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The Terminology of Map Projections*

INTRODUCTION

The first object of this contribution is to attempt to correlate certain of the words, phrases and algebraic symbols which have been employed in the literature relating to map projections in four languages, English, German, French and Russian. This contribution to the terminology of cartography is an individual effort, presented by one author and therefore it must contain certain limitations of scope and content when compared with the results of composite studies made by national or international committees. In particular, the accuracy of correspondence between the equivalent terms in the four languages must be limited by the gaps in the mathematical and linguistic knowledge of the author. It is hoped, however, that a paper of this nature might serve as a bridge between the various national contributions to Commission II of the International Cartographic Association and that it may, moreover, stimulate further discussion and investigation in this particular field of study.

The list of comparative terms in four languages is divided into two main sections :

Part 1 : List of the equivalent names for individual map projections.

Part 2 : List of equivalent terms relating to the geometry of the Earth, the components, classification and properties of map projections which have been used in the published literature concerned with this subject.

The majority of the names and terms included in these two lists were submitted to the United Kingdom *Working Group to Study Standardisation of Technical Terms in Cartography* (hereinafter called the Working Group) and appear in the British contribution to Commission II, the *Glossary of Technical Terms in Cartography* (1). However the lists forming the Appendix to this paper contain a certain number of entries which are additional to those given in the Glossary. These were apparently excluded from the final draft of the Glossary because they were regarded as being only marginally related to the study of map projections and had wider application in the whole field of mathematics or because they were virtually synonymous to other, preferred, words or terms.

The *Glossary of Technical Terms in Cartography* now provides some measure of standardisation for future English usage. To this extent the labours of the Working Group have been immensely valuble in selecting the more meaningful, expressive or accurate words and phrases from the confusion of departmental jargon and the inconsistencies of the published literature. Writing about the nomenclature of map projections in 1944, L. P. LEE (2) said :

"Not only is the classification of projections unsatisfactory in English writings, but the

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nomenclature employed, both of the classification groups and of the individual projections, is in a state little short of chaotic."
Much the same can be said about most other aspects of cartographic terminology in English at the time when the Working Group began its deliberations in 1964.

However the recommendations of the Working Group, represented by the contents of the Glossary, need to be disseminated among people who will make use of this terminology and consequently some time must elapse before the true value of it can be appreciated. A glossary which excludes all the redundant words and phrases is no guide to the student of the subject who needs to interpret and understand the literature which has already been published. This fact is most important in the study of map projections because so much of the basic literature about the subject dates from the nineteenth or early twentieth centuries and is especially rich in synonymous, unnecessary or misleading terms. Hence the second purpose of this paper is to provide, through the Appendix, some sort of guide to the words and phrases which have been used in the past and which require cross-referencing within the proposed standardised usage. In short, the British *Glossary of Technical Terms in Cartography* defines and recommends future usage in the English language; these multilingual lists relating to the terminology of map projections are also concerned with former usage.

The third object of this paper is to summarise some of the difficulties which are inherent in giving individual map projections names which are both brief, identifiable and which have some meaning. This, in turn, demands some reference to the terminology which relates to the description and classification of all map projections.

THE ARRANGEMENT AND CONTENT OF THE APPENDIX

The organisation of the lists and the meaning of the symbols used in them require a few words of explanation. Each list is presented in the alphabetical order of the English rendering of each term *as these are written* (but excluding the definite or indefinite article). There has been no attempt to cross-reference these to other possible permutations or combinations of word order which would not arise in the ordinary manner of reading. Thus *Principal scale* appears under P and is not listed under S as *Scale, principal.* This is because the author believes that presentation of the usual word order which is encountered is an important aid to translation.

The equivalent terms in German, French and Russian are all grouped together under the same serial number as the term in English which is to be preferred, and which therefore usually corresponds to an entry which is defined in the British Glossary. The author has made no attempt to judge which of the supposedly synonymous terms in German, French or Russian are to be preferred. In general, however, the first of several entries which are listed is the form which is most commonly encountered in these languages.

Where it has been possible to estimate when a particular term was first used, and by whom, this information is given in brackets by means of the author's name and the date of the publication.

The note "Syn (xx)" under the English version of the term indicates that it is synonymous with some other, preferred, term which is listed under serial number (xx).

The symbol (+) entered against the English term denotes that the author believes that this is an undesirable or misleading term.

The symbol * indicates that no corresponding term in that language is known to the author.

This provides quite a useful indication where gaps in the use of certain terms, or even of unfamiliarity with certain concepts, may occur in the national literature. For example, the only known references to *Isoperimetric curves* appears to occur in the American (3) and Russian (4) literature. Hence this term is only recorded in the English and Russian columns of the list.

The author has made some attempt to include under appropriate entries those algebraic symbols which are commonly associated with the geometry of the spheroid, sphere and plane. These are, as far as possible, the modern forms of notation employed in comparatively recent publications and are based mainly upon references (5), (6) and (7) which represent some of the most important recent works in German, French and Russian. The author has not attempted to record the variations of symbolisation which may be encountered in the earlier literature. An undertaking of this sort would present formidable difficulties because many writers have used a bewildering variety of different symbols and some of them have also been most inconsistent in the use of the symbols to denote different quantities.

THE NOMENCLATURE OF MAP PROJECTIONS

Map projections are not just a subject for abstract study by a handful of academically inclined people who are working beyond the mainstream of productive cartography. One or other from the infinity of possible map projections ought to be used as the framework of every map which is produced. It follows that each map should bear some marginal statement which will identify the particular map projection which has been employed. Examination of the list of named map projections shows how varied and confusing can be the nomenclature which is employed for this purpose. It is therefore useful to examine some of the methods which have been used to distinguish a map projection uniquely and to define it succinctly.

There appear to be four kinds of names or titles which can be used in these senses :

1. The single descriptive word, often of antique origin which has also become associated with the *geometry* of the means of representation. This is exemplified by the well known names for perspective Azimuthal projections ; *Gnomonic, Stereographic and Orthographic.* Much later additions to this list have resulted from the derivation of terms which redefine or slightly modify certain special properties (e. g. *Homalographic, Eumorphic, Orthodromic*) or which have been borrowed from mathematics to describe the nature of certain of the families of curves comprising the graticule (e. g. *Sinusoidal, Parabolic*).
2. Most projections can be named in a descriptive fashion according to some multinominal system based upon *the system of classification and the special properties of the projection*, for example the *Azimuthal equal-area* and *Cylindrical equidistant* projections. However there are only a small number of graticules which can be defined accurately as briefly as this. Supplementary information may also be needed to complete an adequate title (e. g. *Conical equal-area projection with one standard parallel*).
3. Projections are frequently named after *their true or supposed inventor*. Most of the famous projections belong to this category, such as *Mercator's projection, Bonne's projection* or *Gauss-Krüger projection.* An extension of this system is to name the projection after *the book, atlas or map* in which it first appeared ; even after the *place or institution* where it was invented. Examples include the *Oxford projection, War Office projection, Proektsiya BSAM* and the numerous *Proektsii TsNIIGAiK.*
4. A small group of projections have been named from the *association of their visual appear-*

ance to other objects which are more or less familiar. Examples of these include the *Kite projection, Lotus projection, Armadillo projection* and *Butterfly map.*

5. A few projections bear distinctive names which are only remotely associated with the *purposes of the map or with the places depicted* so that the title is virtually an arbitrary choice. Bartholomew's names ; *Nordic projection* and *Atlantis projection* are examples.

The first group of named projections possess the overwhelming advantage that the majority of them are well known. Perhaps this is because there are comparatively few of them and they are terms which are encountered early in learning about map projections. However the popularity of the words has sometimes led to their misapplication in the partial descriptions of other projections. In particular the word stereographic has become incorporated into the titles of a number of other map projections which are only remotely related to the parent graticule either geometrically or to its special property. Later additions to this list, such as *Eumorphic, Homolosine* and *Orthodromic* are less well known or understood.

When generic mathematical terms are used to describe individual map projections, this frequently leads to an unfortunate choice of title because the same word can be extended to name a whole family of related projections. For example the words sinusoidal, elliptical and parabolic are used with particular reference to the pseudocylindrical class of map projections to describe three different families of curves which may be employed to depict the meridians. Hence it is confusing and restricting to speak of *a* Sinusoidal projection or *a* Parabolic projection. The terms *eumorphic, orthodromic* and *homalographic* can also be used in the generic sense to refer to special properties.

The practice of naming projections *after their originators* has certain merits and it would be inconceivable to imagine discarding or altering some of the best known names. However Part I of the Appendix indicates the extent to which this practice has been enthusiastically applied, with the result that the method now possesses little merit by itself. The present author must confess to having helped to perpetuate this form of identification by listing the map projections which have been described in Russian sources according to this system (8). Resulting from the way in which the nomenclature has grown, the method now presents one minor and one major difficulty of identification. The minor difficulty is that a projection may have been named after more than one person, each of whom have been associated with the description or use of it. This leads to a certain amount of international confusion because there are obvious national preferences to use the names which are common in the literature of a particular language. The Appendix indicates several examples of confusion between individuals; for example, between LAMBERT and GAUSS, between MOLLWEIDE and BABINET, between APIANUS, ARAGO and LOTTER, between NICOLOSI and ARROWSMITH. However most of the projections which bear double names have been known for a century or more. Much of the uncertainty surrounding them is now of historical interest and no longer presents much confusion in productive cartography. We also know now that many of the most popular projections have not been named after their true discoverer. Both MERCATOR's and BONNE's projections come within this category but it would be pedantic (and futile) to suggest changes to them for there is now a considerable measure of international agreement in the use of existing names.

A much greater problem arises when several map projections have all been *named after the same individual.* This fashion began to appear in the eighteenth century when referring to the work of LAMBERT and MURDOCH, but the practice only became really common in the twentieth century after ECKERT described the six pseudocylindrical projections which we are accustomed to identify as Eckert I through Eckert VI. This arbitrary form of numbering

immediately creates difficulties in remembering which of them are equal-area projections, or which of them have rectilinear, elliptical or sinusoidal meridians for there is no clue within the title which can assist the user. Because V. V. KAVRAISKY described at least seven different projections and because G. A. GINSBURG has already described eight, it is a strain upon the memory to recall whether *Kavraisky III* is a conical projection or which of the world polyconic projections correspond to *Ginsburg IV*, *Ginsburg V*, *Ginsburg VI and Ginsburg VII*. This method of nomenclature can appeal only to the memory and it lacks any description of the map. In this respect, however, the Russian practice of nomenclature is hardly less arbitrary. Thus GINSBURG distinguishes between his four polyconic graticules, all of which are termed *Polikonicheskaya proektsiya TsNIIGAiK*, by the date of their introduction or use. There seems to be little difference between trying to distinguish the number V from VII than trying to distinguish between 1950 and 1954.

It is, perhaps, significant that no one has ever attempted to apply this system of nomenclature to list all the projections which can be attributed to Professor MAURER. Examination of his list of 237 map projections (9) shows that seven of these had been previously described by him and that a further 32 projections are listed as "neu", implying that he had also derived the expressions for these. Any attempt to distinguish (say) between Maurer XVIII and Maurer XXXVI would reduce this system of nomenclature to its logical absurdity.

The possibility of naming map projections *after the objects which they are supposed to resemble* also presents difficulties because a major purpose of any system of nomenclature must be to distinguish between a large number of projections in certain classes which all look similar to one another. Nomenclature of association has only been successfully applied to the discontinuous recentred and composite forms of world maps which possess distinctive outlines.

The use of *interesting distinctive names* probably merits more attention than it has received in the past. Certainly it is a means of identification which might overcome some of the problems inherent in calling several projections all after the same person and it may be easier to associate the name with the graticule than is possible through a combination of author and number. An inspired example may be found in the choice, by A. R. CLARKE, of the title *Twilight projection* for his minimum error perspective azimuthal projection for a map of spherical radius equal to 108°. Not only is this a pleasant and distinctive name, but it also has some meaning because the area of the earth's surface so mapped can be chosen to correspond with the illuminated part of the earth including those parts subjected to morning and evening twilight.

THE DESCRIPTIVE NOMENCLATURE

There remains the method of defining and describing each map projection uniquely by means of a series of descriptive terms which denote *aspect*, *class of projection*, *special properties* and *other distinctive characteristics*. This is generally the preferred method to the others which have been described because it reduces the possibility of errors in recognition of the projection. Moreover it is commonly employed on all of the four languages which have been considered.

To do this effectively, the description ought to be brief and easy to comprehend. This can be done for a dozen or more basic graticules without the need to refer to distinctive characteristics but thereafter the terms become more cumbersome. The real trouble is that the vocabulary of terms which might be employed is incomplete in all four languages and

consequently the greater the mathematical sophistication of the distinction between two projections the smaller is the likelihood that this can be adequately expressed in a succinct description. One alternative would be to create a variety of entirely new terms to describe these characteristics, but entirely new terms seldom have much popular appeal. At present, therefore, it seems preferable to make what use we can of the existing terminology.

Aspect

The word aspect appears to have been introduced to the English usage relating to map projections by LEE (2) and constitutes a useful addition to the terminology because it has a meaning related to appearance. Moreover the word is identical with the corresponding one in French. However many writers in English still persist in the older, but less satisfactory use of the word "case". This is an unfortunate choice because it has a variety of other meanings in medicine, the law and grammar, as well as describing a sort of container.

Current practice in all four languages seems to favour reference to the aspect only for maps which are based upon either the transverse or oblique versions of a projection. Hence it is usual to refer to the *Cylindrical equal-area projection*, omitting the words "normal aspect", but it becomes desirable to provide information about both the aspect and location of the origin of the projection in *Oblique aspect azimuthal equidistant projection with origin 50° N, 30° W*. A variety of different terms have been used to denote the different aspects of various classes of projection. Most of these have been recorded in the second part of the Appendix and there is also an exhaustive list of the variations found in the German literature in MAURER's monograph (9). In recent years the usage in all four languages has become uniform and confined to three words which are equivalent to *normal, transverse* and *oblique*.

It has been widely recognised that the difference between one aspect and another is basically a coordinate transformation derived from spherical trigonometry and that the relationship of the pattern of distortion isograms remains constant with respect to the origin, axes or boundaries of the graticule irrespective of the appearance of the parallels and meridians. Consequently the visual changes which result from changes of aspect have trivial significance in any system of classification of map projections and can be regarded merely as an unnecessary complication. It follows, moreover, that there is no need to seek special names for different aspects of the same projection. This, indeed, appears to be a rule which has only one major exception and a few minor ones in international usage. The major exception comes with the use of transverse and oblique aspect cylindrical projections as the bases for most topographical mapping. Thus the terms *Cassini projection, Gauss-Krüger projection* and *Laborde projection* represent irregular usage. Although the English use of *Transverse Mercator projection* appears to be formally more correct, this term, employed with respect to mapping the spheroid, fails to distinguish the important differences which exist between the GAUSS-KRÜGER, GAUSS-SCHREIBER and GAUSS-LABORDE systems of projection.

CLASS OF PROJECTION

The second of the terms which must be employed to define and name a projection fully is a word or phrase which can locate it within an ordered classification system of all map projections. It is important therefore to formulate a system of classification which is, at the same time, collectively exhaustive and mutually exclusive. In other words, the system ought

to include all the possible kinds of projection which have been, or within the limits of our mathematical comprehension can be described. Ideally each projection ought to occupy an unique position within the classification, like every element within the Periodic System or each species within the classifications of the plant and animal kingdoms.

The terminology employed must be concise, intelligible and unequivocal. In particular, no group of projections ought to be relegated to a meaningless class of "Miscellaneous", "Conventional" or "Others" category, thereby creating a kind of rubbish bin to contain all those varieties of map projection which cannot be conveniently accomodated elsewhere within the system. The use of such a category represents a negative or despairing approach to the problems of classification. It means that the map projections assigned to the "Miscellaneous" group may possess no attributes or characteristics in common other than the fact that they are unlike all others. Similar arguments apply to all the attributes which are prefixed by "Not-" or "Non-". For example the *non-perspective projections* are those which cannot be derived by perspective geometry, and therefore creates a dichotomous classification which has small mathematical importance and little practical value.

There are probably only two methods of classification of the map projections which satisfy these desirable criteria; that proposed by MAURER (9) as his *Linnean System of Classification* and TOBLER's *Parametric Classification* (10). The merits of the two systems can only be outlined briefly here, for space will not permit an exhaustive development of this aspect of the theory of map projections. It will suffice to state that TOBLER's four basic groups of functional relationships include all the combinations of coordinate expressions which will map the earth *continuously* upon the plane. Although MAURER's basic scheme of classification is rather different, for it is based partly upon functional relationships and partly upon the symmetry of projections about certain axes, the relationship between the two systems of classification can be illustrated by means of a Venn diagram (Fig. 1).

It must be noted that TOBLER's system of classification is entirely concerned with the eight possible combinations of functional relationships in cartesian and polar coordinates which can map the earth continuously. There is no place within this system for the heterogenous collection of projections which resemble stars, leaves, butterflies or even the familiar recentred versions of the pseudocylindrical projections. None of these kinds of projections satisfy the functional relationships continuously for they possess interruptions or the juxtaposition of two entirely different projections along certain parallels or meridians. These projections must be assigned to a fifth group which corresponds to MAURER's *Stamm V: Zusammengesetzte Netze*. The term may be conveniently translated into English as *Composite projections*. The group is presumably also capable of further subdivision.

Within the grouping provided by TOBLER's system of classification the first stage of further subdivision is the location of the three traditional classes (azimuthal, conical and cylindrical) together with the three proposed by TISSOT (pseudoconical, pseudocylindrical and polyconic) and the seventh class termed *pseudozenithal* by ARDEN-CLOSE or *pseudoazimuthal* by GINSBURG. The *retroazimuthal* projections may also be justifiably regarded as an eighth class within this subdivision. The location of all these classes is shown in Fig. 1. It will be noted that each of Tobler's groups C and D contain three classes of projection, but groups A and B are only described by one term each. In group B the lack of nomenclature reflects the lack of research which has been done on projections which satisfy these particular functional relationships. On the other hand, group A contains a very large number of different projections and clearly the single descriptive word "polyconic" provides an inadequate vocabulary to attempt classification of these.

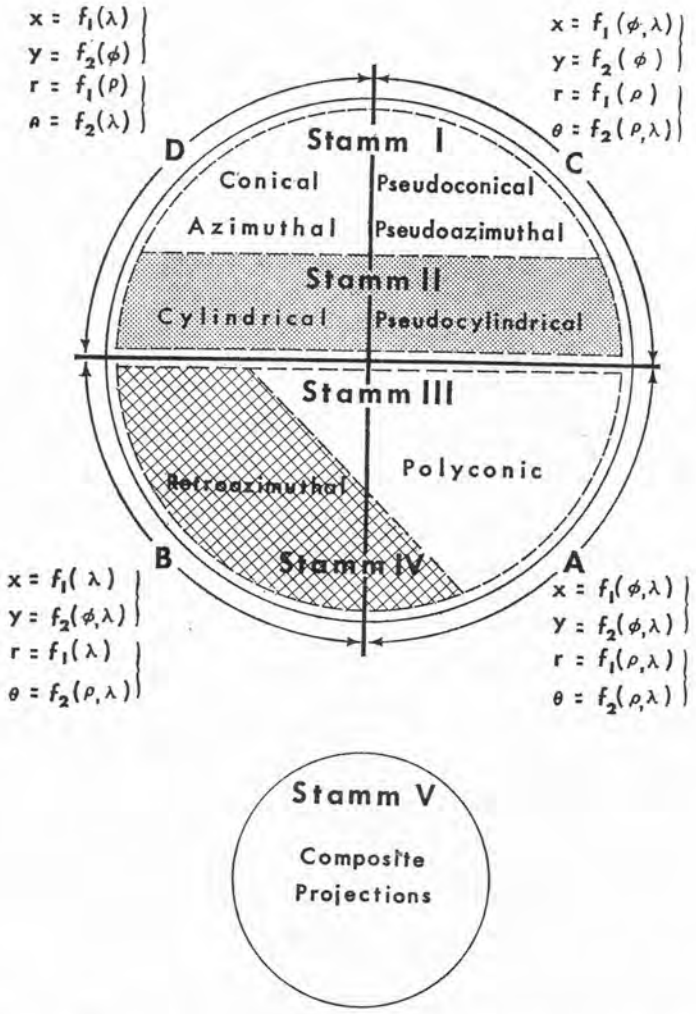

Fig. 1. Venn diagram showing the relationship between the basic subdivisions in the systems for classification of map projections proposed by Maurer (1935) and Tobler (1962).

Tobler's four groups, A, B, C and D are represented by the quadrants of a circle. Maurer's four main groups, Stamm I through Stamm IV are superimposed upon this diagram. Stamm II and Stamm IV are shaded to assist interpretation of the diagram. The eight named classes of map projections are also located within the diagram.

Composite projections, which correspond to Maurer's Stamm V, do not satisfy the condition of Tobler's Parametric Classification that the earth's surface should be continuously mapped. Hence the various forms of star-shaped and recentred projections must belong to this group which is independent of the others.

PROPERTIES OF MAP PROJECTIONS

The present author distinguishes in his published work between the *Fundamental properties* and the *Special properties* of a map projection. These terms correspond with MAURER's *Netzeigenschaften* and *Netzfreien Eigenschaften* respectively. An equivalent distinction is often made in the Russian literature. Most other writers in English have employed the word *Properties* to mean *Special properties*. For reasons which are not apparent, only the term Fundamental properties has been included in the British Glossary (1). Hence it is desirable to explain the meaning of this usage.

We may define *Fundamental properties* of any map projection as :

> the location and form of the point(s) or line(s) of zero distortion and the resulting pattern of distortion isograms over the map as a whole. The property can be further extended to describe the general features of the arrangement of the parallels and meridians of the normal aspect of the projection.

In general, therefore, the fundamental properties relate to those characteristics which are common to a whole class of map projections. For example, a fundamental property of the Azimuthal projections is that the origin of the projection is a point of zero distortion and consequently all angles are correctly represented at this point. Incidentally it is this useful fundamental property which is implied by the preferred name for this class, whereas the alternative name of Zenithal projections appears to be meaningless. It follows from the definition of fundamental properties that these extend our knowledge of the eight named classes of projections without introducing new concepts. Hence it is reasonable to equate the names of the fundamental properties with those for the classes which they describe.

The *Special properties* of any map projection are those which arise from the mutual arrangement of the maximum and minimum particular scales throughout the map. Three of these are of especial mathematical and practical importance : conformality, equivalence and equidistance. The range can be further extended by including other mathematical concepts such as the various forms of minimum error representation, the ability to show great circles or rhumb lines by straight lines, or projections whose total areas are correctly represented but which are not true equal-area projections.

Some writers limit the range of special properties to include only the conformal and equal-area projections. Then a very large number of projections which satisfy neither of these conditions must be assigned to an *Arbitrary* or *Aphylactic* category. Indeed it has become quite common to find this regarded as if it were a third mathematical property, whereas in this context it can only mean absence of both conformality and equivalence.

However the range of special properties may be extended to incorporate a number of other mathematical constraints which may have potential value in a map :

1. *Approximately equidistant projections* (8) differ from Equidistant projections because the meridional particular scale is a constant value but is not equal to the principal scale.
2. There are projections in group C which have equidistantly spaced parallels, but which have variable meridional particular scales. This property is distinguished by the word *abstandsgleich* in German, but no equivalent term is employed in English or French. In these languages such projections are often termed "Equidistant" but this is not a justifiable extension of the special property thus named.

3. There are some projections in which the particular scale along the parallels is equal to the principal scale. This property is described in German as *abweitungstreu* and in French as *automécoïque* but there are no corresponding terms in either English or Russian.
4. *Absolute minimum error projections* are the representatives of each class in which the sums of the squares of the errors in the particular scales, integrated throughout the area mapped, have a minimum value.
5. Other kinds of *Minimum Error* projection possess one or other of the special properties but then satisfy the secondary condition that the sum of the squares of the errors in particular scale have a minimum value.

6.–8. An alternative method of reducing the scale errors is represented by TISSOT's concepts of *périgonale*, *périhalique* and *périmecoïque* projections. In these maps the maximum values of angular deformation, area or linear distortion which occur within the map are reduced to a minimum value. There are no corresponding terms for these in the English language.

9. Projections which are *total area true* (*flächengleich* or *atractozonique*) and which satisfy some property other than equivalence.
10. "Orthodromic" projections in which great circle arcs are rectilinear, corresponding to MAURER's property *orthodromisch*.
11. "Loxodromic" projections in which rhumb lines are rectilinear, corresponding to Maurer's property *loxodromisch*.

We see that all these terms have been used in one or more of the four languages. They are not new concepts but are ideas which have failed to pass through the barriers of language.

Although this list can be extended further, any scheme of classification which is partly based upon a subdivision according to special properties must ultimately become exceedingly complex or require the introduction of an Arbitrary or Aphylactic category. Since this represents an undesirable addition anywhere within the classification scheme, it follows that further subdivision from the eight named classes of map projections ought to be based upon characteristics other than the special properties. It is not surprising to find that MAURER's Linnean System of Classification makes only limited use of them.

Notwithstanding the argument that special properties may prove unsatisfactory as a basis for classification, it remains an important principle that the descriptive title of a map projection ought to contain reference to any special properties that it possesses. Knowledge about this is vital to the critical map user.

DISTINCTIVE CHARACTERISTICS

The limit between what constitutes a special property and might conveniently be called a "distinctive characteristic" is not particularly clear when a variety of additional concepts become categorised as "properties". For example, some of the forms of minimum error representation might be regarded as a kind of *modification* to a parent graticule which still preserves the original property, though the errors in the particular scales may be redistributed through the map. A *minimum error stereographic projection* remains conformal, but through the introduction of a *standard circle*, the sum of the squares of the scale errors within the area mapped is made the minimum value which can occur for a conformal azimuthal projection of given spherical radius. Generally the information presented under the heading

of distinctive characteristics either relates to some kind of modification of a basic projection, as, for example, when the number of standard parallels in a conical projection is stated. Another purpose is to describe the nature of the outline of the map (e.g. *Conformal projection of the world within a square/circle/ellipse*) or the nature of the meridians (*rectilinear/circular/elliptical/parabolic/sinusoidal/quartic*), parallels or poles. Very frequently the special characteristics of the projection are concealed by use of the peculiarly uniformative word "modified". Perhaps the only general definition which could attempt to summarise the more intelligent uses of the word *modified* can be :

Map projections which have been altered from their original and simplest form in order to reduce scale errors and the resultant distortions.

However it is probably true to say that correct use of the term is generally confined to describe only those projections in which the scale errors have been redistributed by the introduction of a scale factor which has had the effect of replacing one line of zero distortion by two, transforming a point of zero distortion into a standard circle. It is especially important to emphasise that if the word modified is employed with reference to a projection of defined special property, the modification should not destroy this special property. In this interpretation of the term, the projections called after BEHRMANN, GALL (Orthographic) and TRYSTAN EDWARDS are all *Modified cylindrical equal-area projections*. However the word "Modified" cannot distinguish between the three projections listed unless additional information is provided. If this information is presented in the descriptive title, then use of the word becomes superfluous. At best, therefore, the word has little practical value ; at worst, it may be positively misleading.

A typical example of misinforming the user through the use of this word occurs in the description of the projection used by the U. S. Army Map Service for the 1/5,000,000 map of the Moon as a "Modified Stereographic Projection". In fact the geometry of this projection does not correspond to that of the stereographic projection, for it is an external perspective azimuthal projection. Nor is this a conformal projection, as is implied by introducing the name of the conformal member of the azimuthal class of projections (11). In this particular example, therefore, the word "modified" can only be interpreted to mean "transformed out of all recognition".

Even if the nature of a modification is stated more explicitly, as in "Conical . . . projection with two standard parallels", this information may still be inadequate to distinguish the true nature of the projection without ambiguity. It has been known for more than fifty years that there are seven different kinds of relationship between the particular scales along the limiting parallels and some parallel near the centre of any conical projection with two standard parallels (8). Hence further information is needed if it is necessary to distinguish between the seven conformal conical projections, seven equal-area projections and seven equidistant conical projections which are theoretically possible. There are no descriptive terms which can make this distinction without a lengthy explanation, although reference to the location of the standard parallels might provide the map user with a clue to make the distinction. For this reason the positions of the standard parallels should be added to the title. Although this is fairly common practice, maps still appear on which the vital information is lacking.

The problem of ambiguity is equally important in presenting the distinctive characteristics relating to appearance. For example there are five different pseudocylindrical equal-area projections, each with sinusoidal meridians and the poles represented by lines which are one half of the length of the Equator. None of this information, which adds up to a fairly

lengthy description of them, allows unique distinction between the projections attributed to ECKERT, HAMMER, KAVRAISKY (and WAGNER), NELL and WERENSKIOLD, all of which satisfy this description.

It seems, therefore, that the only way of ensuring that the map user can acquaint himself of all the necessary information relating to a given map projection is to provide a reasonably complete descriptive title and to combine this with reference to the author. This practice is, of course, an acknowledged method of distinguishing and naming certain projections. For example, we are familiar with the use of *Lambert Conformal Conical projection with two standard parallels* which, by reference to LAMBERT, immediately distinguishes this conformal projection from those attributed to KAVRAISKY or VITKOVSKY. In English it seems to be a matter of individual preference whether the author's name comes first, as in this example, or is given in some alternative form such as *Truncated pseudocylindrical equal-area projection with sinusoidal meridians (Eckert VI)*. Indeed there seems to be very little logic in the order in which the different elements of the descriptive title may be presented. Common English usage seems to favour the rule "class before property", but the order is reversed for the conformal and minimum error projections. The more elaborate descriptions requiring reference to the nature of the poles and meridians are often presented in a quite random sequence of terms exemplified by *Flat polar quartic authalic projection.* Where should the vital classification word "pseudocylindrical" be introduced in this descriptive title?

An important corollary to the combination of a descriptive name with reference to the author is that the user must have access to some standardised list of the named projections which will provide him with a brief, authoritative distinction between them and which can refer him to the relevant literature. MAURER's catalogue of 257 projections has satisfied this need for more than 30 years but it is now somewhat out-of-date and requires drastic reorganisation to conform to TOBLER's Parametric classification. In this respect, Commission II of the ICA might undertake the preparation of such a catalogue of names and definitions which would be more complete than any national or individual contribution could achieve.

SOME CONCLUSIONS

The author has attempted to summarise the different ways in which map projections have been named and has shown how numerous difficulties arise in the attempt to provide names or titles which are concise, intelligible and unequivocal. *The only positive recommendation which can be made is that use should be made of the descriptive terminology and that to resolve most of the ambiguities this title should be combined with the name of the author of the projection.* In this way the map user who is really in need of further information can refer to the additional sources which he needs.

Many of the difficulties of identification and nomenclature which have been summarised stem from some fairly sophisticated theoretical concepts and some of the fine distinctions between theoretically different projections are barely apparent when the map is plotted.

To what extent, therefore, are these problems of nomenclature significant? Does it really matter what are the particular scale relationships between certain parallels of a conformal conical projection? Is it not sufficient to know that the projection is conical, that it is conformal and that it has two standard parallels? Generalising these questions, we might enquire "Will the map user notice these minor differences, or, for that matter, will he care?"

Although the last of these questions implies some measure of irresponsibility on the part

of the map maker, it is probably true to say that, provided some reasonable choice of projection has been made in the first instance, the only time when the map user is aware of the projection is when he wishes to make quantitative use of a map of chart.

Because of the importance of projections in quantitative map use it is not surprising that the most complete information relating to projections is generally found on navigation charts, aeronautical planning maps and some topographical maps primarily intended for military use. For such users a clear distinction between closely related projections can have practical importance. Yet the distinction between the GAUSS-KRÜGER, GAUSS-SCHREIBER and GAUSS-LABORDE projections is not clear from the use of the term Transverse Mercator projection. Confusion arose during World War I between the TISSOT-HAMMER and the LAMBERT conformal conical projection, so that the Système LAMBERT grid was based upon a projection which was not conformal (12). Any attempt to distinguish between the many different forms of polyhedric projection which have been used as the basis for topographical mapping in different countries and at different times is complicated by the fact that nearly all these variants are inadequately distinguished from one another in the literature relating to them.

As long as a fundamental object of cartography is to produce maps which will satisfy the most critical user, there is need to identify the map base with proper care and at least refer the user who requires them to sources of additional information.

THE TERMINOLOGY OF MAP PROJECTIONS, APPENDIX OF MULTI-LINGUAL LISTS OF TERMS, PART 1: LIST OF NAMED MAP PROJECTIONS

Serial	English	German *	French	Russian
1	Adams' projections	Adams' Kartennetzentwürfe		
1a	Adams' conformal projection of the world enclosed within an ellipse	*	Projection conforme de la sphère entière dans une ellipse de M. O. Adams	Проекция Адамса
1b	Adams' conformal projection of the world enclosed within a square	*	*	*
1c	Adams' (elliptical) orthembadic pseudo-cylindrical projection	*	*	*
1d	Adams' conformal projection of the world enclosed within a regular hexagon	*	*	*
2	Airy's projection	Airys Kartennetzentwurf	Projection compensative d'Airy	Проекция Эйри
3	Aitoff's projection	Aitows Kartennetzentwurf	Transformation d'Aitoff appliquée à la projection méridienne de G. Postel	Проекция Аитова
4	Aitoff-Wagner projection	Aitow-Wagners Kartennetzentwurf / Aitowscher Entwurf mit Pollinie	Projection de Aitoff-Wagner	*
5	Albers' projection	Albers' flächentreue Kegelprojektion mit 2 längentreuen Parallelkreisen / Flächentreuer Schnittkegelrumpfentwurf nach Albers	Projection d'Albers / Tronconique équivalente	Равновеликая коническая проекция Альберса
6	Apianus' projections	Apiansche Kartennetzentwürfe		
6a	Apianus I	Apianus I	Projection d'Apianus	?
6b	Apianus II	Abstandsgleicher unechtzylindrischer Entwurf mit elliptischen Meridianen / Netz des Apianus / Lotters Kartennetzentwurf / Apianus II	Projection de l'astronomie populaire d'Arago	
7	Approximately equidistant conical projection (Krasovsky II)	*	*	Коническая равнопромежуточная проекция Красовского

Serial no.	English	German *	French	Russian
8	Approximately equidistant minimum error conical projection (Krasovsky III)	*	*	Коническая равнопромежуточная проекция Красовского, наилучше / приспособления для изображения данной страны
9	Approximately equidistant minimum error conical projection (Murdoch III)	Murdoch III	Troisième projection de Murdoch	*
10	Arago's projection See (6b)	Aragos Kartennetzentwurf s. o. (6b)	v. (6b)	см. (6b)
11	Armadillo projection	Armadillos Kartennetzentwurf	*	*
12	Army Map Service Lunar projection	Army-Map-Service-Mondkartennetzentwurf	*	*
13	Arnd-Werner eumorphic projection	?	*	*
14	Arnd's star projection	Arnds Projektion / Äquidistante Kegelprojektion	*	*
15	Arrowsmith's projection See (145)	Arrowsmiths Kartennetzentwurf s. u. (145)	v. (145)	см. (145)
16	Atlantis projection	Atlantis Kartennetzentwurf	*	*
17	August's projection	Augusts Kartennetzentwurf / Kieperts Kartennetzentwurf	*	*
18	Azimuthal equal-area projection (Lambert)	Flächentreuer azimutaler Entwurf / Lamberts flächentreue azimutale Abbildung	Projection de Lorgna / projection azimutale équivalente de Lambert	Равновеликая азимутальная проекция Ламберта
19	Azimuthal equidistant projection (Postel)	Postels Kartennetzentwurf / Mittabstandstreuer azimutaler Entwurf	Projection de Guillaume Postel / projection zénithale équidistante / projection centrale à méridiens automécoïques / projection de Hatt (aspect oblique)	Равнопромежуточная азимутальная проекция Постеля/ проекция Постеля
20	Behrmann's projection	Behrmanns Kartennetzentwurf	*	*

Serial no.	English	German *	French	Russian
21	Berghaus' projection	Berghaus' Kartennetzentwurf / Berghaus' Polarsternprojektion	*	*
22	Bipolar oblique conformal conical projection (Miller)	*	*	*
23	Bomford's projection	Bomfords Kartennetzentwurf	*	*
24	Bonne's projection	Bonnes Kegelabbildung / Bonnes Kartennetzentwurf / Abweitungstreuer flächentreuer Kegelentwurf / Merkator-Bonnescher Entwurf	Projection de Bonne / projection dite de Bonne / projection du Dépôt de la Guerre / projection de la Carte de France / projection de Flamsteed modifiée	Проекция Бонна
25	Botley's tetrahedral gnomonic projection	*	*	*
26	Bradley's projection	Bradleys Kartennetzentwurf	*	*
27	Bourdin's projection	Bourdins Kartennetzentwurf	*	*
28	Braun's projections			
28a	Braun's perspective cylindrical projection	Brauns Kartennetzentwurf	Projection stéréographique à cylindre de P. Braun	Стереографическая цилиндрическая проекция Брауна
28b	Modified Mercator projection (Braun) See (138)	s. u. (138)	v. (138)	см. (138)
28c	Perspective conical projection (Braun)	Brauns stereographischer Kegelentwurf	*	*
29	Breusing's projections	Breusings Kartennetzentwurf	*	*
29a	Breusing's projection	Breusings Kartennetzentwurf	Projection de Breusing	Проекция Брейзинга
29b	Breusing (Harmonic) minimum error projection	*	*	Перспективная азимутальная проекция Соловьева с многократным изображениям (стерео-стерео)
30	Briesemeister's projection	Briesemeisters Kartennetzentwurf	Projection de Briesemeister	Проекция Бризмейстера
31	Butterfly map	Schmetterlingskarte (-netzentwurf)	*	*

Serial no.	English	German *	French	Russian
32	Cassini's projection	Cassinis Kartennetzentwurf / Cassini-Soldners Kartennetzentwurf / Transversalplattkarte	Projection de Cassini / projection des cartes plates carrées transverses / projection de Soldner / coordonnées orthogonales de Hatt	Проекция Кассини/проекция Кассини-Зольднера
33	Cassini-Soldner projection See (32)	s. o. (32)	v. (32)	см. (32)
34	Central projection See (90)	s. u. (90)	v. (90)	см. (90)
35	Circular orthomorphic projection See (113b)	s. u. (113b)	v. (113b)	см. (113b)
36	Clarke's perspective azimuthal projections	Clarkes Kartennetzentwürfe	*	*
36a	Minimum error projection for a map of radius 40°	*	*	*
36b	Minimum error projection for a map of radius 54°	*	*	*
36c	Minimum error projection for an hemisphere See (78b)	s. u. (78b)	v. (78b)	см. (78b)
36d	Minimum error projection for a map of radius 108°	*	*	*
36e	Minimum error projection for a map of radius 115½°	*	Projection du capitaine Clarke	*
37	Collignon's projection	Collignons Kartennetzentwurf / Collignons äquivalente Projektion	Projection méricylindrique à méridiens rectilignes et à contour carré	?
38	Conformal conical projection with one standard parallel (Lambert)	Lamberts winkeltreue Kegelabbildung mit 1 längentreuen Horizontalkreis	Projection conique conforme de Lambert (projection à cône tangent)	Равноугольная коническая проекция Ламберта (на касательном конусе)
39	Conformal conical projection with two standard parallels (Lambert)	Winkeltreue Kegelabbildung mit 2 längentreuen Parallel-(Horizontal-)kreisen / Lambert-Gaußscher Kartennetzentwurf / Winkeltreue Kegelabbildung mit 2 längentreuen Bezugsbreitenkreisen	Projection conique conforme de Lambert (projection à cône sécant)	Равноугольная коническая проекция Ламберта (на секущем конусе)

Serial no.	English	German *	French	Russian
40	Conformal conical projection with two standard parallels (Kavraisky III)	*	*	Равноугольная коническая проекция Каврайского (1934)
41	Conformal conical projection with two standard parallels (Vitkovsky III)	*	*	Равноугольная коническая проекция В. В. Витковского
42	Conformal projection of the world within a two-cusped epicy – cloid (August) See (17)	s. o. (17)	v. (17)	см. (17)
43	Conical equal-area projection with one standard parallel (Lambert)	Flächentreuer Kegelentwurf mit längentreuem Mittelparallel mit dem Pol als Punkt / Lamberts flächentreue Kegelprojektion mit längentreuem Mittelparallel	Projection conique équivalente de Lambert	Равновеликая коническая проекция Ламберта (на касательном конусе)
44	Conical equal-area projection with two standard parallels (Albers) See (5)	s. o. (5)	v. (5)	см. (5)
45	Conical equal-area projection with two standard parallels (Krasovsky I)	*	*	Равновеликая коническая проекция Красовского
46	Conical equal-area projection with two standard parallels (Tissot)	Zöppritz' Kartennetzentwurf	Projection conique équivalente périgonale	Равновеликая коническая проекция Тиссо
47	Conical equal-area projection with two standard parallels (Vitkovsky II)	*	*	Равновеликая коническая проекция Витковского
48	Conical equidistant projection with one standard parallel (Ptolemy)	Abstandstreuer Kegelentwurf mit 1 längentreuen Parallelkreis / Einfacher Kegelkartennetzentwurf / Abstandstreuer Kegelentwurf auf den Berührungskegel	Projection conique simple (avec un parallèle d'échelle conservée)	Простая коническая проекция

Serial no.	English	German *	French	Russian
49	Conical equidistant projection with two standard parallels (Delisle)	Delisles mittabstandstreue Kegelprojektion / Delisles Kartennetzentwurf / Abstandstreuer Kegelentwurf mit 2 längentreuen Parallelkreisen / Abstandstreuer Schnittkegelentwurf / Delisles Schnittkegelprojektion mit 2 längentreuen Parallelen	Projection de Delisle / Conique équidistante avec 2 parallèles d'échelle conservée	Проекция Делила/ равнопромежуточная коническая проекция с двумя стандартными параллелями (на секущем конусе)
50	Conical equidistant projection with two standard parallels (Euler)	Eulers Kartennetzentwurf	*	Проекция Эйлера
51	Conical equidistant projection with two standard parallels (Kavraisky II)	*	*	Равнопромежуточная коническая проекция В. В. Каврайского
52	Conical equidistant projection with one standard parallel (Mendeleev)	*	*	Проекция Менделеева
53	Conical equidistant projection with two standard parallels (Mikhailov)	*	*	Проекция Михайлова
54	Conical equidistant projection with two standard parallels (Murdoch I)	Murdoch I	Première projection de Murdoch	*
55	Conical equidistant projection with two standard parallels (Vitkovsky I)	*	*	Равнопромежуточная коническая проекция В. В. Витковского
56	Conical orthomorphic projection with two standard parallels See (39)	s. o. (39)	v. (39)	см. (39)
57	Craig's retroazimuthal projection See (123)	s. u. (123)	v. (123)	см. (123)
58	Craster's cylindrical equal-area projection	*	*	*
59	Craster's parabolic equal-area projection See (151)	s. u. (151)	v. (151)	см. (151)

Serial no.	English	German *	French	Russian
60	Cylindrical equal-area projection (Lambert)	Flächentreuer Zylinderentwurf mit längentreuem Äquator / Lamberts flächentreue Zylinderprojektion	Projection cylindrique équivalente de Lambert / projection isocylindrique	Равновеликая цилиндрическая проекция Ламберта
61	Cylindrical equal-area projection with two standard parallels See (135)	s. u. (135)	v. (135)	см. (135)
62	Cylindrical equidistant projection See (157)	s. u. (157)	v. (157)	см. (157)
63	Cubic development of the gnomonic projection	*	Projection gnomonique sur le cube	*
64	Denoyer's semi-elliptical projection	*	*	*
65	Donny's projection See (213)	s. u. (213)	v. (213)	см. (213)
66	Doubly equidistant projection See (223)	s. u. (223)	v. (223)	см. (223)
67	Doubly periodic projection of the sphere (Guyou) See (94)	s. u. (94)	v. (94)	см. (94)
68	Dymaxion projection	Dymaxions Kartennetzentwurf	*	*
69	Eckert's projections	Eckerts Kartennetzentwürfe / M. Eckerts abweitungsgleiche Polarogkoide	Projections d'Eckert	Проекции Эккерта
69a	Eckert I	Eckert I / Eckerts (trapezförmige) Erdkarte 1 / Eckerts Trapezentwurf I	*	*
69b	Eckert II	Eckert II / Eckerts (trapezförmige) flächentreue Erdkarte 2 / Eckerts Trapezentwurf II	*	*
69c	Eckert III	Eckert III / Eckerts Erdkarte 3 (mit elliptischen Meridianen) / Eckerts Ellipsenentwurf III	Projection d'Ortelius / Projection d'Eckert III	*
69d	Eckert IV	Eckert IV / Eckerts Erdkarte 4 (flächentreu, mit elliptischen Meridianen) / Eckerts Ellipsenentwurf IV	*	*

Serial no.	English	German *	French	Russian
69e	Eckert V	Eckert V / Eckerts Erdkarte 5 (mit sinuslinigen Meridianen) / Eckerts Sinuslinienentwurf V	*	*
69f	Eckert VI	Eckert VI / Eckerts flächentreue Erdkarte 6 (mit sinuslinigen Meridianen) / Eckerts Sinuslinienentwurf VI	*	Проекция Эккерта (Шестой)/синусоидальная равновеликая проекция Эккерта/проекция БСАМ
70	Eckert-Greiffendorf's projection	Flächentreue (azimutaloide) Erdkarte	*	*
71	Eisenlohr's projection	Eisenlohrs Kartennetzentwurf	*	Проекция Эйзенлора
72	Equal-area projection of the World on the icosahedron (Bradley) See (26)	s. o. (26)	v. (26)	см. (26)
73	Euler's projection See (50)	s. o. (50)	v. (50)	см. (50)
74	Eumorphic projection (Boggs)	Eumorphischer Kartennetzentwurf / Boggs' Kartennetzentwurf?	*	*
75	Everett's projection	Everetts Kartennetzentwurf	*	*
76	Fawcett's projections	*	*	*
77	Finaeus' projection	Finäus' Kartennetzentwurf	*	*
78	Fiorini's projections	Fiorinis Kartennetzentwürfe	*	*
78a	Conformal hyperbolic polyconic projection	*	*	*
78b	Minimum error azimuthal projection for a hemisphere See (36c)	*	*	*
79	Fischer's projection	Fischers Kartennetzentwurf	*	*
80	* (Equal-area pseudocylindrical projection with elliptical meridians derived from elliptical integrals)	Flächentreue Plattkarte (Mayr)	*	*

Serial no.	English	German *	French	Russian
81	Flat polar modified sinusoidal authalic projection No. 3 (McBryde and Thomas)	*	*	*
82	Flat polar parabolic authalic projection No. 5 (McBryde and Thomas)	*	*	*
83	Flat polar quartic authalic No. 4 (McBryde and Thomas)	*	*	*
84	Fournier's projections	Fourniers Kartennetzentwürfe	*	*
84a	Fournier I	Fournier I	Première projection de P. Fournier	*
84b	Fournier II	Fournier II	Seconde projection de P. Fournier	*
85	Frye's projection	*	*	*
86	Gall's projections			
86a	Gall's (stereographic) projection	Galls Kartennetzentwurf	Projection de Gall	Цилиндрическая проекция Голла/ проекция БСАМ
86b	Gall's isographic projection See (135)	s. u. (135)	v. (135)	см. (135)
86c	Gall's orthographic projection	*	*	*
87	Gauss' projections	Gaußens Kartennetzentwürfe		
87a	Gauss-Boaga projection	Gauß-Boaga Kartennetzentwurf	Projection de Gauss-Boaga	Проекция Гаусса-Боага
87b	Gauss-Krüger projection	Gauß-Krüger Kartennetzentwurf	Projection de Gauss-Krüger	Проекция Гаусса-Крюгера
87c	Gauss-Laborde projection	Gauß-Laborde Kartennetzentwurf	Projection de Gauss-Laborde	*
87d	Gauss-Schreiber projection	Gauß-Schreiber Kartennetzentwurf	Projection de Gauss-Schreiber	*
87e	See (38 and 39)	s. o. (38 u. 39)	v. (38 et 39)	см. (38 и 39)
88	Ginsburg's projections	Ginzburgs Kartennetzentwürfe		
88a	Ginsburg I	*	*	Азимутальная проекция Гинзбурга

Serial no.	English	German *	French	Russian
88b	Ginsburg II	*	*	Азимутальная проекция с небольшими искажениями площадей для карт полушарий
88c	Ginsburg III	*	*	Псевдоазимутальная проекция ЦНИИГАиК (с овальными изоколами)
88d	Ginsburg IV	*	*	Поликоническая проекция ЦНИИГАиК (1939—1949)
88e	Ginsburg V	*	*	Поликоническая проекция ЦНИИГАиК (1950)
88f	Ginsburg VI	*	*	Поликоническая проекция ЦНИИГАиК (БСЭ)
88g	Ginsburg VII	*	*	Поликоническая проекция ЦНИИГАиК (1954)
88h	Ginsburg VIII	*	*	Псевдоцилиндрическая проекция ЦНИИГАиК (1944)
89	Glareanus's projection	Glareanus' Kartennetzentwurf	Projection de Loritz	*
90	Gnomonic projection	Gnomonischer Kartennetzentwurf / Zentralprojektion / Mittensichtiger Kartennetzentwurf	Projection gnomonique	Гномоническая проекция/ центральная проекция
91	Goode's homalographic projection See (100)	s. u. (100)	v. (100)	см. (100)
92	Gretschel's projection	Gretschels Kartennetzentwurf	Perspective périmécoïque	*
93	*	Grolls Kartennetzentwurf	*	*
94	Guyou's projection	Guyous Kartennetzentwurf	Projection conforme doublement périodique de Guyou	Проекция Гюйу
95	Hamilton's star projection	*	*	*

Serial no.	English	German *	French	Russian
96	Hammer-Aitoff projection	Hammer-Aitows Kartennetzentwurf Hammers Entwurf	Projection de Hammer-Aitoff / transformation de Hammer-Aitoff appliquée à la projection de Lorgna (aspect méridienne)	Проекция Аитова-Гаммера
97	Hammer-Wagner projection	Hammer-Wagners Kartennetzentwurf / Hammers Entwurf mit Pollinie	*	*
98	Hammer's projections	Hammers Kartennetzentwürfe	*	*
99	Herz's projection	Herzens Kartennetzentwurf	*	*
100	Homalographic projection	Homalographischer Kartennetzentwurf / Goodes Kartennetzentwurf	Projection homalographique de Goode	Проекция Гуда
101	Homeotheric projection See (176b)	s. u. (176b)	v. (176b)	см. (176 b)
102	Homolosine projection	Homolosiner Kartennetzentwurf	*	Проекция гомолосин
103	Hyperbolic projection	Hyperbolischer Kartennetzentwurf	*	*
104	Hyperbolic Cassini projection	Hyperbolischer Cassini Kartennetzentwurf	*	*
105	International Map projection	IWK-Kartennetz-entwurf / Modifizierte polykonische Projektion	Projection polyconique modifiée de la Carte Internationale du Monde au 1 000 000e	Видоизменная поликоническая проекция
106	Jäger's projection	Jägers Kartennetz-entwurf / Jäger-Petermanns sternförmige Projektion	*	*
107	James's projection See (199)	s. u. (199)	v. (199)	см. (199)
108	Kamenetsky's projection	Kamenetskys Kartennetzentwurf	*	Проекция Каменецкого
109	Kavraisky's projections	Kawraiskys Kartennetzentwürfe	*	*
109a	Kavraisky I	*	*	Составная цилиндрическая проекция В .В. Каврайского
109b	Kavraisky II See (51)	s. o. (51)	v. (51)	см. (51)

Serial no.	English	German *	French	Russian
109c	Kavraisky III See 40)	s. o. (40)	v. (40)	см. (40)
109d	Kavraisky IV See (131)	s. u. (131)	v. (131)	см. (131)
109e	Kavraisky V	*	*	Равновеликая псевдоцилиндрическая проекция Каврайского
109f	Kavraisky VI	Unechtzylindrischer flächentreuer Entwurf mit sinuslinigen Meridianen und Pollinie (Wagner)	*	Равновеликая псевдоцилиндрическая синусоидальная проекция Каврайского
109g	Kavraisky VII	*	*	Произвольная псевдоцилиндрическая эллиптическая проекция Каврайского (со 120-градусным круговым меридианом)
110	Kite projection	*	*	*
111	Krasovsky's projections	Krasowskys Kartennetzentwürfe	*	
111a	Krasovsky I See (45)	s. o. (45)	v. (45)	см. (45)
111b	Krasovsky II See (7)	s. o. (7)	v. (7)	см. (7)
111c	Krasovsky III See (8)	s. o. (8)	v. (8)	см. (8)
112	Laborde's projection	Labordes Kartennetzentwurf	Projection de Laborde	*
113	Lagrange's projections	Lagranges Kartennetzentwürfe	Projections de Lagrange	*
113a	Oblique double circular conformal projection of the world (Lagrange)	*	?	*
113b	Conformal projection of the world in a circle centred on the Equator (Lagrange)	Lagranges Entwurf	Projection de Lagrange	Равноугольная проекция Лагранжа
114	(de) La Hire's projection	La Hires Kartennetzentwurf	Projection de la Hire	Проекция Лаира
115	Lambert's projections	Lamberts Kartennetzentwürfe	*	
115a	Azimuthal equal-area projection (See (18)	s. o. (18)	v. (18)	см. (18)
115b	Conformal conical projection with 1 standard parallel See (38)	s. o. (38)	v. (38)	см. (38)

Serial no.	English	German *	French	Russian
115c	Conformal conical projection with 2 standard parallels See (39)	s. o. (39)	v. (39)	см. (39)
115d	Conical equal-area projection with 1 standard parallel See (43)	s. o. (43)	v. (43)	см. (43)
115e	Cylindrical equal-area projection See (60)	s. o. (60)	v. (60)	см. (60)
116	*	*	Projection de Lecoq	*
117	Le Testu's projections	Le Testus Kartennetzentwürfe	*	*
118	Lidman's projection	Lidmans Kartennetzentwurf	*	*
119	Littrow's projection	Littrows Kartennetzentwurf / Littrow-Lamberts Kartennetzentwurf / Littrowscher Entwurf / Lambert-Littrowsche Azimutmeßkarte	Projection conforme de Littrow	Проекция Литтрова
120	Loritz's projection See (89)	s. o. (89)	v. (89)	см. (89)
121	Lotus projection	Lotus-Kartennetzentwurf	*	Проекция Лотос
122	Lowry's projection	Lowrys Kartennetzentwurf	*	*
123	Mecca retroazimuthal projection (Craig)	Mekka-Kartennetzentwurf / Quibla-Kartennetzentwurf / Craigs Kartennetzentwurf	*	*
124	Mendeleev's projection See (52)	s. o. (52)	v. (52)	см. (52)
125	Mercator's projection	Winkeltreue Zylinderprojektion (Merkator) / Merkators Kartennetzentwurf / Merkatorprojektion	Projection de Mercator	Проекция Меркатора
126	Meridian central projection See (90)	s. o. (90)	v. (90)	см. (90)
127	Mikhailov's projection See (53)	s. o. (53)	v. (53)	см. (53)
128	Millers's projections	Millers Kartennetzentwürfe	*	*

Serial no.	English	German *	French	Russian
128a	Bipolar oblique conformal conical projection See (22)	s. o. (22)	v. (22)	см. (22)
128b	Miller's cylindrical projections	*	Projections cylindriques de Miller	*
128c	Miller's conformal transformation of the oblique aspect stereographic projection	*	*	*
129	Minimum error conformal conical projection with two standard parallels (Zinger I)	*	*	Равноугольная коническая проекция Цингера с наименьшим средним квадратическим искажением длин на территории данной страны
130	Minimum error equal-area conical projection with two standard parallels (Zinger II)	*	*	Равновеликая коническая проекция Цингера с наименьшим средним квадратическим искажением длин на территории данной страны
131	Minimum error equidistant conical projection with two standard parallels (Kavraisky IV)	*	*	Равнопромежуточная коническая проекция В. В. Каврайского с наименьшим средним квадратическим искажением длин в пределах изображаемой территории
132	Modified Adams's authalic pseudocylindrical projection See (83)	s. o. (83)	v. (83)	см. (83)
133	Modified authalic pseudocylindrical projection No. 1 (McBryde and Thomas)	*	*	*
134	Modified authalic pseudocylindrical projection No. 2 (McBryde and Thomas)	*	*	*

Serial no.	English	German *	French	Russian
135	Modified plate carrée projection	Rechteckige Plattkarte / Marinus' Kartennetzentwurf	Projection des cartes plates parallélogrammétriques	Равнопромежуточная цилиндрическая проекция с двумя стандартными параллелями
136	Modified polyconic projection (IMW) See (105)	s. o. (105)	v. (105)	см. (105)
137	Modified Mercator projection (Miller) See (128b)	s. o. (128b)	v. (128b)	см. (128 b)
138	Modified Mercator projection (Braun)	*	Projection de Mercator modifiée de P. Braun	*
139	Modified rectangular polyconic projection See (179)	s. u. (179)	v. (179)	см. (179)
140	Mollweide's projection	Mollweides Kartennetzentwurf / Flächentreuer unechtzylindrischer Entwurf mit elliptischen Meridianen (Mollweides Entwurf) / Babinets Kartennetzentwurf	Projection de Mollweide / projection homalographique de Babinet	Проекция Мольвейде
141	Müller's star projection	Müllers Projektion (modifiziert)	*	*
142	Murdoch's projections	Murdochs Kartennetzentwürfe	*	*
142a	Murdoch's first projection See (54)	s. o. (54)	v. (54)	см. (54)
142b	Murdoch's second projection See (155)	s. u. (155)	v. (155)	см. (155)
142c	Murdoch's third projection See (9)	s. o. (9)	v. (9)	см. (9)
143	Nell's projections	Nells Kartennetzentwürfe	*	*
143a	Nell's modified globular projection	Nells vermittelndes Kreisnetz / Nells modifizierte Globularprojektion	*	Круговая проекция Нелла
143b	Combined equal-area projection from Bonne's and Lambert's conical equal area projection	Nellscher Entwurf	*	*

Serial no.	English	German *	French	Russian
143c	Combined equal-area flat polar pseudo-cylindrical projection from Sanson Flamsteed and Cylindrical equal-area projections	Nellscher Entwurf	*	*
144	*	Neys Kartennetzentwurf	*	*
145	Nicolosi's projection	Nicolosis Kartennetzentwurf / Englischer Kartennetzentwurf / Arrowsmiths Kartennetzentwurf / Bouthillier de Beaumonts Kartennetzentwurf / Globularprojektion von Nicolosi	Projection globulaire de Nicolosi	Шаровая (глобулярная) проекция Николози
146	Nordic projection	Nordischer Kartennetzentwurf	Projection nordique de Bartholomew	*
147	Octahedral gnomonic projection	*	*	*
148	Orthodromic , projection	Orthodromischer Kartennetzentwurf / Doppelazimutaler gnomonischer Entwurf / Maurers Kartennetzentwurf?	Projection d'Immler	*
149	Orthographic projection	Orthographischer Kartennetzentwurf / Parallelprojektion / Fernsichtiger Kartennetzentwurf / Appolonius' Kartennetzentwurf?	Projection orthographique	Ортографическая проекция
150	Oxford projection	Oxfordkartennetzentwurf	*	*
151	Parabolic equal-area projection (Craster)	Parabolischer Kartennetzentwurf / Crasters Kartennetzentwurf	*	*
152	Parent's projections	Parents Kartennetzentwürfe		
152a	Parent I	Parent I	Première projection de Parent	*
152b	Parent II	Parent II	Deuxième projection de Parent	*
152c	Parent III	Parent III	Troisième projection de Parent	*
153	Peirce's projection	Peirces Kartennetzentwurf	Projection conforme en quinconce de Peirce	Проекция Пирса

Serial no.	English	German *	French	Russian
154	Perspective conical projection	Zentraler Kegelentwurf	Projection conique centrale / développement de perspective gnomonique épiconique	*
155	Perspective conical projection (Murdoch II)	Murdoch II	Deuxième projection de Murdoch	*
156	Petermann's projection	Petermanns Kartennetzentwurf	Projection etoilée de Petermann	*
157	Plate carrée projection	Quadratischer Plattkartennetzentwurf / Quadratische Plattkarte / Thornes Kartennetzentwurf	Projection des cartes plates carrées / cylindrique équidistante carrée	Простая цилиндрическая проекция/квадратная проекция
158	Polar equal-area projection (Goode)	*	*	*
159	Polygnomonic projections	Polygnomonische Kartennetzentwürfe	Projections gnomoniques sur des polyèdres	*
160	Polyhedric projections	Polyedrische Kartennetzentwürfe	Projections polyédriques	
160a		Preußische Polyederprojektion	Projection polyédrique prussienne	
160b			Projection de la Carte de France au 100 000e	
160c			Projection naturelle de la Carte d'Espagne au 50 000e	
160d				Проекция (способа) Мюфлинга
161	Postel's projection See (19)	s. o. (19)	v. (19)	см. (19)
162	Potter's tetrahedral gnomonic projection	*	*	*
163	(de) Prépetit-Foucaut's projection	De Prépetit-Foucauts Kartennetzentwurf	Projection dite stéréographique équivalente de de Prépetit-Foucaut	*
164	Pseudocylindrical equal-area projection with elliptical-arc meridians (Putnins P_2)	*	*	*
165	Pseudocylindrical equal-area projection with elliptical-arc meridians and pole line (Putnins P'_2)	*	*	*

Serial no.	English	German *	French	Russian
166	Pseudocylindrical equal-area projection with elliptical meridians and pole line (Wagner)	Unechtzylindrischer flächentreuer Entwurf mit elliptischen Meridianen mit Pollinie	*	*
167	Pseudocylindrical equal-area projection with sinusoidal meridians and pole line (Hammer)	Hammers Kartennetzentwurf	*	*
168	Pseudocylindrical equal-area projection with sinusoidal meridians and pole line (Nell) See (143c)	s. o. (143c)	v. (143c)	см. (143 c)
169	Pseudocylindrical equal-area projection with sinusoidal meridians (Tissot)	*	Projection méricylindrique équivalente à méridiens sinusoïdaux qui est périgonale pour un hémisphère	*
170	Pseudocylindrical equal-area projection with sinusoidal meridians and pole line (Wagner) See (109f)	Unechtzylindrischer flächentreuer Entwurf mit sinuslinigen Meridianen und Pollinie s. o. (109f)	v. (109f)	Равновеликая псевдоцилиндрическая синусоидальная проекция Каврайского
171	Pseudocylindrical projection with equidistant parallels and elliptical-arc meridians (Putnins P_1)	*	*	*
172	Pseudocylindrical projection with equidistant parallels, elliptical-arc meridians and pole line (Putnins P'_2)	*	*	*
173	Pseudocylindrical projection with equidistant parallels, sinusoidal meridians and pole line (Wagner)	Abstandsgleicher unechtzylindrischer Entwurf mit sinuslinigen Meridianen und Pollinie	*	*
174	Pseudocylindrical projection with elliptical meridians and pole line with specified distortion of areas (Wagner)	Unechtzylindrischer Entwurf mit elliptischen Meridianen mit Pollinie und vorgeschriebener Flächenverzerrung	*	*

Serial no.	English	German *	French	Russian
175	Pseudocylindrical projection with sinusoidal meridians and pole line with specified distortion of areas (Wagner)	Unechtzylindrischer Entwurf mit sinuslinigen Meridianen mit Pollinie und vorgeschriebener Flächenverzerrung	*	*
176	Ptolemy's projections	Ptolemäische Kartennetzentwürfe	*	*
176a	Conical equidistant projection with one standard parallel See (48)	s. o. (48)	v. (48)	см. (48)
176b	Homeotheric projection with three standard parallels	Ptolemäus II	?	*
177	Putnins projections	*	*	Проекции Путныньша
177a	See (164)	s. o. (164)	v. (164)	см. (164)
177b	See (165)	s. o. (165)	v. (165)	см. (165)
177c	See (171)	s. o. (171)	v. (171)	см. (171)
177d	See (172)	s. o. (172)	v. (172)	см. (172)
177e	See (217)	s. u. (217)	v. (217)	см. (217)
178	Quincunctial projection of the sphere (Pierce) See (153)	s. o. (153)	v. (153)	см. (153)
179	Rectangular polyconic projection	Rechtschnittiger polykonischer Kartennetzentwurf des Britischen War Office	Projection polyconique rectangulaire des Américains	*
180	Rectified skew orthomorphic projection	*	*	*
181	Rectilinear equal-area projection See (37)	s. o. (37)	v. (37)	см. (37)
182	Regional projection (Bartholomew)	*	projection regionale de Bartholomew	*
183	Ruysch's projection	Ruyschs Kartennetzentwurf	*	*
184	Salmanova's projection	*	*	Видоизмененная поликоническая проекция для стенной учебной карты Советского Союза

Serial no.	English	German *	French	Russian
185	Sanson-Flamsteed projection	Merkator-Sansons Kartennetzentwurf / Abweitungstreuer flächentreuer (unecht-) zylindrischer Entwurf / Sanson-Flamsteeds Kartennetzentwurf	Projection sinusoïdale de Sanson ou de Flamsteed	Равновеликая синусоидальная проекция Сансона/ Проекция Сансона
186	Schjerning's projections	Schjernings Kartennetzentwürfe	*	*
187	Schmidt's projections	Schmidts Kartennetzentwurf	*	*
188	Schol's projection	Schols Kartennetzentwurf	*	Проекция Схольса
189	Schoy's projection	Schoys Kartennetzentwurf	*	*
190	Sharpe's projection	*	*	*
191	Simple perspective conical projection See (154)	s. o. (154)	v. (154)	см. (154)
192	Simple perspective cylindrical projection	Zentraler Zylinderentwurf	Projection cylindrique centrale / développement de perspective gnomonique épicylindrique	*
193	Simple conical projection with one standard parallel See (48)	s. o. (48)	v. (48)	см. (48)
194	Simple conical projection with two standard parallels See (49)	s. o. (49)	v. (49)	см. (49)
195	Simple polyconic projection	Polykonischer Kartennetzentwurf / Gewöhnlicher polykonischer Entwurf	Projection polyconique ordinaire du Coast and Geodetic Survey	Простая (Американская) поликоническая проекция / собственно поликоническая проекция
196	Sinu-Mollweide projection (Philbrick)	*	*	*
197	Sinusoidal projection See (185)	s. o. (185)	v. (185)	см. (185)
198	Sir John Herschel's projection	Herschels Kartennetzentwurf	*	*

Serial no.	English	German *	French	Russian
199	Sir Henry James's projection	James' Kartennetzentwurf / Perspektivische externe Projektion von James	Projection de Sir Henry James	*
200	Six-Six projection	*	*	*
201	Soloviev's projections	Solowjews Kartennetzentwürfe	*	
201a	Soloviev I	*	*	Перспективные азимутальные проекции Соловьева с многократным изображениям
201b	Soloviev II	*	*	Перспективно-цилиндрическая проекция Соловьева
201c	Soloviev's modification of Bonne's projection	*	*	Псевдоконическая равновеликая проекция с видоизмененными формулами Бонна разработке Проф. М. Д. Солоьева
202	Stab-Werner projection See (228)	s. u. (228)	v. (228)	см. (228)
203	Steinhauser's projection	Steinhausers Kartennetzentwurf / Steinhausers konoalatischer Entwurf / Steinhausers konopterische Projektion	*	*
204	Stereographic projection	Stereographischer Kartennetzentwurf / Nadirkartennetzentwurf / Allkreisiger Kartennetzentwurf / Hüllensichtiger Kartennetzentwurf / Planisphärischer Kartennetzentwurf	Projection stéréographique	Стереографическая проекция
205	*	*	*	Проекция В. Д. Таича
206	Tetrahedral projection (Bartholomew)	*	*	Проекция тетраэдральная
207	See (157)	Thornes Kartennetzentwurf	v. (157)	см. (157)
208	Times projection	Times-Kartennetzentwurf	*	*

Serial no.	English	German *	French	Russian
209	Tissot-Hammer projection	Tissot-Hammers Kartennetzentwurf „Kegelabwickelung" nach Tissot-Hammer (Maurer)	«Système Lambert de la Service géographique de l'Armée»	*
210	Tissot's projection	Tissots Kartennetzentwürfe		
210a	See (92)	s. o. (92)	v. (92)	см. (92)
210b	Perspective azimuthal projection	Tissot II	Perspective périhalique	*
210c	Perspective azimuthal projections	*	*	*
210d	See (46)	s. o. (46)	v. (46)	см. (46)
210e	See (209)	s. o. (209)	v. (209)	см. (209)
211	Transverse Mercator projection	Gauß-Krügers Kartennetzentwurf / Gauß-Schreiber-Kartennetzentwurf / Gauß-Boaga-Kartennetzentwurf / Gauß-Krüger-Projektion / Querachsige Zylinderprojektion	Projection de Mercator transverse / Projection cylindrique conforme de Lambert / projection de Gauss / projection de Gauss-Krüger / projection de Gauss-Schreiber / projection de Gauss-Boaga	Поперечная цилиндрическая равноугольная проекция Меркатора/проекция Гаусса-Крюгера
212	Trapeziform map See (213)	s. u. (213)	v. (213)	см. (213)
213	Trapezoidal projection	Donis Kartennetzentwurf / Donnys Kartennetzentwurf / Donnus Nicolaus Germanus' Kartennetzentwurf	Projection trapézoïdale / Projection trapeziforme	*
214	Trimetric projection	Trimetrischer Kartennetzentwurf	*	*
215	Tripel projection See (232c)	s. u. (232c)	v. (232c)	см. (232 c)
216	Truncated elliptical equal-area pseudo-cylindrical projection (Werenskiold)	*	*	*
217	Truncated parabolic equal-area pseudo-cylindrical projection (Putnins)	*	*	*
218	Truncated parabolic equal-area pseudo-cylindrical projection (Werenskiold)	*	*	*

Serial no.	English	German *	French	Russian
219	Truncated sinusoidal equal-area pseudo-cylindrical projection (Werenskiold)	*	*	*
220	Trystan Edwards's projection	*	*	*
221	Twilight projection See (36d)	s. o. (36d)	v. (36d)	см. (36 d)
222	Two-point azimuthal projection See (148)	s. o. (148)	v. (148)	см. (148)
223	Two-point equidistant projection (Close)	Doppelabstandstreuer Entwurf	Projection bi-équidistante de Sir Charles Close	*
224	Urmaev's projections	Urmajews Kartennetzentwurf	*	Проекции Урмаева
224a	Urmaev I	*	*	Азимутальная проекция Урмаева
224b	Urmaev II	*	*	Азимутальная проекция Урмаева
224c	Urmaev III	*	*	Произвольная цилиндрическая проекция Урмаева
224d	Urmaev IV	*	*	Равновеликая псевдоцилиндрическая проекция Урмаева
225	Van der Grinten's projections	Van der Grintens Kartennetzentwürfe		
225a	Van der Grinten I	Van der Grinten I	*	Проекция Гринтена
225b	Van der Grinten II	Van der Grinten II	*	*
225c	Van der Grinten III	Van der Grinten III	*	*
255d	Van der Grinten IV	Van der Grintens apfelschnittförmiger Kartennetzentwurf	*	*
226	Vitkovsky's projections	Witkowskys Kartennetzentwürfe	*	Проекции В. В. Витковского
226a	Vitkovsky I See (55)	s. o. (55)	v. (55)	см. (55)
226b	Vitkovsky II See (47)	s. o. (47)	v. (47)	см. (47)
226c	Vitkovsky III See (41)	s. o. (41)	v. (41)	см. (41)
227	War Office projection See (179)	s. o. (179)	v. (179)	см. (179)
228	Werner's projection	Stab-Werners Kartennetzentwurf / Werners Kartennetzentwurf / Werners äquivalente Projektion	Projection de Werner	Проекция Вернера

Serial no.	English	German *	French	Russian
229	Werenskiold's projections	*	*	*
229a	See (216)	s. o. (216)	v. (216)	см. (216)
229b	See (218)	s. o. (218)	v. (218)	см. (218)
229c	See (219)	s. o. (219)	v. (219)	см. (219)
230	Wetch's projection	Wetchs Kartennetzentwurf	*	*
231	Wiechel's projection	Wiechels Kartennetzentwurf	*	*
232	Winkel's projections	Winkels Kartennetzentwürfe / O. Winkels Projektionen		
232a	Winkel I	Winkel I	*	
232b	Winkel II	Winkel II	*	*
232c	Winkel's Tripel projection	Winkel III / Winkels Tripelprojektion	Projection de Winkel	Проекция Винкеля
233	Wollgar's projection	*		*
234	Zinger's projections	Zingers Kartennetzentwürfe	*	Проекция Цингера
234a	See (129)	s. o. (129)	v. (129)	см. (129)
234b	See (130)	s. o. (130)	v. (130)	см. (130)

H. Maurer's catalogue provides information about a further 120 map projections which do not seem to possess distinctive names and which are not listed here.

THE TERMINOLOGY OF MAP PROJECTIONS, APPENDIX OF MULTI-LINGUAL TERMS, PART 2: TERMS RELATING TO THE GEOMETRY OF THE EARTH, THE COMPONENTS, PROPERTIES AND CLASSIFICATION OF MAP PROJECTIONS WITH SOME OF THE COMMON ALGEBRAICAL SYMBOLS USED IN CONTEMPORARY PUBLICATIONS.

Key to symbols used with English rendering of terms:
Syn (xx) = the term is synonymous with the term listed under serial number (xx)
(+) = undesirable term in English
* = no equivalent term known

Where some estimate can be given of the possible introduction of a term, this is signified by the author's name and by a date in brackets.

Serial no.	English	German	French	Russian
1	Absolute minimum error projection (Young, 1920)	*	*	Проекция с наименьшим средним квадратическим искажением длин
2	Angular alteration (+) Melluish, 1951) Syn (4)	s. u. (4)	v. (4)	см. (4)
3	Angular change (+) Syn (4)	s. u. (4)	v. (4)	см. (4)
4	Angular deformation (Robinson, 1953)	Winkelverzerrung / Winkeländerung	Altération angulaire / altération des angles (Tissot, 1881)	Искажения углов (γ)
5	Angular distortion (+) (Maling, 1960) Syn (4)	s. o. (4)	v. (4)	см. (4)
6	Aphylactic projections (+) (Lee, 1944) Syn (8)	s. u. (8)	v. (8)	см. (8)
7	Approximately equidistant projections (Maling, 1960) (h = const, in normal aspect)	Angenähert abstandstreue Kartennetzentwürfe / Kreisabstandsähnliche Kartennetzentwürfe (Maurer, 1935) (?)	*	*
8	Arbitrary projections (+)	*	Projections aphylactiques (Tissot, 1881)	Произвольные проекции
9	Arc of the meridian	Meridianbogen	Arc de méridien / arc d'ellipse méridienne	Дуги меридиана
10	Arc of the parallel	Parallelkreisbogen	Arc de parallèle	Дуги параллели
11	Area deformation (+) Syn (13)	s. u. (13)	v. (13)	см. (13)
12	Area distortion (+) Syn (13)	s. u. (13)	v. (13)	см. (13)

Serial no.	English	German *	French	Russian
13	Area exaggeration (p)	Flächenverzerrung / Flächenreduktion (df'/df)	Altération des surfaces (Tissot, 1881)	Искажения площадей/ увеличением площадей (p)
14	Area scale Syn (13)	s. o. (13)	Echelle superficielle / rapport des surfaces (σ)	Масштаб площадей (p)
15	Aspect (of a map projection)	Lage der Bildflächenachse / Lage der Abbildungsfläche	Aspect d'une projection / position d'une projection	Ориентировка сетка/ориентировка проекция
16	Authalic latitude	Äquivalente Breite	Latitude équivalente (L_E)	Сферические широта при равновеликом изображении земного эллипсоида на шаре (φ'')
17	Authalic projections (Lee, 1944) Syn (55)	s. u. (55)	v. (55)	см. (55)
18	Autogonal projections (+) (Deetz and Adams, 1934) Syn (34)	s. u. (34)	v. (34)	см. (34)
19	Auxiliary latitude (in geodesy)	?	?	Сферические широт при равноугольном, равновеликом и равнопромежуточном изображении земного эллипсоида на шаре
20	Auxiliary latitude (in cartography) (Maling, 1960) (ψ, φ')	Hilfswinkel (Wagner) (ψ, φ')	Latitude auxiliaire (L')	(ψ, φ')
21	Axial projections (+) (Goussinsky, 1953)	*	*	*
22	Azimuth (α, A)	Azimut (β)	Azimut (z)	Азимут (α)
23	Azimuthal projections	Azimutale Kartennetzentwürfe / Radliche Kartennetzentwürfe	Projections azimutales / projections zénithales / projections centrales	Азимутальные проекции
24	Balance of Errors (+) Syn (1)	s. o. (1)	v. (1)	см. (1)
25	Case (of a map projection) (+) Syn (15)	s. o. (15)	v. (15)	см. (15)

Serial no.	English	German *	French	Russian
26	Central meridian	Nullmeridian / Hauptmeridian / Grundmeridian	Méridien centrale / premier méridien	Средний меридиан/центральный меридиан/осевой меридиан
27	Colatitude (χ)	Ergänzung der Polhöhe (δ)	Colatitude (λ)	Дополнение географической широты
28	Central projections (+) (Close and Clarke, 1911) Syn (23)	s. o. (23)	v. (23)	см. (23)
29	Combined projections (Close, 1944)	Mischkartennetzentwürfe / Zwischenentwürfe	*	*
30	Composite projections (Maling, 1966)	Zusammengesetzte Netze (Maurer, 1935)	*	*
31	Compression Syn (54)	s. u. (54)	v. (54)	см. (54)
32	Condensed projections (Robinson, 1953)	*	*	*
33	Conformal latitude Syn (88)	s. u. (88)	v. (88)	см. (88)
34	Conformal projections (a = b)	Winkeltreue Kartennetzentwürfe / Konforme Kartennetzentwürfe	Projections conformes / projections orthomorphiques (Germain, 1865) / projections autogonales (Tissot, 1881)	Равноугольные проекции/конформные проекции
35	Conic projections (+) Syn (36)	s. u. (36)	v. (36)	см. (36)
36	Conical projections	Kegelkartennetzentwürfe / Kegelige (konische) Entwürfe (Maurer, 1935)	Projections coniques	Конические проекции
37	Constant of the cone (n)	Konstante des Kegelentwurfs / Projektionskonstante / Kegelkonstante / Parameter für die Veränderung des Längenunterschiedes zwischen zwei Meridianbildern (Beck) (n)	Coefficient de réduction des longitudes (n)	Коэффициент пропорциональность долгот (α)
38	Contracted projections (Botley, 1954)	*	*	*
39	Conventional projections (+)	Konventionelle Kartennetzentwürfe	Projections non classées / * systèmes conventionnelles	

Serial no.	English	German *	French	Russian
40	Convergence Syn (42)	s. u. (42)	v. (42)	см. (42)
41	Convergency Syn (42)	s. u. (42)	v. (42)	см. (42)
42	Convergence of the meridians (γ)	Meridiankonvergenz (γ)	Convergence des méridiens / angle de convergence (γ)	Сближение меридианов (γ)
43	Cordiform projections (Keuning, 1955)	Herzförmige Kartennetzentwürfe	*	Сердцевидные проекции
44	Cylindric projections (+) (Craig, 1882) Syn (45)	s. u. (45)	v. (45)	см. (45)
45	Cylindrical projections	Zylinderkartennetzentwürfe / Säulige Entwürfe (Maurer, 1935)	Projections cylindriques	Цилиндрические проекции
46	Direct aspect (of a map projection) (Lee, 1944) Syn (117)	s. u. (117)	v. (117)	см. (117)
47	Distortion	Verzerrung	Déformation / altération	Искажение
48	Distortion isopleths (Maling, 1960)	Verzerrungslinien / Äquideformaten (Zöppritz-Bludau)	*	Изоколы
49	Double-point projections (Close, 1922) Syn (196)	s. u. (196)	v. (196)	см. (196)
50	Eccentricity (e)	Exzentrizität (e)	Excentricité (e)	эксцентриситета (e)
51	Ellipse of distortion	Tissotsche Indikatrix / Verzerrungsellipse	Ellipse indicatrice (Tissot, 1881)	эллипс искажений
52	Ellipsoid	Ellipsoid	Ellipsoïde	эллипсоид
53	Elliptical projections (+)	Elliptische Kartennetzentwürfe	*	*
54	Ellipticity (f)	Abplattung (α)	Aplatissement (α)	Полярний сжатие (α)
55	Equal-area projections ($ab = 1$)	Flächentreue Kartennetzentwürfe / äquivalente Abbildungen (Zöppritz-Bludau)	Projections équivalentes / projections authaliques (Tissot, 1881)	Равновеликие проекции/ эквивалентные проекции
56	Equator	Äquator	Équateur	Экватор
57	Equatorial projections (+) Syn (58)	s. u. (58)	v. (58)	см. (58)

Serial no.	English	German *	French	Russian
58	Equatorial aspect (of a map projection) (Lee, 1944)	Äquatorialentwurf / Äquatorständigkeit	Projection équatoriale	Экваториальная проекция
59	Equatorial case (of a map projection) (+) Syn (58)	s. o. (58)	v. (58)	см. (58)
60	Equidistance See (62)	s. u. (62)	v. (62)	см. (62)
61	Equidistant latitude	Äquidistante Breite	?	Сферические широта при равнопромежуточном изображением земного эллипсоида на шаре (φ''')
62	Equidistant projections (h = 1, in normal aspect)	Abstandstreue Kartennetzentwürfe / Mittabstandstreue Kartennetzentwürfe	Projections équidistantes	Равнопромежуточные проекции
63	Equivalence See (55)	s. o. (55)	v. (55)	см. (55)
64	Equivalent latitude Syn (16)	s. o. (16)	v. (16)	см. (16)
65	Equivalent projections Syn (55)	s. o. (55)	v. (55)	см. (55)
66	Eumorphic projections (Boggs, 1929)	Gestalttreue Kartennetzentwürfe	*	*
67	Exceptional points Syn (174)	s. u. (174)	v. (174)	см. (174)
68	External perspective projections (Close and Clarke, 1911)	Außenständig perspektivische Kartennetzentwürfe	*	Внешние перспективные проекции
69	Flat polar projections (McBryde and Thomas, 1949)	Entwürfe mit Pollinie	*	*
70	Flattening Syn (54)	s. o. (54)	v. (54)	см. (54)
71	Free projections (+) (Goussinsky, 1951)	*	*	*
72	Fundamental properties of a map projection (Maling, 1965)	Netzeigenschaften (Maurer, 1935) Haupteigenschaften	Propriétés géométriques générales d'une projection	Вид параллелей и меридианов нормальной сетки
73	Generating globe	Hilfskugel	*	*
74	Geocentric latitude (φ')	Geozentrische Breite (γ)	Latitude géocentrique	Геоцентрическая широта (φ')

Serial no.	English	German *	French	Russian
75	Geodetic latitude (φ)	Geographische Breite (φ)	Latitude géographique (L)	Географическая широта (φ)
76	Geographical coordinates (φ, λ)	Geographische Koordinaten (φ, λ)	Coordonnées géographiques (L, M)	Географические координаты (φ, λ)
77	Geographical poles	Pole / Geographische Pole	Pôles géographiques	Полюс
78	Geometrical projections (+) (Goussinsky, 1951) Syn (130)	s. u. (130)	Projections géométriques v. (130)	см. (130)
79	Globular projections (+ ?) (Arrowsmith, 1794, *sensu stricto;* Keuning, 1955? *sensu lato*)	Kreiskartennetz-entwürfe	Projections sphériques / projections mérisphériques	Круговые проекции
80	Gore	Globussegmente / Meridianstreifen	Fuseau	Часть земной поверхности между двумя меридианов для меридианной полосы глобуса
81	Graticule	Gradnetz / Geographisches Netz / Polnetz (Maurer, 1935)	Canevas géographique / réseau géographique	Географическая сетка
82	Great circle	Großkreis / Orthodrome	Grand cercle / orthodromie	Большой круг/ ортодромия
83	Greenwich Grid (Maclure, 1941)	*	*	*
84	Grid	Gitter / Gitternetz(linien) (des rechtwinklig-ebenen Koordinatensystems)	Quadrillage	сетка координат
85	Hemisphere	Halbkugel	Hémisphère	Полушарие
86	Homalographic projections (+) Syn (55)	s. o. (55)	v. (55)	см. (55)
87	Interrupted projections (+) (Goode, 1919) Syn (160)	s. u. (160)	v. (160)	см. (160)
88	Isometric latitude (ψ)	Isometrische Breite ($\overline{\varphi}$, B)	Latitude isométrique / latitude conforme / latitude croissante / latitude variable de Mercator (?)	Изометрическая широта (φ', ln U)

Serial no.	English	German *	French	Russian
89	Isoperimetric curves (Deetz and Adams, 1945)	*	*	Изопериметрические крив
90	Latitude (φ)	Breite (φ) / Geographische Breite / Höhe	Latitude (L)	Широта (φ)
91	Linear distortion ($1 - \mu$)	Längenverzerrung / Längenreduktion (Kneissl) / Streckenreduktion (Kneissl) (Lv = λ)	Altération des longueurs	Искажение длин (масштаба)
92	Line(s) of zero distortion (Maling, 1960)	*	*	Лини нулевых искажений/линей картографической сетка (?) (Павлов, 1959)
93	Longitude (λ)	Länge (λ) / Geographische Länge	Longitude (M)	Долгота (λ)
94	Loxodrome Syn (164)	s. u. (164)	v. (164)	см. (164)
95	Map projection	Kartennetzentwurf / Abbildung / Kartenprojektion / Entwurf / Projektion	Projection de la carte	(Картографическая) проекция
96	Maximum angular deformation (Robinson, 1953) (ω)	Maximale Winkelverzerrung (ω_m)	Altération angulaire maximum (Tissot, 1881) (2 ω)	Наибольшие искажения углов (ω)
97	Maximum angular distortion (Maling, 1960) Syn (96)	s. o. (96)	v. (96)	см. (96)
98	Maximum particular scale (Maling, 1960) (a)	Hauptverzerrung / Maximale Längenverzerrung / Größte Längenverhältnisse (a)	Le rapport de longueurs maximum / échelle maximum (a)	Наибольшие частний масштаб/ наибольшие искажение длин (a)
99	Maximum linear distortion Syn (98)	s. o. (98)	v. (98)	см. (98)
100	Maximum scale error Syn (98)	s. o. (98)	v. (98)	см. (98)
101	Mean square scale error (Young, 1920) (m)	*	*	Средние квадратические искажение длин
102	Meridian	Meridian / Längenkreis	Méridien	Меридиан
103	Meridional parts	Abstände der Parallelgrade vom Äquator für den Mercatorentwurf (Wagner)	Latitude variable de Mercator (?)	Меридианные части

Serial no.	English	German *	French	Russian
104	Meridional projections (+) Syn (189)	s. u. (189)	v. (189)	см. (189)
105	Minimum error projections (Young, 1920?)	Kleinstfehlerkartennetzentwürfe / Minimumbedingungsentwürfe (Maurer, 1935)	Projections compensatives (?)	*
106	* (Minimum error projections in the sense that the greatest angular deformation within the area mapped is made the minimum value)	Kartennetzentwürfe mit kleinster Winkelverzerrung	Projections périgonales (Tissot, 1881)	Проекции с небольшими искажениями углов
107	* (Minimum error projections in the sense that the greatest area exaggeration within the area mapped is made the minimum value)	Kartennetzentwürfe mit kleinster Flächenverzerrung	Projections périhaliques (Tissot, 1881)	Проекции с небольшими искажениями площадей
108	* (Minimum error projections in the sense that the maximum particular scale within the area mapped is made the minimum value)	Kartennetzentwürfe mit kleinster Längenverzerrung	Projections périmécoïques (Tissot, 1881)	*
109	Minimum particular scale (Maling, 1960) (b)	Kleinste Längenverhältnisse / Hauptverzerrung (b)	Le rapport de longueurs minimum / échelle minimum (b)	Наименьший частный масштаб (b)
110	Miscellaneous projections (+) (Lee, 1944) Syn (59)	s. o. (59)	v. (59)	см. (39)
111	Modified projections (+)	Vermittelnde Kartennetzentwürfe	Projections modifiées	Производные проекции/видоизменённые проекции
112	Multiple perspective azimuthal projections (Maling, 1960)	Vielperspektivische azimutale Kartennetzentwürfe	*	Перспективные проекции с многократными изображениями (Соловьев)
113	Nominal scale (+) Syn (143) (Fisher and Miller, 1944)	s. u. (143)	v. (143)	см. (143)
114	Non-geometric projections (+) (Goussinsky, 1951)	*	*	*

Serial no.	English	German *	French	Russian
115	Non-perspective projections (+)	Nichtperspektivische Kartennetzentwürfe	Projections centrales autres que les perspectives / projections quasi-perspectives (Reignier, 1957)	
116	Normal aspect (of a map projection) (Lee, 1944)	Erdachsiger Kartennetzentwurf / (Maurer, 1935, lists numerous alternatives)	Projection directe / projection normale / aspect directe / aspect normal / position directe / position normale	Нормальная проекция/прямая проекция
117	Normal case (of a map projection) (+) Syn (116)	s. o. (116)	v. (116)	см. (116)
118	Oblique aspect (of a map projection) (Lee, 1944)	Schiefachsiger Kartennetzentwurf / Horizontalprojektion (Maurer, 1935, lists many other alternatives)	Projection oblique / aspect oblique / position oblique / projection sur l'horizon d'un lieu quelconque	Косая проекция/ горизонтальная проекция
119	Oblique case (of a map projection) (+) Syn (118)	s. o. (118)	v. (118)	см. (118)
120	Orthembadic projections (+) (Lenox-Conyngham, 1944) Syn (55)	s. o. (55)	v. (55)	см. (55)
121	Orthoapsidal projections (Raisz, 1943)	Orthoapsidische Kartennetzentwürfe	*	*
122	Orthodromic projections	Orthodromische Kartennetzentwürfe / geradwegige Entwürfe (Maurer, 1935)	Projections orthodromiques	*
123	Orthomorphic projections (+) (Craig, 1882) Syn (34)	s. o. (34)	v. (34)	см. (34)
124	Oval projections (+) (Keuning, 1955)	*	*	*
125	Parallel (of latitude)	Parallelkreis / Breitenkreis	Parallèle géographique	Географическая параллель
126	Parametric classification of map projections (Tobler, 1962)	*	*	*
127	Particular scale (Maling, 1960) (μ, μ_1, μ_2)	Sondermaßstab / Längenverhältnisse	Rapport de longueurs de la projection / échelle locale / échelle d'une projection	Частный масштаб (μ, μ_1, μ_2)

Serial no.	English	German *	French	Russian
128	Perpendicular scale (Young, 1920) ($\mu_1 = k$, in normal aspect)	*	*	Частный масштаб по альмукантарату (μ_2)
129	Perspective centre	Augenpunkt / Projektionszentrum	Point de vue	Точка зрения
130	Perspective projections	Perspektivische Kartennetzentwürfe	Projections perspectives / les perspectives	Перспективные проекции
131	Plane projections (+) (Goussinsky, 1951) Syn (23)	s. o. (23)	v. (23)	см. (23)
132	Point of tangency	Bildhauptpunkt / Berührungspunkt	Point de tangence / point tangent	Точка касания
133	Point(s) of zero distortion (Maling, 1960)	Kartenhauptpunkt	*	Точки нулевых искажений/центральной точкой
134	Polar aspect (of a map projection) (Lee, 1944)	Polarentwurf	Projection polaire / aspect polaire	Полярная проекция
135	Polar case (of a map projection) (+) Syn (134)	s. o. (134)	v. (134)	см. (134)
136	Polar coordinates (r, Θ)	Polarkoordinaten (r, Θ)	Coordonnées polaires (r, Θ)	Полярные координаты (ϱ, δ)
137	Polar projections (+) Syn (134)	s. o. (134)	v. (134)	см. (134)
138	Polyconic projections (Hunt, 1853, *sensu stricto*)	Polykonische Kartennetzentwürfe	Projections polyconiques (Tissot, 1881, *sensu lato*)	Поликонические проекции (в широком понимании)
139	Polycylindrical projections (Goussinsky, 1951) See (141)	s. u. (141)	v. (141)	см. (141)
140	Polygnomonic projections (Fisher and Miller, 1944)	*	Projections gnomoniques sur des polyèdres	*
141	Polysuperficial projections (Goussinsky, 1951)	Mehrmittige Kartennetzentwürfe Polyeder- oder Facettenprojektionen (Vital, 1903) / Vielflächenentwürfe (Maurer, 1935)	Représentations polycentriques	Проекции многолистных номенклатурных карт/ многополосные проекции/многогранные проекции
142	Principal directions (Maling, 1960)	Hauptverzerrungsrichtungen / Hauptrichtungen / Hauptstrahlen	Directions principales / tangentes principales (Tissot, 1881)	Главные направлении

Serial no.	English	German *	French	Russian
145	Principal scale (Maling, 1960) (μ_0)	Hauptmaßstab	Échelle générale / échelle d'une carte	Главный масштаб/ общцый масштаб (μ_0)
144	Principal tangents (Melluish, 1951) Syn (142)	s. o. (142)	v. (142)	см. (142)
145	Projections with total area true (Young, 1920)	Flächengleiche Kartennetzentwürfe / Totalflächentreue Entwürfe	Projections atractozoniques (Tissot, 1881)	*
146	Projective projections (+) (Goussinsky, 1951)	*	*	*
147	Properties (of a map projection) (+) See (72) and (178)	Eigenschaften des Entwurfs / Abbildungseigenschaften s. o. (72) u. s. u. (178)	v. (72) et (178)	Свойства проекции см. (72) и (178)
148	Pseudoazimuthal projections (Maling, 1960)	Unecht azimutale Kartennetzentwürfe	*	Псевдоазимутальные проекции (Гинзбург)
149	Pseudoconical projections (Maling, 1966)	Unecht konische Abbildungen / Unechte Kegelkartennetzentwürfe	Projections mériconiques (Tissot, 1881)	Псевдоконические проекции
150	Pseudoconic projections (+) (Lee, 1944) Syn (149)	s. o. (149)	v. (149)	см. (149)
151	Pseudocordiform projections (Keuning, 1955)	Unechtherzförmige Kartennetzentwürfe	*	*
152	Pseudocylindrical projections (Maling, 1960)	Unechte Zylinderkartennetzentwürfe / Unechtzylindrische Abbildung	Projections méricylindriques (Tissot, 1881)	Псевдоцилиндрические проекции
153	Pseudocylindric projections (+) (Lee, 1944) Syn (152)	s. o. (152)	v. (152)	см. (152)
154	Quadrangle	Geodätisches Viereck (?)	Quadrilatéral géodésique (?)	Геодезический четырёхугольник/ сферическая (сфероидическая) трапеция
155	Radial scale ($\mu_1 = h$, in normal aspect)	*	*	Масштаб по вертикалу (μ_1)
156	Radius (R)	Halbmesser / Radius (R)	Rayon (R)	Радиус (R)

Serial no.	English	German *	French	Russian
157	Radius of curvature of the meridian (ϱ)	Meridianhalbmesser / Meridiankrümmungshalbmesser (M)	Rayon de courbure de méridien (ϱ)	Радиус кривизны меридиана (M)
158	Radius of curvature at right angles to the meridian (ν)	Normalschnittkrümmungshalbmesser / Querkrümmungshalbmesser (N)	Rayon de courbure de la section normale (N)	Радиус кривизны первого вертикала (N)
159	(plane) rectangular coordinates (x, y)	Rechtwinklige (ebene) Koordinaten (x, y) (x′, y′) (Merkel) ($\bar{x}$, $\bar{y}$) (Beck)	Coordonnées planes rectangulaires (x, y)	(плоские) Прямоекции / надрезанаты (x, y)
160	Recentred projections	*	Projections discontinues / projections interrompues	Разорванные проекции надрезанные проекции
161	Relative scale (+) (Close and Clarke, 1911) Syn (127)	s. o. (127)	v. (127)	см. (127)
162	Representative groups (of map projections) (Lee, 1944) (+) Syn (147)	s. o. (147)	v. (147)	см. (147)
163	Retroazimuthal projections (Craig, 1910)	Gegenazimutale Kartennetzentwürfe	*	*
164	Rhumb line	Kursgleiche/ Loxodrome / Schiefläufige Linie	Loxodromie	локсодромия
165	Scale along the meridian (h)	Längenverhältnisse im Meridian (h)	Échelle suivant le méridien (h)	Масштаб по меридиану (m)
166	Scale along the parallel (k)	Längenverhältnisse im Parallel (k)	Échelle suivant le parallèle (k)	Масштаб по параллели (n)
167	Scale error See (91)	(Längen-)Vergrößerungsverhältnisse / Längenreduktion (Kneissl) / Längenverzerrung ($(L_v = \lambda = ds'/ds)$ s. o. (91)	Déformation de longueur v. (91)	Увеличением масштаба/искажение длины см. (91)
168	Scale factor	?	Le coefficient de réduction d'échelle	Редукционный коэффициент/ масштаб по осевому меридиану
169	Secant conical projections	Schnittkegelkartennetzentwürfe	Projections coniques sécantes	Проекции на секущей конусе
170	Semi-geometric projections (+) (Goussinsky, 1951)	*	*	*

Serial no.	English	German *	French	Russian
171	Semi-major axis (a)	Große Halbachse (a)	Demi-grand axe (a)	Большая полуось (a)
172	Semi-minor axis (b)	Kleine Halbachse (b)	Demi-petit axe (b)	Малая полуось (b)
173	Sine series (of pseudocylindrical projections) (Baar, 1947)	*	*	*
174	Singular points	Singuläre Punkte	Points singuliers de la représentation (Tissot, 1881)	*
175	Skew aspect (of a map projection) Syn (118)	s. o. (118)	v. (118)	см. (118)
176	Skew case (of a map projection) (+) Syn (118)	s. o. (118)	v. (118)	см. (118)
177	Small circle	Kleinkreis	Petit cercle	Малый круг
178	Special properties (of a map projection) (Maling, 1960)	Netzfreie Eigenschaften (Maurer, 1935)	*	Свойства по характеру искажений
179	Spherical coordinates (u, v) (z, α)	Sphärische Koordinaten (p, q) (δ, α)	Coordonnées sphériques (Z, D)	Сферические координаты (z, α)
180	Spherical quadrilateral Syn (154)	s. o. (154)	v. (154)	см. (154)
181	Standard circle	*	*	Стандартная круг
182	Standard parallel (φ_0 or φ_1, φ_2)	Längentreuer Horizontalkreis / Längentreuer Breitenkreis / Standardparallele (φ_g, δ_g, φ_m, δ_m)	Parallèle d'échelle conservée (L_0 or L_1, L_2)	Стандартная Параллель (φ_0, φ_1, φ_2)
183	Star-shaped projections	Sternförmige Kartennetzentwürfe	Projections étoilées	Звездчатые проекции
184	Tangent conical projections	Berührungskegelentwürfe	Projections coniques sur le cône tangent	Конические проекции на касательном конусе
185	Tangent series (of pseudocylindrical projections) (Baar, 1947)	*	*	*
186	Tangential scale (+) (Nowicki, 1962) Syn (128)	s. o. (128)	v. (128)	см. (128)

Serial no.	English	German *	French	Russian
187	Tissot's Indicatrix (Melluish, 1931) Syn (51)	s. o. (51)	v. (51)	см. (51)
188	Transformation of coordinates	Koordinaten-umformung	Transformation des coordonnées	Пересчёт координат
189	Transverse aspect (of a map projection) (Lee, 1944)	Querachsiger Kartennetzentwurf (Maurer, 1935, lists many other alternatives)	Projection transverse / aspect transverse / position transverse / aspect méridien / position méridienne	Поперечная проекции
190	Transverse case (of a map projection) (+) Syn (189)	s. o. (189)	v. (189)	см. (189)
191	Transverse scale (+) (Close and Clarke, 1911) Syn (155)	s. o. (155)	v. (155)	см. (155)
192	Tronconic projections (+) (Maling, 1960) Syn (194)	s. u. (194)	v. (194)	см. (194)
193	True scale (+) Syn (143)	s. o. (143)	v. (143)	см. (143)
194	Truncated conical projections (Tobler, 1962)	Schnittkegel-rumpfentwürfe Kegelrumpf-kartennetzentwürfe / Kegelabbildung mit kreisförmigem Polbild	Projections tronconiques	Конические проекции в которых полюс изображается в виде дуги
195	Truncated pseudocylindrical projections (Werenskiold, (1944)	Unechtzylindrische Entwürfe mit Pollinie	*	*
196	Two-point projections (Close, 1922)	Doppelazimutale Entwürfe	*	*
197	Zenithal projections (+) Syn (23)	s. o. (23)	v. (23)	см. (23)
198	* (Pseudocylindrical and pseudoconical projections in which the parallels are equidistantly spaced. Commonly referred to in English as "Equidistant" but not in the strict sense of (62)	Abstandsgleiche Kartennetzentwürfe	*	Проекции сохраняющих масштаб длин по средному меридиан

Serial no.	English	German *	French	Russian
199	* (The special property of preservation of the principal scale along all the parallels of latitude in the normal aspect of the projection—as in the Sanson Flamsteed and Orthographic projections, where k = 1)	Abweitungstreue Kartennetzentwürfe	Projections automécoïques	Проекции равнопромежуточные по параллелям (альмукантаратам)

* In German the terms "Projektion", "Entwurf", "Kartennetzentwurf" have in the past been used as synonyms. In recent years it has been suggested – and it is now common usage – that the general term "Entwurf" (or "Kartennetzentwurf") should be subdivided into "Projektion" (i. e. those projections which are obtained from geometric projection) and "Abbildung" (i. e. those projections which are derived from other transformations). Thus for example, Lambert's cylindrical equal-area projection is called a "Projektion", whereas Mercator's projection is called an "Abbildung".