in higher education geography are crucial for communicating the essential understandings of this particular discipline (Stoltman, 1990; 1992). So what kind of foundation does this suite of introductory geography courses produce?

To help answer this question, this research drew from *curriculum analysis theory* to identify the content in these courses. Curriculum analysis theory explains and predicts the organization and structure of intended learnings in classroom settings (Ariav, 1983; 1991), and it works with *intended curricula*, the documents that specify and organize the material intended to be presented to students in the classroom (Applebee, 1996; Ariav, 1991; Tanner & Tanner, 1995).² Syllabi were selected as the intended curricular documents to be analyzed in this research because curriculum analysis theory suggests that syllabi exist as the “vehicles by which organization and structure of intended learnings are communicated” (Eash, 1991, p. 71) and that they have the common purpose of transmitting knowledge about the formulation and organization of their respective instructional areas (Ariav, 1991; Eash, 1991; Gall, 1981). Consequently, syllabi developed and utilized by individual professors and instructors of the three introductory undergraduate geography courses can be used within the context of curriculum analysis theory to generate empiri-

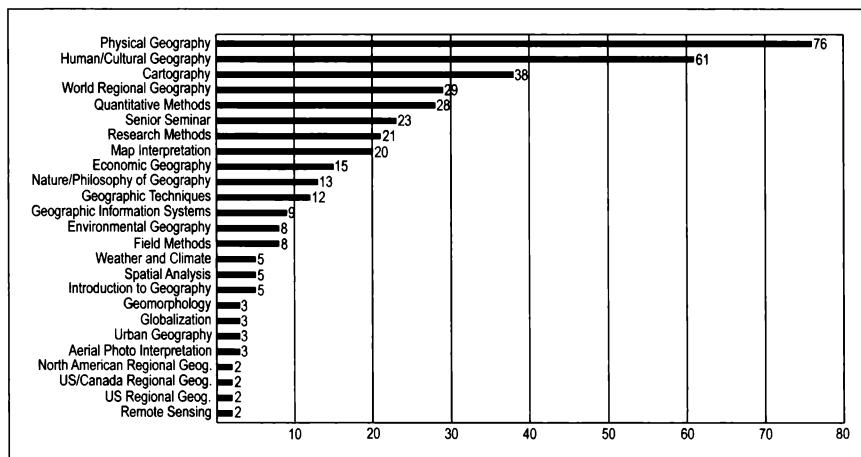


Figure 2. Courses required for the bachelor's degree at geography programs in the United States by percentage of programs requiring the course (Rutherford, 2001).

cal data that will produce basic knowledge of the subject matter of these courses.³

Course syllabi were collected from a random sample of faculty from across the United States who teach the three introductory undergraduate courses. Faculty participation was solicited by sending a short email message to department chairpersons at as many geography departments in four-year colleges and universities across the United States as could be identified ($N = 313$). In this email, the project was briefly outlined and a request was made that the department chairpersons forward the email message to all faculty members in their departments who teach one of the three introductory courses. An Internet link to a data-driven website created for the research was located in the email so that faculty members could click on this link and go directly to the website where a small amount of demographic data was requested and faculty members were asked to upload an electronic version of the syllabus used in her/his course. The demographic questions asked faculty to state the course they teach, their highest degree earned, and the discipline in which the highest degree was earned. Only faculty members who possessed an earned graduate degree (Master's or Ph.D.) in geography or a closely related discipline were used for the analysis based on the assumption that academic study at least through the master's level is required for a person to obtain a mature conception of the discipline.

An extensive literature review revealed 12 prior studies that analyzed undergraduate course syllabi for the purpose of determining subject matter content, and although these studies focused on disciplines other than geography, they provided a good reference for methodological procedures.⁴ All of these studies employed the method of *content analysis* for their investigations, a method that Neuendorff (2002, p. 1) defines as “the systematic, objective, quantitative analysis of message characteristics,” and that Krippendorff (1980, p. 21) emphasizes produces “replicable and valid inferences” from communications messages. Drawing from the prior analyses of undergraduate syllabi and the content analysis literature, a content analysis procedure was designed to extract subject matter items (SMIs) from the syllabi that then served as the data which could be analyzed (SMIs included a range of topics from agriculture to air masses to Africa). The content analysis followed a well-established and research-validated nine-step process (Appendix A) (Budd, Thorpe, & Donohew, 1967, Holsti, 1969; Krippendorff, 1980, 2003; Neuendorff, 2002).⁵ Key aspects of this analysis include: (1) development of detailed definitions and a codebook that served to standardize the analysis; (2) implementation of replicable procedures; (3) completion of four independent codings; and (4) use of the criterion of one hundred percent agreement among codings for each SMI for both stability and reproducibility.⁶ The median and mean number of syllabi used for the content analyses in the 12 prior studies was 45 and 67, respectively, and the 60 qualified faculty members who uploaded syllabi for the current research conformed to these guidelines. Additionally, an equitable distribution of syllabi existed among the three introductory courses — 19 for human geography, 17 for physical geography, and 24 for world regional geography.

The next step in the analysis process calculated total SMIs for each of the three courses and then reduced this large number of total SMIs to those that could be considered “essential” by employing a procedure that first eliminated idiosyncratic subject matter and then established clear criteria for identifying SMIs as “essential” (Appendix B). These essential SMIs were compiled into seven lists. The first three of these lists showed the essential subject matter items that were reliably found on the syllabi for each of the three courses. The next three of the lists showed the essential subject matter items that were reliably found to be common to pairs of courses (physical-human, physical-world regional, and human-world regional), and the final list showed the essential subject matter items that were reliably found to be common to all three courses. The researcher then interpreted these lists using qualitative methods. This interpretive approach suggested by Creswell (2003; 2007), starts with a narrative description of the data as presented in the

lists. The narrative begins the process of synthesizing themes or categories from the data, or more specifically, summarizing the essential SMIs for each course. Following the narrative description, the themes and categories for each course were formally presented in tabular and graphic form where they could be compared.

Analysis and Results

Analysis 1

Total SMIs found on the syllabi were 434 for human geography, 600 for physical geography, and 621 for world regional geography. From this group, the numbers of essential SMIs were determined to be 39 for human geography, 55 for physical geography, and 49 for world regional geography (8.9%, 9.1%, and 7.8% of total SMIs for each course, respectively). The small percentage difference in essential SMIs suggests relatively little difference between the courses in defining essential subject matter, although world regional geography's lower percentage suggests somewhat less consensus about such definition.

Analysis 2

The second analysis listed the essential SMIs that are unique to each course, common to pairs of courses, and common to all three courses (Figure 3). The SMIs unique to each course will be explored in more detail in *Analysis 3* while the analysis here focuses on comparisons between pairs of courses and between all three courses. Comparisons between pairs of courses revealed eleven SMIs uniquely common to human and world regional geography but only two uniquely common to human and physical and just one uniquely common to physical and world regional. In respect to the *total* essential SMIs common to pairs of courses (i.e., the sum of items uniquely common to pairs of courses and items common to all three courses), seventeen items were common to human and world regional but only eight were common to human and physical geography, and seven to physical and world regional. A *commonality index* for each pair of courses was calculated (Table 1), and revealed that the commonality was not large between any pair, although it was substantially higher for human and world regional geography than for either of these courses with physical geography.

The six SMIs common to all three courses (Figure 3) fit well into two broad categories — (1) the focus of geographic study and (2) the methods of geographic study. The focus of study was represented by the SMIs of (1) the *physical, natural environment* and (2) *human/environment interactions*. Both of these include study of phenomena and process, and their inclusion across all three courses tends to support the contention that geography contains this dual focus. The *human/environment interactions* item present in all three courses also tends to support a second contention that geography serves as a “bridge” discipline connecting the natural and social sciences. The four other SMIs common to all three courses fit into the methods of study category. The SMI specifically titled *geography* suggests that faculty in these courses seek to communicate a definition/explanation of geography as a discipline. The second SMI labeled *geographical perspectives/thinking/knowledge* reinforces the importance that faculty seem to place on communicating the definition

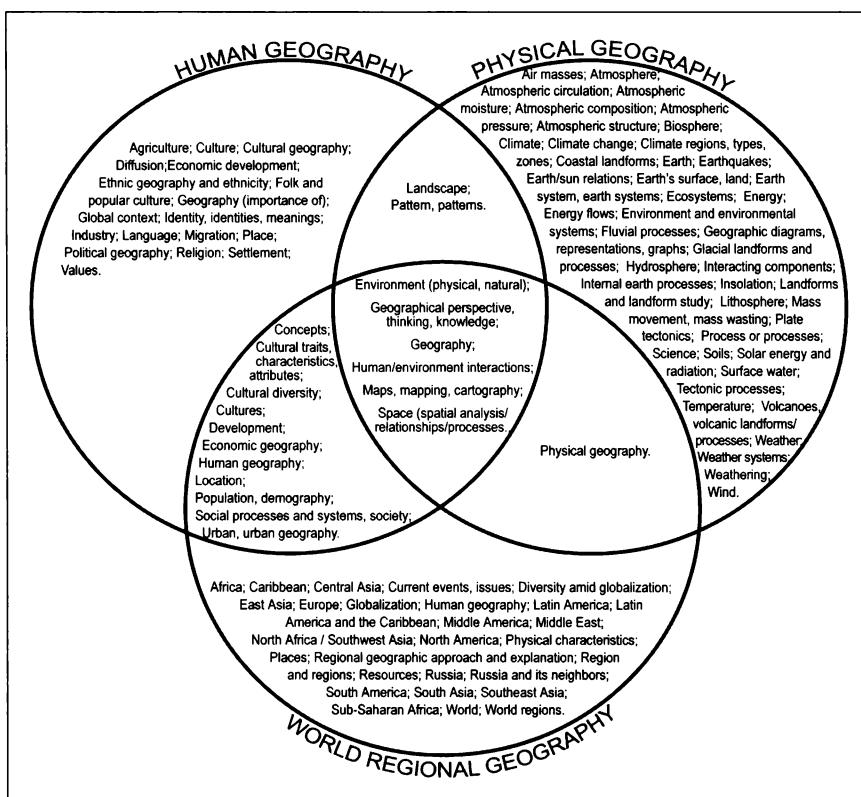


Figure 3. Essential subject matter items across the three courses.

Table 1

Commonality index of essential subject matter items between pairs of courses.

Course Pair (Total items per Course)	Calculation			Index
	Total Common Items per Pair	Average Total Items per Pair		
Human (39) and Physical (55)	8	÷	47	= 17%
Human (39) and Regional (49)	17	÷	44	= 39%
Physical (55) and Regional (49)	7	÷	52	= 13%

of geography as a discipline, and it implies a focus on a unique geographic methodology. The final two SMIs suggest what that disciplinary methodology may be — *maps, mapping, and cartography* and a focus on *spatial analysis, spatial relationships, and spatial processes*. The presence of two items in the focus of study category and four in the methods of study category suggests that the methods of geographic study may be a more uniting factor than the focus of geographic study and reinforces an additional commonly-held view that geography may be more a method of study than a discrete body of phenomena and processes to be studied.

Analysis 3

The third analysis was a narrative interpretation that grouped SMIs within each course into five thematic categories (Table 2). Categories one and two identified SMIs that appeared to be the focus of geographic study and were either pervasively or strongly present. The third category included all the remaining essential SMIs that appeared to be the focus of geographic study but less than pervasively or strongly present.⁷ Categories four and five listed essential SMIs that seemed related to philosophical/methodological aspects of geographic study and the concepts of space/place, respectively.

This analysis revealed little commonality among the three courses in respect to their focus of study. The greatest commonality among the courses was found in the philosophical/methodological aspects of geographic study,

and yet, differences existed even in this category: specifically, physical geography displayed a unique, explicit focus on *processes* and the sole mention of *geographic diagrams, representations, and graphs*, but it lacked the SMIs of *concepts* and *location* that are found in human and regional geography. The concept of *space* was addressed in all three courses but consideration of *place* was almost exclusive to human geography. In general, human and world regional geography show greater similarity to one another than either one does to physical geography.

An important observation from Table 2 is that the pervasively present focus of study in the world regional course is made up entirely of various regions. While this may not seem surprising, it highlights a difference between this course and the other two: that World Regional Geography is organized around world regions while the other two courses are organized around the phenomena and processes that exist and operate on Earth. This could mean that World Regional Geography would not be fairly compared with the other two courses because within the study of any world region, various phenomena and processes will be studied, and the analysis of syllabi would under-represent these within this course. However, several factors mitigate this possibility. First, as Klein (2003, p. 151) points out, world geography instructors generally “select from a menu of topics [phenomena and processes] to discuss within each world region,” and this necessarily limits the number of such topics that can be addressed in the course. Second, as explained earlier and detailed in Appendix B, the research identified SMIs considered *essential* while eliminating SMIs that were idiosyncratic and had only minor representation. Third, as detailed above, the low percentage of essential SMIs compared to total SMIs for World Regional Geography indicates little consensus among faculty who teach this course about the phenomena and processes to include. Consequently, it seems fair to believe that the phenomena and topics shown in Figure 3 and Table 2 for the World Regional Geography course represent those that most broadly receive substantive coverage in this course.

Discussion

The research indicates that geography’s introductory courses present divergent components of the discipline. In most respects, the three introductory courses cover three different fields of study, and this coursework may encourage the process of developing specialists even at the introductory level. The three course model of geography does seem well suited for providing students with a thorough introduction to the subject matter content of the

Table 2

Essential subject matter items in thematic categories sorted by course. Numbers in parentheses indicate the number of syllabi / number of appearances for each item. "N" is entered where the item failed to reach the top two quartiles of subject matter items for either of the categories.

Category of Subject Matter Item	Human Geography	Physical Geography	World Regional Geography
1. Focus of geographic study and <i>pervasively</i> present	<ul style="list-style-type: none"> - Agriculture (12/31) - Political geography (16/34) - Population/demography (13/36) - Religion (13/38) - Urban geography (13/33) 	<ul style="list-style-type: none"> - Atmosphere (13/27) - Atmospheric moisture (13/22) - Climate regions, types, zones (13/22) - Earth/sun relations (12/16) - Human/environment interactions (10/23) - Soils (11/21) - Temperature (13/18) - Wind (11/15) 	<ul style="list-style-type: none"> - East Asia (19/43) - Europe (17/42) - Latin America (11/19) - North Africa/Southwest Asia (15/37) - North America (12/27) - South Asia (19/44) - Southeast Asia (17/34) - Sub-Saharan Africa (17/32)
2. Focus of geographic study and <i>strongly</i> present	<ul style="list-style-type: none"> - Culture (8/13) - Cultural geography (9/15) - Development (8/19) - Economic geography (8/13) - Ethnic geography (9/23) - Folk/popular culture (9/22) - Human/environment interactions (11/15) - Language (11/28) 	<ul style="list-style-type: none"> - Atmospheric pressure (11/13) - Climate (9/14) - Ecosystems (8/12) - Environment and environmental systems (8/14) - Fluvial processes (9/14) - Hydrosphere (8/17) - Landforms (8/14) - Mass movement/mass wasting (9/11) - Plate tectonics (10/11) - Weather (11/12) - Weathering (12/13) 	<ul style="list-style-type: none"> - Geography (10/11) - Human/environment interactions (9/12) - Human geography (8/8) - Physical/natural environment (11/15) - Physical characteristics (9/11) - Physical geography (6/6) - World regions (11/16)
3. Additional items related to the focus of geographic study	<ul style="list-style-type: none"> - Diffusion (8/10) - Economic development (6/10) - Geography (importance of) (4/N) 	<ul style="list-style-type: none"> - Air masses (6/7) - Atmospheric circulation (7/12) - Atmospheric composition (N/6) 	<ul style="list-style-type: none"> - Caribbean (5/8) - Central Asia (5/7) - Cultural characteristics (56)

	<ul style="list-style-type: none"> - Global context (4/N) - Identity, identities, meanings (N/5) - Industry ((7/13) - Landscape (4/N) - Migration (N/5) - Physical/natural environment (5/6) - Settlement (N/5) - Values (N/6) 	<ul style="list-style-type: none"> - Atmospheric structure (5/8) - Biosphere (5/10) - Climate change (N/6) - Coastal landforms (5/7) - Earth surface, land (5/8) - Earth system, earth systems (7/9) - Earthquakes (6/6) - Energy flows (5/8) - Glacial landforms, process (7/8) - Internal earth processes (5/8) - Insolation (8/9) - Landform study (N/6) - Lithosphere (7/9) - Solar radiation, energy (6/9) - Surface water (6/7) - Tectonic processes (6/6) - Volcanoes/volcanic processes (8/9) - Weather systems (5/8) 	<ul style="list-style-type: none"> - Cultural diversity (7/9) - Cultures (7/8) - Current events, issues (6/7) - Development (5/N) - Diversity amid globalization (N/6) - Globalization (6/9) - Latin America and the Caribbean (N/7) - Middle America (7/12) - Places (8/8) - Population/demography (6/7) - Resources (5/6) - Russia (8/17) - Russia and its neighbors (N/7) - South America (7/18) - Urban geography (5/N)
4. Philosophical and methodological aspects of geographic study	<ul style="list-style-type: none"> - Cartography, maps, mapping (5/10) - Concepts (6/6) - Geographic knowledge, perspectives, thinking (10/15) - Location (6/7) - Pattern, patterns (5/6) - Social processes, social systems, society (6/10) 	<ul style="list-style-type: none"> - Cartography, maps, mapping ((9/27) - Geographic knowledge, perspectives, thinking (N/8) - Geographic diagrams, representations, graphs (N/7) - Interacting components (9/16) - Pattern and patterns (8/12) - Process or processes (10/29) - Science (7/8) 	<ul style="list-style-type: none"> - Cartography, maps, mapping (6/7) - Concepts (5/N) - Geographic knowledge, perspectives, thinking (8/10) - Location (7/8) - Regional geographic approach and explanation (7/10) - Region and regions (10/12) - Social processes, social systems, society (5/N)
5. Space and Place	<ul style="list-style-type: none"> - Space – Present (8/11) - Place – Present (6/7) 	<ul style="list-style-type: none"> - Space – Present (6/7) - Place – Completely absent (N/N) 	<ul style="list-style-type: none"> - Space – Present (8/12) - Place – Virtually absent (1/1)

discipline, which is an important function of introductory coursework. Such a purpose is perhaps particularly important in preparing majors in the discipline and would seem to imply that majors would benefit most by a requirement to take the full suite of three courses. Such a model, however, has been criticized as creating learning that is wasteful and ineffective due to a lack of unity and coherence (Britzman, 1991; Mills & Lehman, 1996), and as viewing “the curriculum through a periscope, offering one sighting at a time,” each disconnected from the others (Fogarty, 1991, p. 61).

Assuming the continuance of the three-course model, what implications does this research offer for geography program structure and the place of the three introductory courses within that structure? The research indicates that the one course of these three whose content has the highest capacity to integrate across the three realms of study is world regional geography. This course at least mentions both human and physical geography and has subject matter items that range from cultures and urban geography to physical characteristics and resources. This may imply that world regional geography is a good choice for the entry level introductory geography course, and that its status as the highest enrollment geography course in the nation is deserved. But before making this conclusion, additional research should investigate the extent to which this course, as currently taught, actually accomplishes the integrative purpose.

But there may be another contender for the course most likely to integrate across the major divisions of geography. As already mentioned, a single “introduction to geography” course that focuses on the geographic perspective is offered in numbers that are much smaller than any of the three introductory courses studied in this research. A brief review of textbooks indicates that this single introductory course may focus on the geographic perspective more than on providing a thorough knowledge of geography’s subject matter content. This course is generally not required of majors (Figure 2), and because it fulfills general education requirements it seems likely to attract non-majors. This presents a seeming paradox in which the non-majors taking this single introductory course may obtain a more holistic view of geography as a discipline of synthesis than do majors. Consideration of this single introductory geography course also carries implications for undergraduate geography program structure: a proposal that this course assume a larger role than it currently occupies in undergraduate geography education. Perhaps this course could serve as the foundational introductory geography course, although that would mark a revolutionary change in undergraduate geography education considering the dominance of the three-course model.

The clear finding of this research is that none of the three introductory geography courses presents all of the major categories of subject matter that comprise the discipline. In fact, on average, 77% of the essential subject matter in these courses is unique to each course and an average of only 12% is common to all three. Consequently, future research should consider the balance between (1) in-depth knowledge of the various sub-disciplines and (2) conceptual understanding of how the disparate sub-disciplines of geography synthesize into a single discipline. Can geographers identify and agree on what a suitable balance should be? To what extent do geography programs with different topical and methodological foci vary with respect to this balance?

In spite of the pervasive differences among these three introductory courses, they also contain a commonality of explicit reference to “geography,” “geographic perspectives,” “geographical thinking,” and “geographical knowledge.” This suggests that these introductory courses are making attempt(s) to communicate a definition of geography as a discipline and/or the unique methodology that the discipline employs, although this analysis of syllabi suggests that the attempt is underdeveloped. This finding carries implications that all introductory courses, be they a general introduction to geography or an introduction to one of the major sub-disciplines, may be well-advised to increase and improve their efforts in this regard. Communication of the unique nature of geographic study seems appropriate to continue in all these courses, and future research could consider ways to advance this communication in both curriculum and instruction. In addition, study and consideration is needed to answer questions related to defining further functions of these introductory courses. It seems probable that geography programs and faculty possess ideas of what these functions are and should be, and studying these ideas and conceptions, making them explicit instead of implicit, and contributing to a dialog about them seems like a fruitful addition to future research.

Additional implications of this research relate to university general education requirements. The World Regional Geography course predominates as the course that meets the university general education requirement for an introduction to the social sciences (Boehm, 1998). The current research, however, indicates that while this course touches on geography as a perspective for inquiry, it focuses primarily on the descriptive study of world regions and not on topical or methodological aspects of geography as a social science. Additionally, as Boehm (1998) determined, all three introductory geography courses also meet a wide range of other general education requirements that vary from providing an international perspective or a focus on multi-cultural

awareness to meeting the needs of a laboratory science. The results of the analysis of syllabi in this research did not identify these as essential SMIs. Consequently, this raises the implication that the subject matter of these courses may not adequately fulfill the general education requirements they have been designated to satisfy, although additional research is needed to confirm or deny this possibility.

Conclusion

In addition to informing geography's introductory coursework, this research offers implications for the discipline more broadly. Curriculum theory holds that the various curricula found in any introductory, undergraduate course reflect essential characteristics of their respective discipline (Eash, 1991; Ratcliff, 1997). In addition, various researchers, particularly Stoltman (1990; 1992) with respect to geography, have produced empirical verification of the theoretical proposition stated by Stark et al. (1990) that development of introductory undergraduate curricula is primarily a function of the disciplinary views held by faculty who develop those curricula. Consequently, the results of this research with respect to geography's introductory, undergraduate courses can be applied to consideration of the nature of the overall discipline of geography.

Specifically, the divergence in subject matter among geography's introductory courses that has been demonstrated in this research verifies considerable anecdotal evidence that the same holds true for the discipline more generally. This evidence is well summarized by Rhoads (2004, p. 752) with the statements that "physical geography and human geography, for the most part, are separate and unconnected" and that "geography encompasses the human and the physical, but does not combine these ingredients." While many have suggested that geography possesses the potential to integrate inquiry and instruction across the natural and social sciences (Abler, 1992; Gober, 2000; Haggett, 1972; Turner, 2002), others have commented that such synthesis does not characterize the discipline at the present time, or as summarized by Wolman (2004):

Synthesis, often the defining word, however, ranges from once over lightly to deep understanding of complex interrelationships. Most eschew the former and are unable to do the latter well. Thus few practitioners practice geography, most practice parts, sometimes overlapping parts. (p. 723)

Nevertheless, the research in this paper shows that geography's introductory undergraduate coursework contains a subject matter core that transcends the three major sub-disciplines, and perhaps this finding points a way toward realizing convergence and synthesis across the discipline as a whole. It would certainly be improper to claim that the six subject matter items identified in this research represent an exclusive core for the discipline. Nonetheless, these six items seem like a reasonable starting place for efforts at generating synthesis across the discipline while maintaining the search for additional items that may qualify as well. Maintaining the search for additional "core," synthesizing subject matter and disciplinary perspectives for geography seems additionally important considering the finding of this research that subject matter topics that comprise a large segment of the geographic literature are conspicuously absent from the list of six core items. For example, what role(s) exist in geography as a discipline of synthesis for subject matter related to the topics of cultural ecology, area studies, regions, landscape, place, and more? Perhaps a continued focus on geography's introductory undergraduate coursework can help the discipline overcome its divergent tendencies.

Endnotes

1. Developed in 1973, the Biglan typology has been extensively validated. See Creswell and Bean (1981) and Braxton and Hargens (1996) for reviews of the validation that has occurred in more than two decades of studies.
2. Synonyms for the term *intended curricula* include written curricula (English, 2000), formal curricula (English, 2000), manifest curricula (Bloom, 1981), and official curricula (Posner, 1995). In addition to syllabi, intended curricula can include lesson plans, textbooks, and curriculum frameworks.
3. The literature presented here provides a strong theoretical framework for using syllabi to study the content of these courses, which is the purpose of the research presented in this paper. Of course, there is more to college courses than the subject matter content that instructors intend to present to students as represented in syllabi. Although syllabi provide a good view into how a class is conceptualized and even taught, the findings in this research could be tested with additional research, such as classroom and/or instructor observations, instructor and/or student interviews, or textbook analyses.

4. The table below summarizes pertinent information about the 12 prior studies of undergraduate syllabi that were revealed by the literature review.

Author and Date	Discipline	Syllabi N
Bayless and Wardrobe (1998)	Business	45
Beasley (1996)	Social Work	54
Boatman (1999)	Leadership Development	105
Bogart and Butt (1996)	Business	45
Conrad (1992)	Economics	12
Garcelon (2000)	Mathematics Education	42
Hill (2002)	Political Science	NA
Le-Doux and Montalvo (1999)	Social Work	32
Lucas-Fusco (1993)	Special Education Teacher Preparation	214
Pezzoli and Howe (2001)	Planning	69
Shepherd (1996)	Elementary Teacher Education	34
Stephens and O'Hara (2001)	Information Technology	84
MEAN		67
MEDIAN		45

5. Content analysis is often an inadequately understood methodology that is too easily dismissed as lacking rigor. Appendix A outlines the well-established and research-validated nine-step process employed in this research and specifies how the process was implemented in the research. Appendix A, therefore, not only supports the rigor of the analysis used but also provides important methodological information that serves as an example to other researchers about the components of a rigorous content analysis.
6. *Stability* refers to the degree with which a process is invariant over a period of time and can be achieved when the same content is coded more than once by the same coder (intra-coder reliability). *Reproducibility* refers to the degree to which a process can be recreated under varying circumstances and indicates the extent to which different coders produce the same results when coding the same text (inter-coder reliability). Both stability and reproducibility must be measured to ensure the reliability of the content analysis. In the current research, the researcher and two other coders conducted codings that were used to determine reproducibility. In addition, the researcher conducted two codings, separated by a one-month time

period, and these two codings were used to determine stability. All codings were conducted using only the procedures specified in the codebook and without consultation with other coders, as per the definition of *independent coding*. Acceptable levels of stability and reproducibility occur when coefficients greater than or equal to 0.70 are achieved on various tests (Cohen's *kappa* and Krippendorff's *alpha*). This research did not conduct the tests, but rather, insisted on 100% agreement among codings, which would equate to a coefficient of 1.0 if the tests had been conducted. Neuendorff (2002, p.143) states that reliability (stability and reproducibility) "must be reported for each and every measured variable," not averaged across all variables. Consequently, the research did not average reliability measures but instead determined reliability for each SMI. All SMIs that failed to achieve 100% agreement were deleted from the analysis.

7. The categories of pervasively and strongly present were defined by first selecting SMIs that were in the top quartile on the two criteria of *number of syllabi* and *number of appearances* (defined in Appendix B) and placing these SMIs in rank order. Then a natural break in this rank order was identified as the division between pervasively and strongly present.

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Appendix A. Steps in the content analysis.

Step	Definition	As Used / Implemented in the Research
1. Define the target of inference.	The target is what the researcher wants to identify and learn about.	Target defined as subject matter of introductory geography courses.
2. Develop contextual knowledge.	Contextual knowledge provides the logical bridge between the data that are available and the uncertain target that exists in those data.	Contextual knowledge emerged from constructs, definitions, and propositions of Curriculum Analysis Theory.
3. Determine the data to be counted as a target.	Define what counts as a datum and state how it will be identified.	Explicit subject matter content was identified as (1) <u>being</u> a geography subject matter item or (2) <u>not being</u> a geography subject matter item.
4. Develop the codebook.	4.1. Define the experience and qualifications needed by people conducting the analysis (coders). 4.2. Define the recording units – that is, the types of content items that will be recorded. 4.3. Define how the data will be unitized – that is, determine what the unit of analysis will be. 4.4. Develop coding procedures and demonstrate how they determine the construct validity of the analysis.	(1) Posses a graduate degree in geography and (2) have served as instructor of record for at least two semesters in one of the introductory courses. Facts, concepts, topics, themes, objects, processes, place names, issues, perspectives, approaches. Individual words and phrases found in three syllabi sections – course description, course objectives, and course schedule. Detailed 18 page codebook with procedures and dichotomous key developed with reference to extensive literature review and refined by a pilot test of 20 syllabi.

5. Develop the coding form.	Develop the form that will be used by the coders to record the data.	Form contained case I.D. number, course name, and four fields – one for textbook used and one for each syllabi section specified in 4.3 above.
6. Record data.	Coders will follow procedures and record the data.	The researcher and two other coders independently recorded subject matter items from all syllabi electronically onto coding forms. Then the researcher coded all syllabi a second time.
7. Conduct reliability assessment.	7.1. Establish criterion for reliability. 7.2. Conduct stability measure. 7.3. Conduct reproducibility measure.	100% agreement among all codings on each subject matter item. Compare the two codings by the researcher. Compare the final list of subject matter items from 7.2 to the other two codings.
8. Data Processing.	Transfer data from coding forms to a database.	One database file developed for each course. Subject matter items were transferred to database files, alphabetized, and then multiple entries of the same subject matter item were enumerated under one entry.
9. Conduct final analysis.	Utilize a computer database application to sort and produce counts of the target of inference.	"Essential" subject matter items were identified. Developed seven ranked lists of subject matter items: one for each course, one for items common to each pair of courses, one for items common to all three courses.

Appendix B. Six-step procedure used to determine “essential” subject matter items.

1.	All subject matter items that appeared on only one syllabus were deleted based upon the premise that they represented idiosyncratic rather than essential subject matter.
2.	Ranked counts of subject matter items were produced in each of the following categories: ➤ <i>Number of syllabi</i> – the total number of syllabi in which a given subject matter item was found; ➤ <i>Number of appearances</i> – the total number of times that a given subject matter item appeared on all syllabi.
3.	Calculations were conducted to determine the frequencies with which subject matter items occurred for both <i>number of syllabi</i> and <i>number of appearances</i> . In other words: ➤ <i>number of syllabi</i> = the number and percent rankings of subject matter items that were found on 2, 3, 4 . . . n syllabi; ➤ <i>number of appearances</i> = the number and percent ranking of subject matter items that had 2, 3, 4 . . . n appearances.
4.	The frequency of subject matter items for both <i>number of syllabi</i> and <i>number of appearances</i> were divided into quartiles.
5.	Subject matter items that failed to reach the top two quartiles for <i>number of syllabi</i> OR <i>number of appearances</i> were deleted.
6.	This research considers the remaining subject matter items to be “essential.” In other words, “essential” was defined as subject matter items that appeared in the top two quartiles of either <i>number of syllabi</i> OR <i>number of appearances</i> .

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