What Was a Map? The Lexicographers Reply

J. H. ANDREWS

Chepstow / Wales / UK

Abstract Definitions of the word "map" are often discussed in a philosophical spirit, but they have not been previously used as a way of throwing light on cartographic history. In this study, a sample of more than three hundred such definitions has been collected from dictionaries, encyclopedias, geographical texts, and other writings of various dates from the mid-seventeenth century to the present day. The results clearly deserve statistical and historical analysis, and several examples of such analysis are offered for consideration. The most common lexicographical approach is to treat maps as representations of the surface of the earth, but for many writers this simple formula has been too general and too crude. Of the alternative definitions, few seem conformable to common usage. Instead, they reflect changing intellectual fashions among geographers and, in more recent times, cartographers. In these cases where greater lexicographical refinement is attempted, a number of motifs can be seen to emerge, those chosen for discussion being, in historical order, scientific, popular, professional, and philosophical.

THIS paper is based on 321 definitions of the word "map" drawn from dictionaries, glossaries, encyclopedias, textbooks, monographs, and learned journals of the period 1649–1996.[1] The sample is neither random nor structured, but incorporates whatever biases must affect a researcher with limited time and money who makes occasional use of libraries and bookshops within the British Isles. No type of source has been deliberately excluded: the author's purpose is not to find the best definitions but simply to suggest how various ways of thinking about maps may have impinged upon the reading public. Members of the cartographic and academic professions have been allowed no more authority than the man or woman in the street, and in furtherance of this non-discriminatory principle the word "lexicographer" will be applied to anyone who frames a definition, regardless of his or her occupational status. The only ground for disqualification is that to reduce the risk of arithmetical error, and to avoid tedium, works repeating the same definition in successive editions have not been counted more than once. There is no room to print more than a few extracts from the complete list;[2] instead, attention will be concentrated on some of the most common elements in map-lexicography, each term being introduced by a bracketed reference to the number of its occurrences and the dates of its earliest and latest recorded use.[3]

Until recently, lexicographers have hardly ever given reasons for differing from their predecessors, and it seems unlikely that their thought processes can be much illuminated by research in the archives of publishing houses, universities, or individual authors. To understand the ebb and flow of fashion in this field would therefore require wider contextual knowledge and finer historical judgement than the average map specialist has at his or her command. It is at least conceivable, however, though perhaps not very likely, that the intrinsic weaknesses of a definition may have something to do with its demise and replacement, and in recognition of this possibility the statistical facts will be interspersed with a number of explanatory suggestions, all inevitably hypothetical and some no doubt controversial.

A Lexicographical Base Level

One group of map definitions is so much larger than any others that it can serve as a standard for the assessment of alternative versions. In words that vary considerably but always seem to bear much the same meaning, the map has been equated by dozens of writers with a representation (205: 1649–1996) in a plane (150: 1649–1996) of all or part of the earth's surface (144: 1733–1995).[4] This has remained a popular opinion from the seventeenth to the late twentieth century, though as Table 2 shows it has remained more prevalent in general dictionaries and encyclopedias than among less conservatively minded authors. The main lesson to be drawn from it is that thinking about maps, as distinct from making maps,

J. H. Andrews was formerly associate professor in the Department of Geography at Trinity College, Dublin. He wishes to thank Richard Haworth for supplying a number of definitions, Paul Ferguson for making available important e-mail correspondence on the word "map," and Krystina Szykula for tracing the article referred to in note 1. Special thanks are also due to Edward H. Dahl for several kinds of help and encouragement.

Dates	General dictionaries and encyclopedias	Other writings	Total
1720 or earlier	5	2	7
1721–1740	4	1	5
1741–1760	4	–	4
1761–1780	4	4	8
1781–1800	5	–	5
1801–1820	4	1	5
1821–1840	7	3	10
1841–1860	8	1	9
1861–1880	5	4	9
1881–1900	6	3	9
1901–1920	5	11	16
1921–1940	20	14	34
1941–1960	14	19	33
1961–1980	17	44	61
1981or later	30	76	106

Table 1 Definitions of the word "map" classified by origin and period

Dates	Dictionaries and encyclopedias	Other works	Total
1649–1940	86	70	80
1941–1996	82	24	42
1649–1996	84	35	56

Table 2 "Standard" definitions as a percentage of all definitions

has seldom been considered worthy of the highest intellectual rigour.

The most interesting constituents in definitions of the standard type are the words "representation" and "surface." "Representation" belongs to a group of terms that also includes "picture" (42: 1755–1992), "delineation" (38: 1755–1993), "drawing" (22: 1870–1995), "projection" (14: 1708–1835),[5] "description" (13: 1649–1989), "image" (10: 1977–95), "figure" (6: 1730–1823), "model" (5: 1922–93), "expression" (5: 1933–95), "diagram" (3: 1978–80), "analogue" (2: 1980–82), "resemblance" (1: 1717), "reproduction" (1: 1919), "miniature" (1: 1936), "mimicking" (1: 1994), "matrix" (1: 1995) and "transcript" (1: 1995). It will be noted that the idea of strict verisimilitude, as in "reproduction" and perhaps "miniature," is comparatively rare in this vocabulary, and that "mirror," strongly castigated in recent map-philosophical writing, does not occur even once.[6] But most of these words involve some idea of spatial correspondence, and we may note in passing that both "delineation" and "drawing" seem to hold the further suggestion that a map consists of dots and lines rather than patches of colour.[7]

Representation is a more complex idea than reproduction. (For instance, it may be taken to include some degree of misrepresentation, though in our sample this proviso is never made explicit.) All its meanings allow the representative to act in certain circumstances as a substitute for the object represented: where they differ is in the weight given to graphic or pictorial communication. Thus for the art critic *representationalism* suggests a close resemblance between an image and its referent. In other forms of graphic expression there need be little or no such resemblance: the real-life railway station *represented* on a map by a red circle may itself be of any colour. At least the circle in this case is (loosely speaking) in the same place as its referent, but when an ambassador *represents* his country on a state occasion, no one seeing a picture of him thus engaged would suppose that both he and his country exist in the same room. Perhaps it is this versatility that has made the word "representation" so popular in map definitions.[8] Twentieth-century lexicographers, especially, may be inclined to congratulate themselves on their impartiality about the relation of pictorial to non-pictorial elements in map-making, secure in the belief that both language and pictures are in some way representational. Unfortunately, a fourth use of this word carries a meaning that is purely verbal, as in (to borrow an example from a famous dictionary) "society is not what Balzac *represents* it to be." The earth's surface, like society, might be "represented" in Balzacian prose that could never be mistaken for a map.

It follows that no definition in which a map "represents," without qualification, can be wholly satisfactory. In recent times the definition-maker's favourite qualifying adjective for map-representation has been "graphic" (37: 1943–95). This term presents its own problems. Nowadays it is usually taken to exclude writing, as when "graphics" are opposed to script, but to judge from words like "autograph" and "graphology" it might also be interpreted in an opposite sense. In fact most people would see both words and images as essential to a map (even if the words are only spoken), though only three of our examples (1918–77) refer explicitly to verbal language.

The earth's surface might be defined (again loosely speaking) as whatever breaks the fall of an object dropped from a considerable height. But a fly on a vertical window pane, if it could talk, would probably not describe itself as having left the earth's surface, and few people seem to regard the drawing of elevations as part of cartography.[9] More generally, "representation of the

earth's surface" allows every specimen of landscape art to count as a map, whatever the observer's angle of vision, and this too is obviously in conflict with normal usage. Cezanne and Van Gogh were not cartographers.

Considerations of verticality aside, another criticism of "surface" is that it suggests a single object, whereas a map may represent a number of different objects — some of them immaterial, such as voting patterns or religious beliefs. One response is to reduce the semantic importance of the terrestrial surface by allowing mappable phenomena to detach themselves from it. Examples of this approach are "a two-dimensional graphic image which shows the location of things in space, that is *in relationship* to the earth's surface"[10] and "a representation normally to scale and on a flat medium of a selection of material or abstract features on, or *in relation to,* the surface of the earth or of a celestial body" (see Appendix). Here the meaning of "surface" may have shifted from a visible and tangible continuum towards a purely conceptual form perhaps synonymous with "geoid." The next logical step is for "surface" to disappear altogether and for features to be represented simply "in their lateral disposition."[11] The same idea can be found in a charming definition of 1877: "[a showing of] the shapes and positions of the features of the earth, not as they rise before the eye in all the beauties of the sun and air, and in their vertical, upright forms, but as they are stretched out horizontally at one's feet."[12] The last-mentioned examples must serve as a warning against expectations of chronological tidiness in the grouping of map definitions. Each of the following sections refers to a particular time-span but with a considerable overlap; in fact, roughly speaking, each period encloses the next period.

The Scientific Map

"Sketch maps are what you usually think about when you hear the word 'map.'"[13] This dictum from the 1970s is the exact opposite of the truth as recorded two or three hundred years earlier. In our sample, the seventeenth- and eighteenth-century perception of maps is essentially scientific, their closest links being with mathematics, navigation, astronomy, and also with geography as opposed to topography. Today, the inferiority of maps to globes may survive as a routine ploy in the teaching of map projections. In the seventeenth century the comparison was taken more seriously. John Locke recommended that geographical education should begin by pointing out countries on the globe. When a pupil "has the natural parts of the globe well fixed in his memory," he should proceed through elementary arithmetic to the basic concepts of mathematical geography "and by them be made to understand the use of maps," returning finally with improved comprehension to the globe.[14] Isaac Newton appears to have held the same opinion.[15]

Locke's comment explains the emphasis on the terrestrial sphere in the early lexicography of maps. The first item in our list actually begins by defining a globe, with maps added many pages later almost as an afterthought:

> The terrestrial or earthly globe is an artificial representation of the earth and water under that form and figure of roundness which they are supposed to have, describing the situation, and measuring the compass of the whole frame, and describing the situation and measuring the distances of all the parts …. As the earth and water are wholly represented upon the globe, so the whole, or any part of either may be described *in plano,* or upon a plane surface in a map or sea-chart.[16]

Our second definition (1689) is simply "a schedule containing a description of the world, &c."[17] The next two examples take a similarly global view before mentioning individual countries: "a representation of the whole globe of the earth, or of some particular country upon a plan, or plain superficies";[18] "a representation of the globe of the earth, or of some of its parts upon a plan, or plain superficies."[19] It is not until the fifteenth entry, in 1755, that any geographical unit other than the whole earth is placed first. It is also notable that where we find references to "parts, kingdoms, regions or countries" as subjects for cartography at this period the territories in question are nearly always large enough to be found on a normal-sized globe. The same message appears in the examples given by those early lexicographers who chose to flesh out their definitions with inessential detail: among possible constituents of a map they mention rivers (26: 1708–1993), hills and mountains (24: 1708–1992), oceans and seas (22: 1721–1993), cities and towns (19: 1708–1993), woods (4: 1708–1956) and islands (3: 1721–30) but until the twentieth century never streets, fields, or individual buildings.[20]

Similar considerations explain the emphasis placed on the flat drawing surface as a way of distinguishing map from globe. ("Flat" may be taken to include the capacity for being unrolled or unfolded, but apparently no one has tried to classify the curved regional maps, supposedly cut out of very large-scale globes, that have sometimes been recommended for educational use.)[21] To subsume spherical representation under the general concept of "map," as favoured by Arthur Robinson and Barbara Petchenik, would probably have been regarded in Locke's time as an insult to globes.[22] The flatness still required by many modern definitions may be a heritage from these early sphere-fixated years of geo-lexicography.

In 1717 John Green defined a map as a "resemblance of the heavens or the earth."[23] As it happens, the sky makes no further appearance in our sample until 1829 (it is prominent enough afterwards) though star maps had been familiar in Europe since the sixteenth century.[24] There is nothing uncartographic about such maps. They are plane representations of a sphere or part of a sphere that happens to be viewed from the inside; indeed they are in one respect more map-like than terrestrial cartography, because in star maps the observer's

view is for practical purposes always orthogonal to the surface of the sphere.[25] At any rate, most eighteenth-century definitions of "map" are dominated by concepts dependent for their applicability upon the sun and stars. An example is Nathan Bailey's "a general map is a description of the whole earth, with the several countries, islands, seas, rivers etc. therein contained, and also the *circles of the globe*."[26] The circles of the globe are of course lines of latitude and/or longitude (14: 1755–1906), concepts explicitly and influentially imported into English lexicography by Samuel Johnson.[27]

Another common expression of geometric ideals at this early period is the claim that maps show the earth's surface "according to the rules of perspective" (8: 1733–1823). This seems to mean that every map must be based on a definite projection, though the word "perspective" would today be taken to exclude those projections that are usually called conventional because they cannot be generated by the methods of projective geometry. Of course, some conventional projections, such as Mercator's, had been invented before the earliest date in our sample. Perhaps the proliferation of such systems from the late eighteenth century onwards helped to lower the "merit-bar" between two- and three-dimensional representations of the earth, with globes losing their place in geographical education and literature as flat maps became more mathematically versatile. However, this may be giving projections too much credit. Equally convincing objections to the globe in the context of mass education have been its cost, bulk, and fragility. It is certainly remarkable how seldom globes are mentioned in the pedagogic literature of the late Victorian era,[28] which was also a time when lexicographers began to show proportionately less interest in distinguishing them from maps.

A particular legacy from the eighteenth century has been the insistence on projection in the modern sense (18: 1889–1992) as well as scale (48: 1779–1993) in two of the most famous word-hoards of recent times, the Oxford and Webster dictionaries. Elsewhere it admittedly remained common for the more difficult concept of projection to be left out, as for instance when Charles Cotter defined a map as simply "a representation of the earth's surface on a reduced scale."[29] Of course, in any terrestrial map of a large area the exact scale must vary from place to place, and definitions that ignore this fact can be legitimized only by redefining "scale" to include the pattern of scale differences entailed by a certain projection. As a mathematical geographer, Cotter was obviously aware of this; with other authors a pluralistic interpretation of scale seems less convincing, and their neglect of projections is more probably due either to forgetfulness or to a special concern for "popular" maps as defined below.

The astro-mathematical bias of early map definitions can be explained in various ways. One influence on global preoccupations may have been an unconscious folk-memory of the word "mappemonde" from which "map" had taken its origin in the sixteenth century. Also relevant, perhaps, was the tendency of pioneer English dictionary editors to concentrate on "hard words" and, perhaps on this account, to favour unnecessarily technical meanings for expressions that might better have been treated as simple. It would be surprising if these considerations remained important much later than the time of Samuel Johnson, but the general bookishness of definition-makers may have continued to hold sway in the nineteenth century and to some extent afterwards. Bookishness here has a strictly physical sense: it means that throughout this early phase the public's perception of a map was governed by the kind of academically correct "geographical" presentation familiar in printed atlases rather than the specialized ad hoc material more characteristic of single-sheet cartography.

The Popular Map

A new trend in nineteenth-century cartography was the desire to simplify the process of map-reading for those (typically soldiers and children) whose geographical education had been either incomplete or ineffective. Another change was an enormous increase in the public's consumption of large-scale maps with limited territorial coverage, including town plans, estate maps, and engineering surveys, all of them easily comprehensible without reference to the earth's sphericity.[30] The component sheets of a national topographical series may come under the same heading of user-friendliness — to judge from the omission of latitude and longitude in certain small-scale British Ordnance Survey maps aimed at a popular market.[31] The growing use of stiff covers for folded map sheets at the end of the nineteenth century must have exercised a strong influence here, comparable with the earlier effect of the atlas in channelling eighteenth-century notions of a typical map.

Meanwhile there had been some radical changes in the philosophy of geographical education. Jean Jacques Rousseau's challenge to Locke's ideas was published as early as 1780: "You wish to teach this child geography and you provide him with globes, spheres, and maps. What elaborate preparations! What is the use of all these symbols; why not begin by showing him the real thing…?"[32] The first maps that Rousseau's ideal pupil encounters are those he makes himself. However, it was only in the following century, under the influence of Jean Heinrich Pestalozzi and Friedrich Froebel, that it became generally acceptable for cartography to be learned by the heuristic method.[33] Once this happened, the school premises and their immediate vicinity would clearly form a more practicable training-ground than "the whole globe of the earth."

These trends were eventually reflected by new definitions of the word "map." Their intellectual pedigree is captured, long before the end of the century, in Robert Sullivan's reference to "a rude representation of the

schoolroom — as it would appear to a person looking down from the ceiling — or, in other words, … a map of the schoolroom."[34] Twenty-three "vertical" statements of this kind have been collected from between 1874 and 1994. The most famous of their authors is Thomas Henry Huxley: "If a person in a balloon passed at a great height over any part of the earth's surface, and sketched in outline what he saw directly below, his sketch on a flat surface like this page would be called a map."[35] By this time, Huxley's method had already been put into practice.[36] And it was no doubt thanks to the further development of aviation and particularly of air photography that such definitions were to remain current until the present day, at least in dictionaries and school textbooks. A recent example is "the representation of (part of) the earth's surface *as seen from above,* showing the shape of countries, the position of towns, the height of land, the rivers, etc."[37] Verticality achieved its greatest intellectual prestige in Paul Harvey's reference to "the visually impossible feat of vertical representation at every point," though this may have been meant as a description rather than a definition.[38]

The balloonist's or airman's approach is best suited to large-scale representations of small areas and therefore stands at an opposite conceptual extreme to the "geographical" definitions reviewed in the previous section. Its most obvious flaw is that no map thus defined can show more than a hemisphere, a proviso that would surely have inspired horror and outrage in any seventeenth- or eighteenth-century writer confronted with a vertical definition. A less spectacular but still genuine difficulty is that in the aeronaut's field of vision only a very small area immediately below the observer is actually "seen from above" in the sense intended. Harvey's remedy, a vertical representation at every point, is possible only if the earth itself can be considered flat, or if maps are equated with globes. Another problem — the cartographic representation of immateriality — has already been noticed in considering the idea of the earth's surface. Here it need only be added that the prominence given to visual images in vertical definitions shows how little impact thematic maps have made upon the lexicographical community.

The Cartographer's Map

In the mid twentieth century, map definitions began to be influenced by two closely related trends. One was the growing importance of geography — and later, cartography — in universities and other centres of higher education.[39] The other was the development of map-making, as distinct from surveying, into a self-conscious profession, authenticated by the establishment of training courses, the foundation of supervisory bodies, the publication of journals, and the organization of conferences. For the first time, the meaning of the term "cartography" became a matter of practical importance outside the ambit of dictionary-making. These developments naturally lent fresh interest to the word "map," generating a new kind of committee-led definition (Appendix).[40] Professionalization could be expected to bring an element of pragmatism into the defining process, with maps characterized as whatever a cartographer might be asked to produce in the course of a working day.[41] In the event, however, the sympathy between practitioners and theorists has proved to be gratifyingly close.

Historically the most important achievement of academic cartography has been the isolation of physical, biological, or social patterns on maps addressed to a specialist readership. This "thematic" motif can be traced back at least as far as the seventeenth century, but it was not until the 1920s and 1930s that it did much to change the English-speaking cartographer's view of the subject, firstly through some noteworthy thematic atlases and later through a new generation of textbooks like those of John Bygott in Britain[42] and Erwin Raisz in the United States.[43] In due course, thematic maps were to assume a higher intellectual profile than "general reference" maps, but their direct influence on the process of definition has been limited. They certainly failed to displace the idea of the terrestrial surface, though this familiar lexicographical contrivance was now becoming the disembodied possessor of a plurality of "features," from which the thematic cartographer could make his selection, rather than an object in its own right. Other ways of substituting plural for singular on the face of the earth were "phenomena" (12: 1959–91),[44] "relationships" (12: 1968–95), "distributions" (11: 1933–91),[45] and "arrangements" (3: 1986–93), all likely to be characterized as "spatial" (34: 1949–95). The same effect of thematic subdivision has been achieved by defining maps as essentially selective (12: 1955–94).

Few thematic maps can be interpreted as portraits of the landscape, selective or otherwise. Indirectly, then, thematic cartography must have encouraged a new interest in cartographic conventions, though another factor here was probably a reactive backlash against the popularity of vertical viewpoints, as more writers remembered that maps and photographs are texturally quite different whatever their structural similarities. As a cartographer's expression, *signes conventionnels* made its French debut in 1802.[46] The progress of its English equivalent seems not yet to have been investigated historically, but "conventional references" appear in a cartographic context at least as early as 1824[47] and devices such as rhumb lines and graticules were immortalized as "conventional signs" by Lewis Carroll's *Hunting of the Snark* in 1876. Despite these precedents, "conventional" (11: 1912–93) is less common in definitions than might have been expected. In its first sampled occurrence, a map was said "most commonly [to represent] in a *conventional* manner a portion of the earth's surface, somewhat as it would be seen by an eye directly above it, but with additions which render it a summary of observations made on the spot."[48] Most of the additions envisaged here are presumably words, though it is in the guise of signs and symbols that

conventionality more often appeared thereafter, belatedly re-emerging under its own colours when the Royal Society of London undertook to define a map in 1966 (Appendix). Approximately equivalent to "conventional" are "abstract" (9: 1949–92), "schematized" (2: 1990–94) and various forms of "symbolic" (21: 1902–95). "Generalized" (5: 1959–92) and "simplified" (4: 1959–92) refer to only one aspect of conventionalism but serve the same broad lexicographical purpose by disclaiming pictorial verisimilitude.

"Conventional" suits the features that distinguish a map from an aerial view, but it is not without its own difficulties. Whether every map is entirely conventional is too awkward a question to discuss here. But one can easily imagine a record of the earth's surface that would be both graphic and conventional without in any way resembling a map. The word "holistic" in a definition of 1989 (Appendix) may have been meant to exclude this kind of non-cartographic alternative, but holism is too vague a concept to do its job very efficiently.

Perhaps the strongest conceptual link between professional and academic cartography has been the so-called "communication" model (15: 1967–92), first publicized by A. Kolacny in 1969 and almost universally adopted in the following decade.[49] A map definition based on the idea of transferring information had been suggested in 1967 by Janusz Golaski[50] but it was not until the 1980s that this notion began to make much lexicographical impact in cartographic literature, our second example being A. G. Hodgkiss's "a form of graphic *communication* designed to convey information about the environment."[51] Various arguments have been raised against this theory, which now seems to be falling out of favour.[52] One objection is that a map may be used in ways not intended by its author. Another, especially familiar to map historians, is that it may not be used at all.

The Philosopher's Map

Almost throughout its history the word "map" has been used in a metaphorical sense by poets and other imaginative writers, and regular sub-uses eventually became established in technical and academic writing for various classes of non-geographical phenomena. Some of these were also metaphorical: a cognitive psychologist's "mental map," for instance, is no more truly cartographic than the black sheep of a family is truly ovine.[53] More realistically, "map" has been applied to diagrammatically pictorial representations of objects as diverse as electrical circuits and other flow-line systems, the human brain, and the genes of a chromosome. But it was philosophers who took the generalization of the map concept as far as it could go. The pioneer seems to have been C. S. Peirce in 1903: "A map of the simplest kind represents all the points of one surface by corresponding points of another surface in such a manner as to preserve the continuity unbroken, however great may be the distortion."[54] A further stage in the generalization process was for spatial diagrams to represent non-spatial referents, as in several early textbooks of symbolic logic and related subjects.[55] Finally both subject and map lost all their spatial associations: since the 1940s, "map" for mathematicians has meant the kind of purely abstract relationship between two variables that had been formerly known as a "function." This usage is evidently related to the expressions "map onto" and "map into" that became common forty years later as a way of saying "establish a correspondence with." This change of usage can hardly be seen as a mark of intellectual progress: it simply means that "map" is a conveniently short word with the advantage of serving as either a noun or a verb. In general, it seems not unlikely that for non-mathematicians "map" will in due course lose its present primary terrestrial signification and become more or less synonymous with the sadly unfashionable "diagram," thus paralleling (or "mapping onto") the later history of the word "chart."

By the late nineteenth century, extended senses of "map" had begun to find their way into the dictionaries. In the 1880s, for example, John Ogilvie followed an orthodox geographical entry with the "figurative" addendum: "a distinct and precise representation of anything."[56] In more recent dictionaries, such variations are no longer described as figurative, but they have generally taken second place to the traditional signification. Very few reference books have made a complete surrender to Peircian generalization. An unexpectedly precocious example is the definition in *Odham's British Encyclopedia* (London, 1933): "a representation of the features of one surface on another."[57] Like all the other definitions under review, this relates to "map" and not to its polysyllabic alternatives, but recently there have been signs that the word "cartography" is following the same path.[58]

Perhaps surprisingly, these changes have been welcomed by a number of map specialists, and particularly by historians and philosophers of cartography as opposed to practical cartographers and map users. Robinson and Petchenik were thinking about Peircian definitions as early as 1976.[59] A year later, Peter Lewis committed himself to "Maps are scales for measuring the property location," which perhaps can qualify as our best example of a "clever" definition — though with some mental effort it might prove acceptable as well as clever if "location" and "measurement" were suitably re-interpreted.[60] In general, it now became common for the earth's surface to be replaced in definitions by "spatial information," and among more venturesome authors for the graphic to go the same way as the terrestrial. Thus in Michael Blakemore and Brian Harley's "Concepts," the vehicle conveying spatial information became simply a "formal system."[61] The non-graphic "formal" as applied to representations of the earth was matched elsewhere by "structured" (7: 1977–94) and "systematic" (6: 1970–93). These rather indefinite terms may admittedly have been intended by their users to denote the mathemati-

cal properties of projection, scale, and orientation, or the visual codes associated with cartographic symbolism, or the rules governing the map-maker's selection or omission of detail. But, for all the reader knows, their referents could be wholly non-graphic: as Harvey points out, "formal system" allows a gazetteer to qualify as a map.[62]

A strange feature of this new concern for generality has been its extension to the motives of the map-maker, as well as to his or her methods and subject matter. A map, it now appears, may be made for any reason and in furtherance of any purpose. Readers unversed in the literature of cartographic empowerment may wonder why this fact or alleged fact should be dignified by the International Cartographic Association as a matter of definition (Appendix).[63] Perhaps it is part of an attempt to promote the socialization of cartography by denying that maps can be made for their own sakes.

In summary, there seem to be several reasons for the generalization of "map." One is essentially trivial — the belief among practising cartographers that computer disks should be allowed to count as maps — a policy adopted by several recent writers who have put "digital" (5: 1989–92) or "virtual" on a par with "visual" and "tactile" in the characterization of cartographic media. This may not be particularly logical but at least there is some precedent for it: the disk becomes a map by a process of metonymy, the same trope whereby pianists are asked if they have brought their music. One wonders whether this derivative secondary meaning should be treated as a harmless colloquialism rather than as essential to a standard definition.

For map historians there are special advantages in broadening the scope of cartography. By specifying a range of authorial motivations they can signal their acceptance of the above-mentioned belief that many if not all cartographers cherish some purpose (probably connected with the exercise of political or economic power) other than that of making true statements about the world. In the realm of map content the historian can strike a blow against elitism by minimizing the differences between "western" and some "non-western" cartographies. Many of the latter, it is agreed, have been unconcerned with numerical standards of accuracy. Their products are best accommodated in map definitions that make no reference to scale lines, graticules, grids, and compass indicators — or for that matter to "structure," "system," and "formality." In the same spirit, cartographic status can now be made available to any society that produces certain kinds of diagram or picture: all one need do is redefine the word "map." Thus Harley and Woodward, in seeking "to redescribe the history of cartography in non-western countries," have chosen to define maps as "graphic representations that facilitate a spatial understanding of things, concepts, conditions, processes or events in the human world."[64] A further rebuff to old-fashioned "objectivism" here is the transfer of spatiality from the world itself to the observer's understanding of the world. Traditionalists may find this hard to swallow: a regression line can satisfy Harley and Woodward's definition of a map by being understood spatially (in a sense denied to our understanding of the diagonal components in the letter "A," for instance) but there need be nothing spatial about the variables it relates.

On the highest plane of generality, some philosophically minded scholars appear to welcome redefinition simply as an aid to thought. To widen the definition of "map" is to emphasize the resemblances between maps (as previously understood) and certain kinds of non-map. Conversely, to narrow the definition, or to resist the process of widening, is to emphasize the differences within the same set of referents. Since both similarities and differences undeniably exist, neither of these operations is self-evidently wrong. To the philosopher, with his predilection for general statements, widening must have more appeal than narrowing: in the short term it seems to bring more of the universe within his domain, an intellectually stimulating experience however insecure its logical foundation. In the even shorter term the issue is more straightforward: on the one hand "maps" is easier to write than "maps and diagrams," on the other hand it is uncomfortable to be accused of talking nonsense by readers more accustomed to an older definition.

The Limits of Lexicography

The purpose of this paper has been to acknowledge the lexicographical record as a window on the history of maps, not to suggest a new definition or to endorse any particular old one, or even to suggest that the search for definitions is a desirable activity for the serious student. Many famous treatises on cartography have left their subject matter undefined, apparently without incurring criticism on that account. We all know what "map" means sufficiently well to make ourselves understood, and it is unlikely that anyone has ever achieved this knowledge by consulting a dictionary. This attitude was rationalized in Ludwig Wittgenstein's famous discussion of the word "game." Some words, he suggested, are simply unamenable to intensional definition, their various uses being linked not by any single common property but rather by a network of "family resemblances."[65] A related argument is that degrees of "mappiness" form a continuum on which the exact boundaries of the word "map" are arbitrary and uncertain. Alan MacEachren mentions two such scalar progressions, one leading from realism to abstraction, the other from the cosmic scale to the subatomic.[66] (Perhaps we could add a third, from vertical to horizontal sight-lines.) Whether these arguments really invalidate the idea of a dictionary-type definition may be open to doubt. What we can safely assert by way of conclusion is that, as it happens, most definitions of "map" have failed to match the realities of language use. In fact, it is their sheer badness that makes them an interesting historical source.

Appendix

"COMMITTEE" DEFINITIONS

A representation on a plane surface, at an established scale, of the physical features, (natural, artificial or both) of a part or the whole of the earth's surface, by the use of signs and symbols, and with the method of orientation indicated. Also a similar representation of the heavenly bodies.

— American Society of Civil Engineers, *Definition of Surveying, Mapping and Related Terms* (New York, 1954), p. 7.

A representation of the earth's surface or a part of it, its physical and political features, etc., or of the heavens, delineated on a flat surface of paper or other material, each point in the drawing corresponding to a geographical or celestial position according to a definite scale or projection.

— L. D. Stamp, *A Glossary of Geographical Terms Prepared by a Committee of the British Association for the Advancement of Science* (London, 1961).

A conventional representation, normally to scale and usually on a flat medium, of a selection of material or abstract features on or in relation to the surface of the earth, or of a heavenly body.

— Royal Society, *Glossary of Technical Terms in Cartography* (London, 1966), p. 25.

A graphic representation, usually on a plane surface and at an established scale, of natural and artificial features on the surface of a part or the whole of the earth or other planetary body. The features are positioned as accurately as possible, usually relative to a coordinate reference system. Also, a graphic representation of a part or the whole of the celestial sphere.

— [U.S.] Department of Defense, *Glossary of Mapping, Charting and Geodetic Terms* (2nd edition, n.p., 1969).

A representation normally to scale and on a flat medium of a selection of material or abstract features on, or in relation to, the surface of the earth or of a celestial body.

— International Cartographic Association Commission II, *Multilingual Dictionary of Technical Terms in Cartography* (Wiesbaden, 1973), p. 7.

A holistic representation and intellectual abstraction of geographic reality intended to be communicated for a purpose or purposes, transforming relevant geographical data into an end-product which is visual, digital or tactile.

— ICA Working Group on Cartographic Definitions, 1989, quoted in "Commentary," *Cartographic Journal* 26 (1989), p. 115.

A representation or abstraction of geographical reality: a tool for presenting geographical information in a way that is visual, digital or tactile.

— D. R. F. Taylor, 1991, quoted by C. Board, Report of Working Group on Cartographic Definitions 1991, ICA Newsletter, in *Cartographic Journal* 29 (1992), p. 54.

A symbolized image of geographic reality, representing selected features or characteristics, resulting from the creative efforts of cartographers, and designed for use when spatial relationships are of special relevance.

— Quoted in Michael Wood, "Whither maps and map design," *Bulletin of the Society of Cartographers* 27 (1993), p. 8. This definition was adopted in 1996 by the general assembly of the International Cartographic Association (*ICA News* 26 (Summer, 1996), p. 1) with the following changes: for "efforts of cartographers" read "effort of its author's execution of choices"; for "special" read "primary."

References

1 A small number of English translations from other languages has been included (see especially Stanislaw Pietkiewicz, "The evolution of the map definition during the last hundred years," *Actes du xie Congres International d'Histoire des Sciences,* Varsovie-Cracovie, 1965/4 (Wroclaw, 1968), pp. 272–5) but none of these translations is the work of the present author.

2 The full texts of the definitions are obtainable from the author at the Department of Geography, Trinity College, Dublin, Ireland, or on the World Wide Web at: www.usm.maine.edu/~maps/essays

3 The word "recorded" here and throughout this paper refers only to the author's sample. This means that not more than limited significance can be attached to the dates of so-called first and last occurrence. Some of these dates are in any case approximate.

4 The figure for planar representation may be supplemented by another 18 definitions (1775–1989) that specify paper as the commonest cartographic medium.

5 It seems clear from the context that "projection" in these cases does not carry the specialized mathematical meaning familiar in modern cartography.

6 J.B. Harley, "Historical geography and the cartographic illusion," *Journal of Historical Geography* 15 (1989), pp. 84–6; Deconstructing the map, *Cartographica* 26/2 (Spring, 1989), p. 4; Denis Wood with John Fels, *The Power of Maps* (London, 1993), p. 22. In this connection it may also be noted that the words "scientific" and "objective" occur nowhere in the sample.

7 The term "lineal representation" was used in *Mylius's School Dictionary of the English Language* (London, 1819) and revived in *Chambers' World Gazetteer and Geographical Dictionary* (Edinburgh and London, 1957). See also below, note 20.

8 Several recent cartographic theorists have implicitly shown themselves dissatisfied with the concept of representation, for instance John Pickles, "Text, hermeneutics and propaganda maps," in Trevor J. Barnes and James S. Duncan, *Writing Worlds: Discourse, Text and Metaphor in the Representation of Landscape* (London and New York, 1992), pp. 193, 227; and Barbara Belyea, "Images of power: Derrida/Foucault/Harley," *Cartographica* 29/2 (Summer, 1992), pp. 1–9, especially p. 8, n. 11. Such writers may be using "represent" in a narrow pictorial sense; or they may just be concerned with what is

important and interesting about maps rather than with questions of lexicography. At any rate, no one seems to have produced a definition that clearly excludes the idea of representation.

9 An exception is James Hathway, *The Story of Maps & Map-Making: How Man Has Charted his Changing World — From Ancient Times to the Space Age* (New York, 1960), p. 47, where a geological section is expressly described as "a form of map." For a more important case see below, note 41.

10 J.S. Keates, *Cartographic Design and Production* (2nd ed., Harlow, 1989), p. 3. Italics here and elsewhere are mine.

11 G.E. Hutchings, *Landscape Drawing* (London, 1960), p. 79. "Surfaces" have also been avoided by defining the map as a representation of geographical reality, but unless accompanied by a definition of geography, this does no more than evade the issue.

12 George Grove, *Geography* (London, 1877). Surprisingly, Grove is the only author in our sample who mentions horizontality in the context of a cartographer's subject matter.

13 P.C. Muehrcke, *Map Use: Reading, Analysis and Interpretation* (Madison, 1978), p. 55, quoted by Michael Blakemore, "Communicating information about cartographic communication," *Progress in Human Geography* 5/2 (1981), p. 300. The same idea is expressed slightly differently in the 1992 edition of *Map Use* by Phillip C. Muehrcke and Juliana O. Muehrcke (p. 87).

14 "Some thoughts concerning education," first published 1693, reprinted in *The Works of John Locke,* ix (London, 1823), pp. 172–3.

15 "The doctrine of the globes ought to precede the projection of the sphere and making of maps," 25 May, 1694 (H.W. Turnbull, ed., *The Correspondence of Isaac Newton,* iii (Cambridge, 1961), p. 357). Book titles of this period include Joseph Moxon's *A Tutor to Astronomy and Geography, Or an Easy and Speedy Way to Know the Use of Both the Globes Celestial and Terrestrial* (London, 1674) and John Harris's *Astronomical Dialogues Between a Gentleman and a Lady: Wherein the Doctrine of the Sphere, Uses of the Globes, and the Elements of Astronomy and Geography are Explained in a Pleasant, Easy and Familiar Way.* Neither of these works deals with maps.

16 *Gregorii posthuma: or Certain Learned Tracts Written by John Gregorie, M.A. and Chaplain of Christ-Church Oxford* (London, 1649), pp. 257, 285. Gregory's main title is *The Description and Use of the Terrestrial Globe,* but his book is unusual in having two separately titled sections, one on globes, the other on "The description and use of maps and charts universal and particular."

17 *Gazophylacium* (London, 1689). The Oxford English dictionary quotes no parallel uses of "schedule" in this sense.

18 J.K[ersey], *A New English Dictionary* (London, 1702).

19 Edward Phillips, *The New World of Words* (6th ed., London, 1706). It may also be noted that world-wide coverage had been assumed a century earlier in John Davis's definition of a chart as "a special instrument in navigation, pretending the cosmographical description of the terrestrial globe, by all such lines, circles, courses and divisions as are required to the most exquisite skill of navigation" (A.H. Markham, ed., *The Voyages and Works of John Davis the Navigator* (London, 1880), p. 285). Early dictionary definitions of "chart" are unhelpful in the present context: a typical seventeenth-century example is "paper, parchment or written deed." The word "atlas" however was often thought to need a reference to the whole earth, as in David Booth's "a collection of maps of the different parts of the world" (David Booth, *An Analytical Dictionary of the English Language* (London, 1835), p. 211).

20 An implicitly larger-scale reference occurs in John Ash's *The New and Complete Dictionary of the English Language* (London, 1775): "A description of a country by lines drawn on paper, a picture in which lands and seas are delineated according to the rules of geography; the site or description of an estate according to exact admeasurement." This definition appeared soon after the beginning of a marked increase in the output of English estate maps (A.S. Bendall, *Maps, Land and Society: A History, With A Carto-Bibliography of Cambridgeshire Estate Maps,* circa *1600–1836* (Cambridge, 1992), pp. 29–30), and reappeared in William Perry's *The Synonymous, Etymological and Pronouncing English Dictionary* (London, 1805) and in John Walker's *A Critical Pronouncing Dictionary and Expositor of the English Language* (London, 1838).

21 For an example from the 1870s, see Karl Pearson, *The Life, Letters and Labours of Francis Galton,* ii (Cambridge, 1924), p. 22.

22 Arthur H. Robinson and Barbara Bartz Petchenik, *The Nature of Maps: Essays Toward Understanding Maps and Mapping* (Chicago and London, 1976), p. 15. The word "globe" does not appear in the index to this book.

23 John Green, *The Construction of Maps and Globes* (London, 1717), p. 6.

24 D.J. Warner, *The Sky Explored: Celestial Cartography 1500–1800* (New York and Amsterdam, 1979). Non-terrestrial planetary and lunar maps are not explicitly mentioned in the sample until 1966 despite the mapping of the moon by Johannes Hevelius more than three hundred years earlier. See Klaus Bartels, "Vom Mondgesicht zur Mondkarte," *Cartographica Helvetica* 5 (1992), pp. 11–16.

25 Michael Blakemore and J.B. Harley did not make this point in their reply to Paul Harvey's criticism of their inclusion of star charts in map history (B.V. Gutsell, ed., "Concepts in the history of cartography," *Cartographica* 19/1 (Spring, 1982), pp. 68, 84); see also Harley's review of R.A. Skelton and P.D.A. Harvey, *Local Maps and Plans from Medieval England* in *The Map Collector* 43 (1988), p. 51.

26 Nathan Bailey, *An Universal Etymological English Dictionary* (London, 1721).

27 "A geographical picture on which lands and seas are delineated according to the latitude and longitude" (Samuel Johnson, *A Dictionary of the English Language* (London, 1755)).

28 This is well exemplified in J.S. Keltie, "Geographical education," *Royal Geographical Society, Supplementary Papers,* i (1886), pt. 4, no. 1, pp. 439–594.

29 Charles Cotter, *The Astronomical and Mathematical Foundations of Geography* (London, 1966), p. 173. Several definitions

(including that of the British Association: see Appendix) treat scale and projection as alternatives. In such cases both criteria have been included in the word-count.

30 See for example David Smith, *Victorian Maps of the British Isles* (London, 1985).

31 Guy Messenger, *The Ordnance Survey One-inch Map of England and Wales, third edition (large sheet series)* (London, 1988).

32 Jean Jacques Rousseau (trans. Barbara Foxley), *Emile* (London, 1911), pp. 131–4.

33 F.H. Hayward, *The Educational Ideas of Pestalozzi and Fröbel* (London, 1905), p. 44. For an example from the 1820s of the educational use of classroom plans in England, see Michael J. Wise, "An early 19th century experiment in the teaching of geography," *Geography* 33 (1948), p. 20.

34 Robert Sullivan, *Geography Generalised* (48th edition, Dublin, 1874), p. 8. This passage does not appear in the 38th edition of 1868; intervening editions have not been traced. To judge from their contexts this extract and the next (below, note 35) may reasonably be regarded as definitions, though strictly speaking both authors might insist that other kinds of unspecified object could also qualify as maps.

35 T.H. Huxley, *Physiography: An Introduction to the Study of Nature* (London, 1893; first ed. 1877), pp. 5–6.

36 A. Philip Muntz, "Union mapping in the American civil war," *Imago Mundi* 17 (1963), p. 93. In the same context see Jan Harvey, "A short history of air survey," *Bulletin of the Society of University Cartographers* 6 (1972), pp. 32–5. An early example of the conceptual link between ballooning and cartography is Edgar Allan Poe's story, "The unparalleled adventure of one Hans Pfaall" (1835), where the earth as seen by a space-travelling balloonist is said to look like "a chart orthographically projected" (cited in Eileen Reeves, "Reading maps," *Word and Image* 9 (1993), pp. 61–2). A still earlier reference, to an actual attempt at this kind of mapping, is in the *Hibernian Journal*, Dublin, 8 May, 1786.

37 *Longman Dictionary of English Language and Culture* (Harlow, 1992).

38 P.D.A. Harvey, *The History of Topographical Maps: Symbols, Pictures and Surveys* (London, 1980), pp. 172–3. Lexicographical considerations were probably not far from Harvey's mind, however: in the same year he emphasized the glaring need among map historians for a definition (in the singular) of the word "map" (Gutsell, "Concepts," p. 68). The idea of ubiquitous verticality is anticipated in W.G.V. Balchin (author and editor), *Geography: An Outline for Intending Students* (London, 1970), pp. 29–30.

39 On cartography, see especially Robert B. McMaster, ed., "U.S. national report to ICA, 1991: history and development of academic cartography," *Cartography and Geographic Information Systems* 18/3 (July 1991); also Arthur H. Robinson, "Geographical cartography then and now," *Annals of the Association of American Geographers* 69 (1979), pp. 97–102.

40 See especially Christopher Board, "Report of working group on cartographic definitions," *Cartographica* 29 (1992), pp. 54–6.

41 For instance, "The term map is generic and includes geographic maps, plans, charts, sections, 3–D models, globes and statistical diagrams" (S. Cassettari, A. Fagg and M. Visvalingam, "Cartography and geographical information systems," *Cartographic Journal* 29 (1992), p. 51).

42 John Bygott, *An Introduction to Mapwork and Practical Geography* (London, 1934).

43 Erwin Raisz, *General Cartography* (New York, 1938).

44 The first two occurrences of "phenomena" in the sample are from translations of non-English definitions (Pietkiewicz, "The evolution of the map definition during the last hundred years," pp. 273, 274).

45 "Distribution map" was widely adopted during the 1940s in the sense later associated with "thematic map" (see W.V. Lewis and W.G.V. Balchin, "The construction of distribution maps," *Geography* 30 (1945), pp. 86–92 and W.G.V. Balchin and A.W. Richards, *Practical and Experimental Geography* (London, 1952), pp. 112–20), but this usage eventually dropped out of sight.

46 Francois de Dainville, *Le langage des géographes* (Paris, 1964), p. 58.

47 *Report of the select committee on the survey and valuation of Ireland*, British parliamentary papers, H. C. 1824 (445), viii, following p. 374. This report dealt with the work of the British Ordnance Survey, but the term "convention" was not much used by Ordnance Survey officers, perhaps because resort to conventions was regarded in the department as an admission of failure. See C.F. Close's comment that "conventional signs are undoubtedly an evil" in "The ideal topographical map," *Geographical Journal* 25 (1905), p. 636.

48 A.T. Summers and E. Stenhouse, *A Class Book of Physical Geography* (London, 1912), p. 3.

49 A. Kolacny "Cartographic information — a fundamental concept and term in modern cartography," *Cartographic Journal* 6 (1969), pp. 47–9; C. Koeman, "The principle of cartographic communication in cartography," *International Yearbook of Cartography* 11 (1971), p. 174; A.H. Robinson and Barbara Petchenik, "The map as a communication system," *Cartographic Journal* 12 (1975), pp. 7–15. A good historical survey of this subject is C. Board, "The development of concepts of cartographic communication with special reference to the role of Professor Ratajski," *International Yearbook of Cartography* 23 (1983), pp. 19–29. See also J.S. Keates, *Understanding Maps* (New York, 1982), ch. 9.

50 Janusz Golaski, "Definition of the map," Third International Congress of Cartography, Amsterdam, 1967, Collection 59 (Skelton papers), Centre for Newfoundland Studies Archive, Memorial University of Newfoundland, II/I/2 (3), typescript, pp. 4, 5. Golaski's definition is in two parts: "A topographic transfer, relative to a given part of the earth surface, is a set of signs informing about spatial relations (conditions) occurring between objects or phenomena connected with the said part of the earth surface. The map of a given part of the earth surface is a topographic transmitter that informs only and solely by means of a disposition on the plane of signs designating objects or phenomena."

51 A.G. Hodgkiss, *Understanding Maps: A Systematic History of their Use and Development* (Folkestone, 1981).

52 Alan M. MacEachren, *How Maps Work: Representation,*

Visualization and Design (New York, 1995), pp. 3–6.

53 E.C. Tolman, "Cognitive maps in rats and men," *Psychological Review* 55 (1948), pp. 189–208. For the later history of mental-map studies see Naomi Eilan, Rosaleen McCarthy and Bill Brewer, eds, *Spatial Representation: Problems in Philosophy and Psychology* (Oxford, 1993), especially chapters 3 (John O'Keefe) and 4 (John Campbell).

54 Charles Hartshorne and Paul Weiss, *Collected Papers of Charles Sanders Peirce,* iv (Cambridge, Mass., 1933), p. 400. Peirce was a cartographer as well as a philosopher: he invented the quincuncial projection (John P. Snyder, *Flattening the Earth: Two Thousand Years of Map Projections* (Chicago, 1993), pp. 136–37).

55 Diagrams showing logical relationships can be traced to the eighteenth century. Their similarity to maps was sometimes noted obliquely, for instance by John Venn (*Symbolic Logic* (London, 1881), pp. 121, 437) and Lewis Carroll (W.A. Bartley III, ed., *Lewis Carroll's Symbolic Logic* (Hassocks, 1977), p. 244), but the first writer known to have actually called them maps is Bertrand Russell (*Introduction to Mathematical Philosophy* (London, 1919), p. 60).

56 John Ogilvie, *The Imperial Dictionary of the English Language* (London etc., n.d., *circa* 1885). The word "atlas" has been similarly generalized: William Turner's *An Atlas of Human Anatomy and Physiology* was published in Edinburgh as early as 1857.

57 A much earlier though less general example is "a delineation of some portion of a sphere, or of the earth, on a plane" (J.E. Worcester, *A Comprehensive Dictionary of the English Language* (Philadelphia, 1860)).

58 "Cartographical" was used in a purely analogical sense by Nelson Godman in *The Structure of Appearance* (Indianapolis, 2nd ed., 1966), pp. 317–18, but the main vehicle for this lexicographical revolution has been a series of papers in and after 1994 by R. Paulston and M. Liebman, cited in Rolland G. Paulston, ed., *Social Cartography: Mapping Ways of Seeing Social and Educational Change* (New York and London, 1996). These authors also favour the term "cartograph," apparently as a modern equivalent for "diagram" (Martin Liebman and Rolland G. Paulston, "Social cartography: a new methodology for comparative studies," *Compare, a Journal of Comparative Education* 24/3 (1994), p. 233 ff.).

59 Robinson and Petchenik, *Nature of Maps,* p. 16.

60 Peter Lewis, *Maps and Statistics* (London, 1977), p. 3.

61 Michael Blakemore and J.B. Harley, "Concepts in the history of cartography: a review and perspective," *Cartographica* 17/4 (Winter, 1980), p. 13; Michael Blakemore and J.B. Harley, "The authors reply" in Gutsell, "Concepts," pp. 82–3.

62 P.D.A. Harvey in Gutsell, "Concepts," p. 68.

63 An earlier "purposive" definition is: "any graphic, conventional representation of spatial information, drawn for a purpose" (Patrick Bailey, "The map in schools: a key, a language and a set of skills," *Cartographic Journal* 21 (1984), p. 62).

64 J.B. Harley and David Woodward, *The History of Cartography, I: Cartography in Prehistoric, Ancient, and Medieval Europe and the Mediterranean* (Chicago and London, 1987), p. xvi; ii (pt 1): *Cartography in the Traditional Islamic and South Asian Societies* (Chicago and London, 1992), p. xxii.

65 Ludwig Wittgenstein, *Philosophical Investigations* (Oxford, 1968, first published 1953), pp. 31–5. No one seems to have suggested that Wittgenstein gave up rather too easily in his search for a definition of "game." See, however, Hans-Johann Glock, *A Wittgenstein Dictionary* (Oxford, 1996), pp. 121–2.

66 MacEachren, *How Maps Work,* pp. 160–61. Also Jean Atkinson, *Words in the Mind: An Introduction to The Mental Lexicon* (Oxford, 2nd ed., 1994), pp. 51–63.

Résumé On discute souvent des définitions du mot "carte" dans un esprit philosophique, mais jusqu'à maintenant, on n'en a jamais discuté pour jeter de la lumière sur l'histoire de la cartographie. Dans cette recherche, on a recueilli un échantillon de plus de trois cents définitions dans des dictionnaires, des encyclopédies, des textes sur la géographie et d'autres écrits datant de la moitié du dix-septième siècle jusqu'à aujourd'hui. Les résultats justifient que l'on en fasse une analyse historique et statistique et l'on offre à notre réflexion plusieurs exemples de telles analyses. L'approche lexicographique la plus commune vise à traiter les cartes comme des représentations de la surface de la terre, mais pour plusieurs auteurs cette formule simple a été trop générale et trop brute. Parmi les autres définitions, peu semblent se conformer à l'usage commun. Elles reflètent plutôt des changements de modes intellectuelles chez les géographes et, plus récemment, chez les cartographes. Dans les cas où l'on a essayé d'atteindre un plus grand raffinement lexicographique, on peut voir émerger certains motifs. Pour les fins de la discussion ces motifs seront, dans l'ordre historique : scientifiques, populaires, professionnels et philosophiques.

Zusammenfassung Was war eine Karte? Die Antwort der Lexikographen Definitionen des Wortes 'map' (Karte) werden oft in einem philosophischen Geist diskutiert, aber sie sind bisher nicht dazu herangezogen worden, die Geschichte der Kartographie zu erhellen. Dieser Studie liegt eine Stichprobe von mehr als dreihundert solcher Definitionen zugrunde. Als Quellen dienten Wörterbücher, Reallexika, geographische Lehrbücher und andere Schriften, die zwischen der Mitte des siebzehnten Jahrhunderts und der Gegenwart erschienen sind. Die Ergebnisse verdienen offensichtlich eine statistische und historische Analyse, und mehrere Beispiele einer solchen Analyse werden vorgelegt. Im häufigsten Fall wurden Karten als Darstellungen der Erdoberfläche definiert, aber viele Autoren haben diese einfache Formel als zu allgemein und zu grob angesehen. Von den alternativen Definitionen erscheinen wenige mit dem gewöhnlichen Sprachgebrauch vereinbar. Sie reflektieren vielmehr wechselnde intellektuelle Moden unter Geographen und, in jüngerer Zeit, unter Kartographen. In diesen Fällen, wo eine verfeinerte lexikographische Behandlung versucht wird, kann man eine Anzahl von Leitgedanken entdecken. Einige davon werden diskutiert; diese sind, in historischer Reihenfolge, wissenschaftlich, volkstümlich, berufsbezogen und philosophisch.