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THE CONCEPT OF GEOGRAPHY AS A SCIENCE OF SPACE, FROM KANT AND HUMBOLDT TO HETTNER

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THE PROBLEM

NUMEROUS geographers writing in recent years concerning the nature and scope of their subject have described the relation of their field to other fields of science in terms of a concept said to stem from Immanuel Kant and from Alexander von Humboldt. Whatever may be the original source of the concept, its importance in current geographic thought stems from the writings of Alfred Hettner, the German master of the methodology of geography. We are not concerned here with the validity of the concept, which is of course in no way dependent on who originated or supported it.¹ As a study in the history of geographic thought, this paper is concerned with the possible origin, or origins, of the concept and its significance to geography during the past century and a half.

Hettner's first brief statement of the concept appears in his earliest methodological

paper, with which he inaugurated in 1895 the *Geographische Zeitschrift*, the journal which he edited for forty years. Noting that the materials of study in geography included a vast diversity of facts, so that many had doubted whether they could be united in a single science, he wrote:

If we compare the different sciences we will find that while in many of them the unity lies in the materials of study, in others it lies in the method of study. Geography belongs in the latter group: its unity is in its method. As history and historical geology consider the development of the human race or of the earth in terms of time, so geography proceeds from the viewpoint of spatial variations.²

Hettner published a full explanation of his concept a decade later, most completely in a paper analyzing the system of the sciences in the *Preussische Jahrbücher*,³ somewhat less extended, as part of what was to become the most famous of his methodological papers, "Das Wesen und die Methoden der Geographie," in his own journal.⁴ In contrast to the "systematic sciences" which study each a particular category of phenomena, whether of nature or of man, the historical or chronological sciences study the association of diverse phenomena in particular periods of time or in development through time, and the spatial, or chorological sciences study the associations of diverse phenomena in sections of space, or areas. In this sense, the historical

¹ An attempt was made to undermine the validity of the concept by challenging the legitimacy of its presumed origins, in Fred K. Schaeffer, "Exceptionalism in Geography," *Annals, Association of American Geographers*, Vol. 43 (1953), pp. 232-35. For detailed and documented demonstration of the errors and distortions on which that thesis is based, see Richard Hartshorne, "'Exceptionalism in Geography' Re-Examined," *Annals, Association of American Geographers*, Vol. 45 (1955), pp. 218-24. While Schaeffer's challenge was the stimulus which led to the present paper, this is not the study referred to in the statement "Preface to Two Papers," *Ibid.*, pp. 205-6. That second paper, which considers the validity of Hettner's concept, together with various other questions concerning the methodology of geography, is to be published shortly as a monograph in the new series to be published by the Association of American Geographers in cooperation with Rand, McNally and Co.

² Alfred Hettner, "Geographische Forschung und Bildung," *Geographische Zeitschrift*, Vol. 1 (1895), pp. 7-8.

³ "Das System der Wissenschaften," *Preussische Jahrbücher*, Vol. 122 (1905), pp. 251-77.

⁴ "Das Wesen und die Methoden der Geographie," *Geographische Zeitschrift*, Vol. 11 (1905), pp. 549-53.

sciences include historical geology, pre-history, and history proper (the history of literate peoples). The spatial sciences include astronomy and geography and, we may now add, geophysics. No sharp or absolute lines can be drawn between the three groups, for in many cases studies overlap, but the viewpoint is basically different in each case.

Immediately following the publication of the two articles in 1905, another German geographer, Schlüter, challenged the concept,⁵ but Hettner was able to show that within the same paper Schlüter had expressed essentially the same conclusion.⁶ In the following decades Hettner's concept became well known and widely accepted among German geographers. In his inaugural address at Edinburgh in 1908, Chisholm based his statement of geography on Hettner's concept.⁷ In 1921 Michotte in Belgium based his orientation on Hettner's statement which he described as "*la classification habituelle*."⁸ But in neither case does the concept appear to have been taken up by others in those countries. Even after the appearance in 1927 of Hettner's volume on the methodology of geography, which was widely acclaimed in other countries, little attention was paid to his re-statement of this basic concept.⁹ The only student of the philosophy of science to give serious consideration to it, to the best of my knowledge, was Victor Kraft, in Vienna, who in 1929 discussed it and evidently found it in general acceptable.¹⁰

The concept has become widely known to English-speaking geographers as a result of its presentation, in 1939, in *The Nature of Geography*, essentially in Hettner's terms.¹¹ Numerous American and English geographers have

used it as the basis for their consideration of the place of geography in the system of sciences.

Hettner evidently did not presume the concept was original with him. In his longer paper of 1905 he expressed surprise that the principal of the chorological sciences had escaped the attention of students who studied the classification of the sciences "even though a number of methodologists of geography have long declared it as the authoritative principle of geography."¹² He also noted that Kant had suggested this principle in his lectures on geography, but, according to a footnote to his other paper, this fact was brought to his attention only as he was completing his own writing—i.e., long after he had formulated his own concept.¹³ In the republication in his volume of 1927 he introduced a quotation from Kant to demonstrate the similarity of ideas, but with no implication of any connection.¹⁴ At no time does he appear to have recognized any connection between his concept and the views of Humboldt. The similarity between the two was first demonstrated by Döring in 1931,¹⁵ and in 1939 I pointed out the similarity of ideas of all three students—Kant, Humboldt, and Hettner.¹⁶

Subsequent writers, using the materials presented in *The Nature of Geography*, have generally assumed that this demonstration of similarity established a direct connection.¹⁷ But Hettner himself recognized no such connection and none has yet been established.

The purpose of the present paper therefore is to trace the history of the concept from its earliest origins to its exposition by Hettner in 1895 and 1905. Our concern is not merely with the bibliographical question but also with the more general problem of what conditions in the general climate of scientific thought may have caused students at certain

⁵ Otto Schlüter, *Die Ziele der Geographie des Menschen* (Munich, 1906), pp. 53-6.

⁶ "Methodische Streifzüge," *Geographische Zeitschrift*, Vol. 13 (1907), pp. 627-32.

⁷ George C. Chisholm, "The Meaning and Scope of Geography," *Scottish Geographical Magazine*, Vol. 24 (1908), p. 567.

⁸ P. Michotte, "L'Orientation nouvelle en géographie," *Bulletin de la Société Royale Belge de Géographie*, Vol. 45 (1921), p. 22.

⁹ Hettner, *Die Geographie, ihre Geschichte, ihr Wesen und ihre Methoden* (Breslau, 1927), pp. 110-17.

¹⁰ "Die Geographie als Wissenschaft," *Enzyklopädie der Erdkunde*, Teil: Methodenlehre der Geographie (Leipzig, Vienna, 1929), p. 8.

¹¹ Richard Hartshorne, *The Nature of Geography* (Lancaster, Pa., 1939, 1946), pp. 140-42.

¹² "Das System der Wissenschaften," *op. cit.*, p. 273.

¹³ "Das Wesen und die Methoden der Geographie," *op. cit.*, p. 551.

¹⁴ *Die Geographie . . .*, *op. cit.*, p. 115.

¹⁵ Lothar Döring, *Wesen und Aufgaben der Geographie bei Alexander von Humboldt*, Frankfurter Geographische Hefte (1931).

¹⁶ *The Nature of Geography*, pp. 134-35, 140-42.

¹⁷ In several such studies, the reader might suppose that the author's conclusions were based on additional evidence because quotations from Kant, Humboldt, or Hettner are cited from the originals, whereas careful comparison of texts demonstrates that they were taken entirely from the intermediary source.

periods to overlook this concept whereas later students were to find it important to their thinking.

BEFORE 1750

Prior to the eighteenth century few students of geography felt any need to determine the status of their subject in the general field of knowledge; its importance was sufficiently assured by popular interest and general utility. In that century, however, an increasing number of students became concerned to establish geography as an integral field of knowledge, rather than merely a utility servant of commerce and government, or the handmaid of history. Geography, they were wont to assert, was similar and comparable to history—not a part of history, but coordinate with it.

This similarity has been recognized by so many students of many different countries that we may assume it to be readily observable as an empirical fact in the geographic literature. To seek its earliest origin we would no doubt need to go back to the period of ancient Greece, to men like Herodotus who wrote both history and geography.

The earliest definite statement of the comparison of geography and history that I have found is that of J. M. Franz in 1747.¹⁸ At the same time, moreover, Franz and other students of that period recognized a close relationship between geography and astronomy, both of which they included under a common term—cosmography. Indeed the first geographical society in Germany, which Franz founded, was called *die Cosmographische Gesellschaft*.¹⁹

KANT AND HUMBOLDT—1756–1859

The earliest statement in which history and geography are not merely compared with each other but contrasted with the viewpoint of the systematic sciences, each defined in terms of categories of phenomena, is found in the introductory lecture of an elementary course in geography which Immanuel Kant gave at Königsberg during most of the second half of the eighteenth century. Kant himself never published these lectures, but numerous handwritten copies were circulated among

students and at least one had been sent by Kant to a government official in Berlin.²⁰ More than a century later, Adickes found a score of such manuscript editions of Kant's course. Certain of these formed the basis for the publication by Rink, in 1802, of Kant's lectures.²¹ By painstaking comparison of these many versions, Adickes has demonstrated that while the larger part of Rink's publication, the latter part, is based on materials used by Kant in the early years of the course and later discarded, the first part, including his statement of the relation of geography to other sciences, represents essentially the form in which Kant presented it in 1775 and subsequent years.²²

Nearly a decade before the publication of Kant's lectures, the same basic concept of the nature of geography as a field of study was stated by Alexander von Humboldt in his first major publication, written in 1793 when he was 24 years old. Although Humboldt had been trained primarily in courses in economics and government finance in preparation for administrative work in government, his personal interest focussed on nature studies, particularly in botany and geology, and he had been introduced to geography in the field by George Forster, one of the first of the scientific explorers.²³ He evidently felt the need to establish a logical basis for a distinction between geography and other sciences. He out-

²⁰ Erich Adickes, *Untersuchungen zu Kants physische Geographie* (Tübingen, 1911), pp. 3, 35 ff., 280 ff.

²¹ *Immanuel Kant's physische Geographie*, edited by F. T. Rink (Königsberg, 1802). Although Kant had authorized this edition he had become too senile to examine what was included in it. An unauthorized version by Gottfried Vollmer was published in six volumes, beginning in 1801, but this has been shown to be based only in minor part on Kant's lectures. Cf. *The Nature of Geography*, pp. 38–39. Since Rink's edition is most readily available in various sets of Kant's collected works, where it appears with but minor changes in text but with varying page numbers, references to it in this paper are given by sections.

²² Erich Adickes, *Ein neu aufgefundenes Kollegheft nach Kants Vorlesung über physische Geographie* (Tübingen, 1913), pp. 10–11, 67. The several paragraphs which form Kant's statement of the concept of geography under discussion in this paper are quoted in full in *The Nature of Geography*, pp. 134–35. In translating from Rink's edition, I incorporated corrections in the wording according to specific recommendations made by Adickes on the basis of his examination of the manuscripts, but this fact is not noted with the quotation, but in the previous footnote concerning Rink's edition, *Ibid.*, p. 39.

²³ *Ibid.*, pp. 49–50.

¹⁸ Arthur Kühn, *Die Neugestaltung der deutschen Geographie im 18. Jahrhundert* (Leipzig, 1939), pp. 39, 41.

¹⁹ *Ibid.*, p. 45 fn., pp. 54 ff.

lined this distinction in a long footnote to his 1793 article and indicated subsequently that it continued to represent his concept of geography by re-publishing the same footnote in another article a decade later and again in the *Kosmos*, fifty years after its first publication.²⁴

Since this statement of Humboldt's of 1793 is the earliest known publication of the concept under discussion, and because it is available only in the Latin form in which Humboldt published his first major work, it is translated here in full (from a photostat copy of the original, in the Library of Congress).²⁵ The more readily available re-publication in the *Kosmos* differs slightly in wording.

Geognosy (*Erdkunde*)²⁶ studies animate and inanimate nature . . . both organic and inorganic bodies. It is divided into three parts: solid rock geography,²⁷ which Werner has industriously studied; zoological geography, whose foundations have been laid by Zimmernan; and the geography of plants, which our colleagues have left untouched. Observations of individual parts of trees or grass is by no means to be considered plant geography; rather plant geography traces the connections and relations by which all plants are bound together among themselves, designates in what lands they are found, in what atmospheric conditions they live, and tells of the destruction of rocks and stones by what primitive forms of the most powerful algae by what roots of trees, and describes the surface of the earth in which humus is prepared. This is what distinguishes geography from nature study,²⁸ falsely called nature history; zoology (*zoognosia*), botany (*phytognosia*) and geology (*oryctognosia*) all form parts of the study of nature, but they study only the forms, anatomy, processes, etc., of individual animals, plants, metallic things or fossils. Earth history, more closely affiliated with geography than with nature study, but as yet not attempted by any, studies the kinds of plants and animals that inhabited the primeval earth, their migrations and disappearance of most of them, the genesis of mountains, valleys, rock formations and ore veins . . .

²⁴ Alexander von Humboldt, *Kosmos: Entwurf einer physischen Weltbeschreibung*, Vol. 1 (Stuttgart, 1845), pp. 486-87.

²⁵ Alexander von Humboldt, *Florae Fribergensis Specimen* (Berlin, 1793), fn., pp. 9-10.

²⁶ In the original: "Geognosia (*Erdkunde*)"; both terms were evidently taken from Werner. In naming the three parts of "geognosy" in the next sentence, Humboldt used *Geographia* for each part. In the subsequent development of nomenclature of the sciences, geognosy came to be synonymous with geology or a part of it, whereas *Erdkunde* came to be synonymous with geography.

²⁷ "Geographia oryctologica, quam simpliciter Geognosiam dicunt."

²⁸ "Physiographia (*Naturbeschreibung*) historiarum naturalium perperam nuncupata." "Physiography" of course has come to have a very different meaning.

the earth surface gradually covered with humus and plants, denuded again by violent stream floods, and once more dried and covered by grass. Thus zoological history, the history of plants, and the history of rocks, which tell only the past state of the earth, are to be clearly distinguished from geography.

Both in substance and in terminology, this statement reflects the thinking of Abraham Gottlob Werner, under whom Humboldt was studying at the time, at the mining academy at Freiberg, Saxony. During the previous decades and more of teaching, Werner had separated materials formerly taught together in a single course into separate courses on minerals, which he called "*oryctognosie*," and on the study of rock formations and forms of mountains, which he called "*geognosie*" or "*Erdkunde*"—in either case, literally, "the knowledge of the earth."²⁹ Humboldt extended this distinction in respect to botany and zoology and also, apparently, added the comparison with the historical aspect of natural science.

There is no similarity in phrasing or in structure between this statement of Humboldt's and that of Kant. Nevertheless they are consistent in recognizing the same three divergent points of view in science. Was the statement which Humboldt published in 1793 inspired or influenced by the statement which Kant presented annually in his lectures since at least as early as 1775?

It is almost certain that there was no personal connection between the young Humboldt and the venerable Kant. During the period when they might have met, Kant never left Königsberg, and there is no mention of a visit by Humboldt to Königsberg in the voluminous correspondence which records his travels as a young man in Germany.

There were, however, many other ways in which Humboldt might have learned of Kant's concept. Before his college days, he and his older brother Wilhelm heard much of Kant's philosophy and work in physics in the intellectual circle in which they lived in Berlin.³⁰ His studies at the University of Frankfurt

²⁹ "Abraham Gottlob Werner," in *Allgemeine deutsche Biographie*, Vol. 42, pp. 33-39; W. Blöde, "Die Geschichte und die jetzigen Verhältnisse der Bergakademie," in *Festschrift zum hundertjährigen Jubiläum der königlichen sächsischen Bergakademie zu Freiberg* (Dresden, 1866), p. 9.

³⁰ Karl Brulins, ed., *Life of Alexander von Humboldt*, translated by J. and C. Lassell (London, 1873), Vol. 1, p. 40.

made him familiar with Kant's philosophy. Wilhelm, with whom he was very close, was a great admirer of Kant, "has read all his works and lives and moves in his system." But Alexander himself appears to have had far less interest in the philosopher, even a negative reaction against him.³¹

It is, of course, possible that Humboldt could have seen one of the manuscript copies of Kant's lectures in geography, either at Frankfurt or at Göttingen, or in Berlin. But it seems unlikely that he would have been greatly interested in handwritten copies of elementary lectures—prepared and sold to enable students to pass a course—in comparison with the great amount of printed works that Kant had published.

In any case, there is no evidence that Kant's ideas about geography came to Humboldt's attention before 1793, or that he even was aware of Kant's interest in geography. In later years, however, Humboldt did almost certainly make use of the statement which Rink published for Kant in 1802.

Thus, in his lectures of 1827–28, if we can rely on the edition published a century later, he stated that his title "*physische Weltbeschreibung*" was taken from Kant.³² But in explaining this title in his own publication, in the *Kosmos*, he merely says that it was an extension from the earth to the universe of "*die alte ausdrucksvolle Benennung physische Erdbeschreibung*" and names no specific source.³³ This, however, is the term used in Rink's edition of Kant's lectures, whereas, as Adickes has shown, Kant probably said "*physische Geographie*" which Rink had changed to the Germanic form.³⁴ Likewise in defining

his term "*physische Weltbeschreibung*," Humboldt wrote that it considers "*die Welt als Gegenstand des äusseren Sinnes*," placing that phrase in quotation marks but without reference;³⁵ the phrase is to be found in Kant's introductory lecture.³⁶ Further, as shown in the following passages, Humboldt contrasted his view of geography, or cosmology, with the "system of nature" of other sciences just as Kant had done, and with considerable similarity of phrasing—but again without reference to source.

Humboldt: "Die systematisch geordneten Verzeichnisse aller organischen Gestaltungen, die wir ehemals mit dem allzu präunkvollen Namen von Natur-Systemen bezeichneten" . . . "Die Einzelheiten . . . können logisch in Classen und Gattungen geordnet werden."³⁷

Kant: "Sage ich z.B. die Rindeart wird unter das Geschlecht . . . oder unter die Gattung . . . gezählt, so ist das eine Eintheilung, die ich in meinem Kopfe mache, also eine logische Eintheilung. Die *Systema naturae* ist gleichsam eine Registrar des Ganzen, wo ich alle Dinge, ein jedes in seine ihm eigenthümlich zukommende Classe setze."³⁸

Humboldt: "Solche Anordnungen führen . . . als ein naturbeschreibender Theil, den anmassenden Titel von Natur-Systemen . . . als Verzeichnisse gewähren sie nur ein formelles Band: sie bringen mehr Einheit in die Darstellung als in die Erkenntnis selbst."³⁹

Kant: "Indessen dürfte man die Systeme der Natur . . . richtiger wol Aggregate der Natur nennen, denn ein System setzt schon die Idee des Ganzen voraus, aus der die Mannigfaltigkeit der Dinge abgeleitet wird. Eigentlich haben wir noch gar kein *Systema naturae*. In den vorhandenen sogenannten Systemen der Art, sind die Dinge bloss Zusammengestellt, und an einander geordnet."⁴⁰

We conclude, therefore, that (1) in later years Humboldt studied Kant's statement as published in 1802 and made important use of it; (2) when he wrote his own basic statement in 1793 he almost certainly did not have before him any of the numerous manuscript copies of Kant's lectures that were circulating in Germany; (3) it is entirely possible that he may at some earlier date have seen such a copy or may have heard of Kant's concept from any of many possible sources, but we have no scrap of evidence that he did. It is

³¹ Rudolf Borch, *Alexander von Humboldt: Sein Leben in Selbstzeugnissen, Briefen und Berichten* (Berlin, 1948), pp. 26–27, 32–33, 41.

³² Alexander von Humboldt, *Vorlesungen über physikalische Geographie nebst Prolegomenen über Stellung der Gestirne, Berlin im Winter 1827–28*, edited by Miron Coldstein (Berlin, 1934), p. 14.

³³ Humboldt, *Kosmos*, *op. cit.*, p. 52.

³⁴ Kant, *op. cit.*, Sec. 2; Adickes, *Ein neu aufgefundenes Kollegheft*, *op. cit.*, pp. 33–34. The term "physische" did not have for the contemporaries of Kant or Humboldt the meaning we now associate with "physical"—i.e., natural or exclusive of human. On the contrary both those students included under physical geography races, languages, and customs of man. The closest approximation of their concept of "physical geography" in present terms would be what Europeans call "general geography," Americans "systematic geography"; cf. Döring, *op. cit.*, pp. 15, 18; and *The Nature of Geography*, pp. 36, 43, 67, 76.

³⁵ *Kosmos*, *op. cit.*, p. 52.

³⁶ Kant, *op. cit.*, Sec. 2.

³⁷ *Kosmos*, *op. cit.*, pp. 55, 66.

³⁸ Kant, *op. cit.*, Sec. 4. According to Adickes, *op. cit.*, p. 35, Kant probably did not use the word "Classe," but that is what Humboldt would have read in Rink's edition of Kant's lecture.

³⁹ *Kosmos*, *op. cit.*, p. 66.

⁴⁰ Kant, *op. cit.*, Sec. 4.

entirely possible, if not probable, that the two men arrived at similar conclusions entirely independently.

OTHER GEOGRAPHERS IN THE FIRST HALF
OF THE NINETEENTH CENTURY

It is difficult to demonstrate that either Kant's or Humboldt's statement had any significant influence on the thinking of other students of the time. The appearance of two conflicting editions of Kant's course at a time when he was too senile to judge either as authentic raised immediate doubts as to the reliability of either. The elementary form of the lectures was no doubt unimpressive and the greater part of their substantive material was clearly antiquated; not until a century later was it discovered, by Adickes' research, that for the latter part of the volume, the editor had used a manuscript of Kant's that was already over forty years old.

Humboldt's original statement, though published three times in all, appeared each time only as a footnote, and in Latin. The statements in his lectures of 1827-28 were not published for over a century, and his most detailed discussion is hidden in the midst of his long introduction to the *Kosmos*, where it is confused with several other questions he was endeavoring to clarify.⁴¹

In any case, most of the students of the time may have found the simple comparison with history adequate to assure status to geography. The term "science" had not yet become a fetish bestowing magical authority on those who acquired title to its use. Kant and Humboldt had both been attracted to geography from studies of nature rather than history. Each of them also had a universalist view of the field of knowledge and hence a concern to clarify the position of the subject he was presenting in relation to the total field. Few geographers then, or perhaps now, felt that need.

Carl Ritter evidently did not feel the need; so far as I can find he made no attempt to state the position of geography in relation to the whole field of knowledge. He did, however, express frequently the comparison of geography and history, and in one case at least in terms that seem to echo those of Kant.

Ritter: "Das Nebeneinander der Örtlichkeiten

. . . das Nacheinander der Begebenheiten oder der Aufeinanderfolge und Entwicklung der Dinge."⁴²
Kant: "Begebenheiten, die aufeinander folgen . . . Begebenheiten, die neben Einander im Raum vor sich gehen."⁴³

Likewise in explaining the interest of geography in phenomena which are also the subject of study in the systematic sciences, Ritter's method of expressing the concern of the latter fields is similar to Humboldt's statement:

Ritter: "nach den Stoffen, Formen und inwohnenden Kräfte des materials an sich."⁴⁴

Humboldt: "formas, anatomien, vires sentantur."⁴⁵

Ritter also, it should be noted, recognized the logical similarity of astronomy and geography.⁴⁶

In the methodological literature of the time of Humboldt and Ritter, and for half a century later, I have found but one publication that shows clear indication of familiarity with the statements which both Kant and Humboldt had made concerning the position of geography among the sciences. In a little-known essay published in 1834, Julius Fröbel stated the concept in terms that to me are clearer than those of Humboldt and in more complete form than those of Kant, for he recognizes geography as one of a group of "spatial sciences," the "cosmographic sciences."⁴⁷ Although the statement itself is presented without reference to sources, elsewhere in the same essay Fröbel quotes with references from other passages in Kant's introductory lecture and likewise from Humboldt's statement of 1793.⁴⁸ We may credit Fröbel therefore as the first writer—and so far as I can find, the only one prior to 1939—to have recognized the essential similarity of the statements of Kant and Humboldt. We know, however, from his autobiography that he had discussed geography personally with Humboldt a few years earlier in Berlin,⁴⁹ so that

⁴² "Über das historische Element in der geographischen Wissenschaft," in *Abhandlungen d.k. Akademie der Wissenschaft zu Berlin*, 1833, Hist.-philolog. Klasse, p. 41. (For other editions of this essay see the Bibliography in *The Nature of Geography*, pp. 4 and xxv.)

⁴³ Kant, *op. cit.*, Sec. 4.

⁴⁴ *Op. cit.*, p. 45.

⁴⁵ *Florae Fribergensis Specimen*, *loc. cit.*

⁴⁶ *Op. cit.*, p. 50.

⁴⁷ "Entwurf eines Systemes der geographischen Wissenschaften," *Mittheilungen aus dem Gebiete der theoretischen Erdkunde*, Vol. 1 (1834, published in Zurich, 1836), pp. 15-16.

⁴⁸ *Ibid.*, pp. 5, 12, 30, 123.

⁴⁹ *The Nature of Geography*, p. 73.

⁴¹ Pp. 48-73.

he may have learned of the similarity from Humboldt. In any case, he was the first to put the two statements together.

No one, however, appears to have noticed his statement. Fröbel remained in the profession only a few years during which he established something of a reputation as a promising but immature critic of methodology—particularly as a result of a published debate with Ritter.⁵⁰ Few readers, one may hazard, noted his statement of the concept hidden in the midst of nearly fifty pages of a new and elaborate structure for geography—an essay itself buried at birth by publication in a journal the author founded in Switzerland, which shortly died.⁵¹

Some forty years later, Hermann Wagner called attention to this long-forgotten essay, but only as an example of the type of study that could have no effect on the development of geographic thought; Wagner did not mention its statement of this concept.⁵² Thereafter it appears to have been almost completely overlooked. The one copy which I have seen had rested in the Smithsonian Institute and the Library of Congress for over a century with its pages uncut.

IN THE SECOND HALF OF THE NINETEENTH CENTURY

Throughout the second half of the nineteenth century the statements of Kant and Humboldt on the place of geography among the sciences appear to have been completely overlooked.

In part this reflects the complete discontinuity in training of geographers at the university level following the death of Humboldt and Ritter, both in 1859. Humboldt never held a teaching position and no successor was appointed to Ritter's chair in geography. When professorships in geography were established in most German universities after 1871, they were filled by men who had not been trained by geographers.⁵³ For their understanding of the methodology of the field these new professors of geography were dependent on the published literature, particularly on the well-known essays of Carl Ritter. These were discussed at length by such

students as Peschel, Marthe, and Ratzel.⁵⁴ But while Ritters' thinking, as we have noted, was consistent with the concept which Kant and Humboldt had stated, he had not directly expressed that concept in his own writings nor had he referred readers to the statements of Humboldt or Kant.

Humboldt's work was regarded as of great importance, but primarily for its descriptions of the countries he had visited. Students endeavored to induce his methodology from those writings but overlooked his scattered statements on methodology itself. Thus as late as 1927, Hettner stated, in his history of geography, that Humboldt had never concerned himself with the methodology of geography and that the famous work of his old age, the *Kosmos*, was not expressly a geographic work since it combined general geography (systematic geography) with astronomy.⁵⁵

Fröbel's re-presentation of the concept, as we noted earlier, appears to have become well-nigh completely lost.

In view of the frequency of mention of Kant's name in modern discussion of the nature of geography, it may seem surprising that geographers of the nineteenth century paid so little attention to what he said on the subject. For this there were a number of reasons.

Students of the published works of Humboldt and Ritter would find no reason to look to the philosopher Kant for ideas about geography. If each of those masters, as we have suggested, used particular ideas and phrases from Kant in their writings, neither mentioned the source. The substantive materials of his lectures, as published in his name, offered nothing of value. Kant had also published a few individual research studies, on the origin of winds, of volcanism, etc., but neither Humboldt nor Ritter, so far as I have found, ever mentioned these.

Indeed there is strong negative evidence to indicate that both the founders of modern geography turned their backs on the geographic writings of the philosopher. Both were dominated in their thinking by the empirical approach to knowledge and distrusted the deductive thinking of *Natur Philosophie*.⁵⁶ On the basis of a detailed examination of the

⁵⁰ *Ibid.*, pp. 72-73, 102-6.

⁵¹ *Ibid.*, p. 104.

⁵² "Bericht über die Methodik der Erdkunde," *Geographisches Jahrbuch*, Vol. 7 (1878), pp. 621-22.

⁵³ *The Nature of Geography*, pp. 86, 106.

⁵⁴ *Ibid.*, p. 53.

⁵⁵ Hettner, *Die Geographie* . . . , *op. cit.*, p. 85.

⁵⁶ *The Nature of Geography*, pp. 54, 72; Bruhns, *Life of Alexander von Humboldt*, *op. cit.*, pp. 196-97, 205; Döring, *op. cit.*, pp. 27, 43-6.

many references to Kant in the *Kosmos*, Lind has demonstrated that while Humboldt spoke repeatedly of "the great philosopher," his concern was to attack Kant's scientific theories—frequently, Lind held, unfairly. Thus the astronomical theories which Kant had established or suggested on the basis of careful calculations, Humboldt described as having been "divined," "suspected," or "dreamed."⁵⁷

The personal explanation which Lind suggests, namely that this is an example of the jealousy of one great man for another, near contemporary,⁵⁸ is mere conjecture and hardly plausible at that. The two were in fact not contemporaries, since Kant died before Humboldt became important. Further, Humboldt revealed no such characteristic in his relations with other men of high standing, as is shown particularly in his reflections on the work of Ritter.⁵⁹

Nevertheless if we combine the facts which Lind presents of Humboldt's disparaging reflections on Kant's scientific work, with the fact that when he used Kant's ideas concerning geography, even in quotation marks, he did not mention Kant's name,⁶⁰ we can hardly escape the conclusion that Humboldt was motivated to belittle the scientific work of the philosopher. Why should he have done that?

In his earlier years, Humboldt had been strongly influenced by Goethe's philosophy of nature and at one time expressed interest in the system of the philosopher Schelling. But the subsequent development of a natural philosophy that would displace observation and

experiment with pure reason and abstract ideas moved him to vitriolic condemnation of what he called a "mad saturnalia," a "*bal en masque* run mad."⁶¹ He could most effectively undermine that school by disparaging the scientific accomplishments of the eminent philosopher.

Whatever the reasons, Kant's work and interest in geography was largely ignored for nearly a century after his death. In the very detailed histories of the development of geography before the nineteenth century which Peschel, Wisotzki, and Günther published in the latter part of that century, the relatively few references to Kant's studies in geography place him as but one of the scores of scholars who had made minor contributions.⁶² Richt-hofen, writing in 1903, refers to Kant's work in philosophy and astronomy, but makes no mention of his work in geography.⁶³ Hettner's historical essay of 1898 does not mention Kant.⁶⁴ The fuller study of the "History of Geography" in his 1927 volume mentions Kant only as having preceded Laplace in presenting the nebular hypothesis of planetary origin and as having given a course in geography.⁶⁵

It may well be that in the conflict between the empirical scientists and the *a priori* natural philosophers, the former were completely triumphant in the second part of the nineteenth century and Kant's very fame as a philosopher tended to obscure his scientific work. When later it was demonstrated that his studies in astronomical theory had represented contributions of outstanding importance,⁶⁶ several geographers were stimulated to examine his briefer studies in geography, but failed to find in them significant contri-

⁵⁷ P. von Lind, "Immanuel Kant und Alexander von Humboldt: eine Rechtfertigung Kants und eine historische Richtigstellung," *Zeitschrift für Philosophie und philosophische Kritik*, Vol. 106 (1895), pp. 68 ff., 256-57, 266-67, 270 ff., Vol. 107 (1896), pp. 28 ff. While Lind's numerous comparisons demonstrate in total that Humboldt gave less than justice to Kant's scientific work, Kaminsky warns that Lind was led by his "enthusiastic veneration" for Kant to numerous exaggerations unfair to Humboldt; see Willy Kaminsky, *Ueber Immanuel Kants Schriften zur physischen Geographie* (Königsberg, 1905), p. 13.

⁵⁸ *Op. cit.*, Vol. 106 (1895), pp. 51-2.

⁵⁹ *The Nature of Geography*, pp. 53-54.

⁶⁰ That is, in no work which Humboldt himself published. In the edition of his Berlin lectures, published a century after they were given from notes taken by a listener, Kant is named as the source of his subtitle for cosmography and both editions of Kant's lecture course on geography are listed, but these may have been added by the listener or the editor; Humboldt, *Vorlesungen . . .*, *op. cit.*

⁶¹ Humboldt, *Kosmos*, *op. cit.*, pp. 68-9; Bruhns, *Life of Alexander von Humboldt*, *op. cit.*, pp. 201-5.

⁶² Oscar Peschel, *Geschichte der Erdkunde bis auf Alexander von Humboldt und Carl Ritter* (Munich, 1877); Emil Wisotzki, *Zeitströmungen in der Geographie* (Leipzig, 1897); Siegmund Günther, *Geschichte der Erdkunde* (Leipzig, 1904).

⁶³ Ferdinand Erl. von Richthofen, "Triebkräfte und Richtungen der Erdkunde im neunzehnten Jahrhundert," *Zeitschrift der Gesellschaft für Erdkunde*, Berlin, Vol. 38 (1903), pp. 672, 679.

⁶⁴ Alfred Hettner, "Die Entwicklung der Geographie im 19. Jahrhundert," *Geographische Zeitschrift*, Vol. 4 (1898), pp. 305-20.

⁶⁵ *Die Geographie . . .*, *op. cit.*, pp. 68, 71.

⁶⁶ W. Hastie, *Kant's Cosmology* (Glasgow, 1900), pp. xvii ff., xlv ff.

butions to substantive knowledge.⁶⁷ Hence they were not motivated to consider his statement of the position of geography among the sciences.

Nevertheless, even though the several statements of Kant and Humboldt, and that of Fröbel were not forced upon the attention of later geographers, they existed in the published literature. It is too much to assume that no geographer saw them; rather we must assume that anyone reading them failed to respond favorably. The reasons for this are to be found in the character of development of geography, and of science in general, in the second half of the nineteenth century.

As we noted earlier, when geography became permanently established in German universities, it was promoted largely by men trained in other fields—in a great variety of other fields. The consequence was methodological confusion—and vigorous methodological discussion.⁶⁸ In part also the confusion was forced on geography by certain characteristics in the general development of science in that period—notably the emphasis on the arbitrary separation of nature and man, which earlier students had not accepted, and the short-sighted view that the end-purpose of science was the construction of scientific laws.

The new generation of geographers, bringing these concepts from the fields in which they had been trained, produced a double form of dualism in geography. Physical geography—notably in the study of the origin and development of land forms—could claim a place as a natural science constructing and applying scientific laws. Human geography, in contrast, not only had drifted farther from its physical base, but in focussing on the study of particular areas could construct no laws

and hence appeared unscientific. Ratzel demonstrated that this contrast was unnecessary by laying the foundations of systematic human geography, but there still remained the dualism between physical geography as a natural science and human geography conceived as a sort of missionary bridge from the natural sciences to the less securely founded social studies. As long as this dualistic viewpoint prevailed, there was no place for the concept Kant and Humboldt had formulated. A Gerland could read Kant's statement and pass it on, as he did in 1905, without seeing anything of value in it.⁶⁹

These discussions, however, ultimately led to the replacement of the dualistic viewpoint by a unified orientation of geography. This was most effectively stated by Richthofen in his Leipzig inaugural address of 1883, which was recognized as restoring the viewpoint of the field that was common to the work of both Humboldt and Ritter and subsequently became widely accepted among German geographers as the programmatic statement of modern geography.⁷⁰

Neither in this nor in any other paper did Richthofen refer to the concept of the place of geography among the sciences, but his discussion of the nature and scope of geography is consistent with that concept. We know that he, and Hettner who studied with him, read widely in Humboldt's substantive works. To what extent was either of them influenced by Humboldt's methodological viewpoint absorbed in such study? We can hardly hope for an answer to that question. More significant is the logical effect of the re-establishment of the earlier orientation. For the reassertion of geography as a unified integral field independent of the division that had become established between the natural and the social sciences inevitably raised the question of how geography could be fitted logically into the total system of knowledge, in a logical classification of the sciences.

HETTNER, 1895-1927

For Hettner, who had been trained in philosophy as well as in geography—and had even considered at one time going into philosophy—it was natural to seek an answer to

⁶⁷ *Op. cit.*, pp. 502-3.

⁷⁰ Solch, *op. cit.*, p. 147; Hettner, *Die Geographie* . . . , *op. cit.*, p. 106; *The Nature of Geography*, pp. 91, 116, 121, 136.

⁶⁸ Several of these studies of Kant's work are reviewed at some length in Kaminski's dissertation of 1905, *op. cit.*, pp. 6-21. In the same year the most thorough study of Kant's work in geography was published by Gerland, who concluded that Kant was less concerned to make positive contributions to geography, rather was concerned to establish conclusions in geography significant for his philosophy; George Gerland, "Immanuel Kant, seine geographischen und anthropologischen Arbeiten," *Kant-Studien*, Vol. 19 (1905), pp. 508 ff.

⁶⁹ Ernst Plewe, "Vom Wesen und den Methoden der regionalen Geographie," *Studium Generale*, Vol. 5 (1952), p. 411; Johann Solch, "Die wissenschaftliche Aufgabe der heutigen Geographie," *Abhandlung der Oesterreichischen Akademie der Wissenschaften*, Vol. 98 (1948), pp. 146-47.

this question. He had studied with Richt-
hofen both before and after the latter's in-
augural address at Leipzig, and in between had
done field work in South America.⁷¹ While he
accepted Richthofen's statement he found it
provided no answer to this general question.
He does not tell us the sources of his thinking
but evidently he found in the concept of geo-
graphy as a chorographic science, which Richt-
hofen had taken over from Marthe and others,
the essential comparison with history in con-
trast to the systematic sciences. Even be-
fore Richthofen's address, Wagner had dis-
tinguished between those geographers who
found the basic concept of geography as an
independent science in the "object" which it
alone studied and those who found it in its
"distinctive method of study."⁷²

In the methodological discussion of the lat-
ter part of the century, the nearest approach
to Hettner's concept that I have found is in
an address by the Italian geographer, Dalla
Vedova, published in 1881 and discussed the
following year by Wagner in the *Geographi-
sches Jahrbuch*, a discussion which we may
assume Hettner probably read. The individ-
ual sciences study their objects from three
points of view: the "static" viewpoint, accord-
ing to the character of the phenomena at a
given moment; the "dynamic" according to
the manner of their existence and develop-
ment in time; and the "chorological," accord-
ing to their collective existence in space. The
third viewpoint presents the field open to
geography.⁷³ The original article, which is
well documented, indicates no connection
back to the statements of either Kant or Hum-
boldt.⁷⁴ Neither does it resemble Hettner's
later statement save in the recognition of the
three points of view.

There is no reason to suppose that Hettner
would ever have examined the obscure essay
in which Fröbel restated the concept of Kant
and Humboldt. The only mention of that
writer that I have found in Hettner's writings

is in a footnote stating that he excluded meth-
odological views that had no effect on later
developments, such as "the methodological
demands of Fröbel"⁷⁵—presumably those in
his debate with Ritter.⁷⁶

According to his own statement, as noted
earlier, Hettner in writing his basic statement
in 1905 was unaware that Kant had recog-
nized a similar viewpoint as the basis for rec-
ognition of geography as a separate science.
Comparison of the two statements shows no
similarity in organization or phrasing.⁷⁷

Likewise Hettner appears not to have
known that Humboldt had presented essen-
tially the same concept. He would have had
no reason to look in Humboldt's study of sub-
terranean vegetation, published in Latin, in
which the concept is stated in a long footnote.
In the later discussion, in the *Kosmos*, Hum-
boldt was concerned to establish a single sci-
ence of cosmology, including both astronomy
and general (systematic) geography, whereas
Hettner considered astronomy and geography
as separate sciences each concerned with a
different section of space. Further, Hum-
boldt's concept of the terrestrial portion of his
cosmology included the entire earth-body,
whereas Hettner followed the practice of Rit-
ter and most geographers in limiting the scope
of the field to the thin outer shell of the planet
—"the earth surface." Finally, Humboldt's
cosmology separated general or systematic
geography, which he included in his cosmology,
from special or regional geography,
whereas Hettner, following Richthofen and
most geographers since Varenus, included
both in the single field of geography.

Hence, though Hettner believed his view of
geography was in general consistent with that
expressed in Humboldt's substantive works,
we can believe his statement (made to me
later in correspondence) that his formulation
of the concept of the position of geography
among the sciences was independent of such
statements by Humboldt. Certainly there is
no similarity either in phrasing or in the
organization of his presentation.

Hettner's own view of his over-all contribu-
tion to the development of methodology in
geography no doubt applies to this specific
case: "My own importance in the construction

⁷¹ Heinrich Schmitthenner, "Alfred Hettner," in
Alfred Hettner, *Allgemeine Geographie des Menschen*
(Stuttgart, 1947), Vol. I, xi-xxxiv.

⁷² Hermann Wagner, "Bericht über die Methodik
der Erdkunde," *Geographisches Jahrbuch*, Vol. 9
(1882), p. 678.

⁷³ *Ibid.*, p. 680.

⁷⁴ G. Dalla Vedova, "Il Concetto Popolare e il Con-
cetto Scientifico della Geografia," *Bullettino della So-
cietà Geografica Italiana*, Vol. 18 (1881), pp. 5-27.

⁷⁵ Hettner, "Die Entwicklung der Geographie im
19. Jahrhundert," *op. cit.*, p. 305.

⁷⁶ See footnote 64.

⁷⁷ *The Nature of Geography*, pp. 134-35, 140-42.

of the methodology of geography has been exaggerated; I believe only that I have clearly expressed and methodologically established what was actually present in the development of the field."⁷⁸

RE-DISCOVERY OF THE CONCEPTS OF
KANT AND HUMBOLDT—1905-1939

The development of methodological thought in German geography toward the end of the nineteenth century no doubt contributed to the coincidence that Kant's long-forgotten statement was re-discovered just when Hettner was writing his basic statement of 1905. The observance of the hundredth anniversary of Kant's death caused Friedrich Hahn, professor of geography at Königsberg, who had earlier worked with Richthofen at Leipzig, to re-examine the geographic works of his famous predecessor. He sensed, and his student Kaminsky demonstrated in his doctoral dissertation, that Kant's importance in geography was not to be sought in his few substantive studies, but in his teaching, in particular in his presentation of the character of geography in relation to the whole field of knowledge.⁷⁹ Kaminsky's dissertation came to Hettner's attention in time to be mentioned in a footnote; that the geographic philosopher had come to the same concept as the philosophic geographer was recorded as welcome confirmation of the validity of the concept. In incorporating this essay in his volume of 1927, Hettner repeated this confirming footnote and added a paragraph in the text quoting from Kant.⁸⁰

Three years after the publication of Hettner's volume of 1927, another doctoral dissertation, by Döring at Frankfurt, brought together for the first time the methodological statements that were scattered in Humboldt's various works.⁸¹ While Döring compared these particularly with the views of Hettner and found them essentially similar, he did not look back to Kant's statement. Shortly thereafter, Humboldt's lectures of the winter of 1827-28 were published for the first time.

⁷⁸ "Neue Angriffe auf die heutige Geographie," *Geographische Zeitschrift*, Vol. 40 (1934), p. 382.

⁷⁹ Willy Kaminsky, *Ueber Immanuel Kants Schriften zur physischen Geographie. Ein Beitrag zur Methodik der Erdkunde* (Dissertation; Königsberg, 1905), pp. 15, 39.

⁸⁰ *Die Geographie . . .*, *op. cit.*, p. 115.

⁸¹ Lottar Döring, *Wesen und Aufgaben der Geographie bei Alexander von Humboldt*, *Frankfurter Geographische Hefte* (1931).

With all these materials at hand, it was possible for me in 1939, in presenting Hettner's statement of his concept, not only to add Kant's complete statement but also to draw on Humboldt for additional confirmation.⁸² My conclusion that the three were in essential agreement in their view of the position and character of geography as a science has since been accepted by German writers.⁸³

CONCLUSION

Kant was the first, so far as we know, to state the concept we have been considering. But his statement has had no *direct* influence in modern geographic thought—other than as a form of confirmation. It may have had an indirect influence, through partial and uncertain connections: in slight degree only through Ritter, possibly in greater degree through an effect on Humboldt's thinking and only thereby, and only possibly, on the thinking of Richthofen and Hettner. In each case, however, it is quite possible that there was in fact no connection. On the whole it appears probable that Humboldt's original statement, published in 1793, was independent of the concept which Kant had been presenting in lectures since as early as 1775 but which was not published until 1802.

While Hettner indicated that his concept was intrinsic in the development of the field and hence was at least in part present in the thinking of his colleagues, he was not aware of any particular source nor is it possible to trace his concept back to that of either Humboldt or Kant. Rather, if we may paraphrase his thinking, the concept existed in the historic development of the field from very early times; several or many students may have formulated it independently. Its present importance in the thinking of geographers of the world, however, is most largely due to the work of Hettner.

Regardless of by whom or when formulated, the concept was ignored when geographers considered their subject in terms of views of science transferred from other sci-

⁸² *The Nature of Geography*, pp. 134-35.

⁸³ Ernst Plewe, "Vom Wesen und den Methoden der regionalen Geographie," *Studium Generale*, Vol. 5 (1952), pp. 411, 415; Hermann Lautensach, *Über die Begriffe Typus und Individuum in der geographischen Forschung*, *Münchener Geographische Hefte* (1953), p. 9.

ences, in particular those of the individual natural and social sciences. It met with receptive response only when geographers considered their subject in terms of its own intrinsic characteristics.

The intrinsic characteristics of geography are the product of man's effort to know and understand the combinations of phenomena as they exist in areal interrelation in his world. These characteristics are therefore independent of any particular concept of the subject; rather they form the empirical fact on which such a sound concept must be based. Acceptance of the concept is in no way essential to work in geography, but it is of value to those students who wish to understand the nature of the field in which they work in relation and comparison with that of other fields of knowledge.

In particular, geographers from early times have observed that work in their field differs from that in many other sciences in the following respects: (1) the fact that geography has no one particular category of objects or phenomena as its specific subject of study but studies a multitude of heterogeneous things as integrated in areas; (2) geography cannot be classified as either a natural science or a social science, nor simply as a bridge between the

two groups, but rather must study combinations in which both kinds of phenomena are intimately intermixed; (3) study in geography requires the use of two markedly different methods of study: the systematic examination of certain categories of relationships over the world or any large part of it, in general or systematic geography; and the study of the totality of interrelated phenomena in particular areas, in special or regional geography; and (4) while geography like all other sciences is concerned with the development and application of generic concepts and general principles or scientific laws, it is like history in that it is also concerned in large degree with the knowledge and understanding of individual, unique cases.

As I hope to have shown in detail in a forthcoming study, the concept stated by Kant and Humboldt and more fully expounded by Hettner provides a reasonable explanation of these empirical facts about the field of geography. Hence it is appropriate to suggest, with Hettner, that this concept is not to be considered as the invention of any one man or of any small number of scholars, but rather as the more or less conscious recognition of countless geographers seeking a common framework of reference for their work.