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NAMING PRINCIPLES

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BRIEF HISTORY

The ISO Recommendation R 704, *Naming principles,* was drawn up by Technical Committee ISO/TC 37, *Terminology (Principles and co-ordination),* the Secretariat of which is held by the Österreichischer Normenausschus (ÖNA).

Work on this question by the Technical Committee began in 1954 and led, in 1963, to the adoption of a Draft ISO Recommendation.

In September 1964, this Draft ISO Recommendation (No. 676) was circulated to all the ISO Member Bodies for enquiry. It was approved, subject to a few modifications of an editorial nature, by the following Member Bodies :

Austria	Ireland	Romania
Chile	Israel	South Africa, Rep. of
Czechoslovakia	Italy	Spain
France	Morocco	Switzerland
Germany	Netherlands	United Kingdom
Greece	Poland	U.S.A.
India	Portugal	

One Member Body opposed the approval of the Draft :

U.S.S.R.

The Draft ISO Recommendation was then submitted by correspondence to the ISO Council which decided, in April 1968, to accept it as an ISO RECOMMENDATION.

FOREWORD

Co-operation and communication between experts engaged in all branches of science and technology are assuming ever-increasing importance as essential conditions for progress, both within each country and between countries. For this exchange to be successful, technical terms should have the same meaning for everyone who uses them. This goal can be achieved only if there is general agreement on the meaning of these terms. Hence the importance of technical vocabularies, in which concepts and terms, as well as their definition, are standardized (terminological standards). It is just such standards which aid to assure mutual understanding.

These vocabularies are prepared by the National Standards Associations and by the Technical Committees of ISO. During the work on terminology carried out by these bodies it quickly became apparent that it was necessary to have directives applicable to any field of knowledge and that it was possible to establish them.

Accordingly, ISO set up a Technical Committee, known as ISO/TC 37, *Terminology (Principles and co-ordination)*, with the mission of finding out and formulating general principles on scientific terminology and terminological lexicography.

The ISO Recommendations prepared by this Technical Committee deal with questions that fall under the following four classes :

1. Vocabulary of terminology;
2. Procedure for preparing national or international standardized vocabularies;
3. National and international standardization of concepts, terms and their definitions : principles for their establishment and criteria of value;
4. Layout of monolingual and multilingual vocabularies, including lexicographical symbols .

The ISO Recommendation included in class 2 deals with guidance in the organization of the work, while the other classes are concerned with technical details.

The following ISO Recommendations have been or will be issued :

Class 1

ISO/R ...,* *Vocabulary of terminology*

Class 2

ISO/R ...,** *Guide for the preparation of classified vocabularies*

Class 3

ISO/R 704, *Naming principles*
ISO/R ...,*** *International unification of concepts and terms*

Class 4

ISO/R ...,**** *Layout of multilingual classified vocabularies*
ISO/R ..., *Layout of monolingual classified vocabularies*
ISO/R ..., *Lexicographical symbols*
ISO/R 639, *Symbols for languages, countries and authorities*

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* At present Draft ISO Recommendation No. 781.
** At present Draft ISO Recommendation No. 792.
*** At present Draft ISO Recommendation No. 1189.
**** At present Draft ISO Recommendation No. 1659.

CONTENTS

SYMBOLS

(V . . .)	Indicates that the preceding term is defined in ISO Recommendation R ...,* *Vocabulary of terminology* under the serial number following the letter V (V = Vocabulary).**
⌜	Beginning of the term (composed of several words) to which the symbol "(V. . .)" following the term belongs.
D	German
E	English
F	French
I	Italian
R	Russian
S	Spanish
Sv	Swedish
USAS	American Standard (USA)
BS	British Standard
IEC	International Electrotechnical Commission
ISA	International Federation of the National Standardizing Associations
NBN	Belgian Standard
NF	French Standard
pNF	Draft French Standard
VSM	Swiss Society of Manufacturers of Machinery

* At present Draft ISO Recommendation No. 781.

** The terms designating the different types of vocabularies and glossaries (see clause 4.1) will appear only in the second edition of the *Vocabulary of terminology*.

ISO Recommendation R 704 April 1968

NAMING PRINCIPLES

INTRODUCTION

This ISO Recommendation deals with questions falling under class 3 mentioned in the Foreword.

Its purpose is to provide those who are dealing with the terminology in any scientific or technical field with a number of principles designed to help them to unify and standardize concepts and terms or to create new ones.

They are fundamental principles, capable of application to any language.

While the principles in this ISO Recommendation apply to any language, it is desirable that, as far as possible, the concepts and terms thus chosen in the various languages should correspond closely to one another. The principles designed to achieve this purpose are included in ISO Recommendation R ...,* *International unification of concepts and terms,* which also falls under class 3.

The technical terms of the terminology used to formulate the principles of this ISO Recommendation are defined in ISO Recommendation R ...,** *Vocabulary of terminology.* Reference to this vocabulary is made by superscript letter symbols after each of these terms (see list of symbols on page 6). ISO Recommendation R ...,** *Vocabulary of terminology* falls under class 1 of the items mentioned in the Foreword.

1. SELECTION OF PRINCIPLES

1.1 Choice between conflicting principles (Principle No. 1)

A term (V 31) should meet a large number of requirements. The most important of these are summarized below in the form of principles.

Some of these principles frequently conflict with one another. In such a case, a search should be made for the principle to which priority should be given.

Important special cases. The principle regarding language economy (Principle No. 2) and the principle requiring that an established usage should not be changed (Principle No. 28) without cogent reasons.

Consequently, the present principles apply firstly to new terms and to the selection of the best term among synonyms (V 92).

1.2 Language economy (Principle No. 2)

In forming or using a term (V 31) it should be borne in mind that greater accuracy of expression very often involves less ease in speaking and understanding. Hence, one should not be more precise than the situation requires.

Special cases. Principles No. 11, 17, 18, 24 and 31.

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* At present Draft ISO Recommendation No. 1189.

** At present Draft ISO Recommendation No. 781.

2. CONCEPTS AND DEFINITIONS

2.1 Concepts

2.1.1 *Nature of concepts (Principle No. 3).* It should always be borne in mind that concepts (V 2) cannot be taken for the individual object (V 1) themselves. They are mental constructions serving to classify the individual objects of the inner or outer world by way of a more or less arbitrary "abstraction".

Concepts should not be confounded with terms (V 31) which are the symbols of the concepts and which are also created by man in a more or less arbitrary manner.

2.1.2 *Delimitation of concepts (Principle No. 4).* In creating or defining a new concept (V 2), one should carefully determine the limits of the mental representation of the concept and also its relation to other existing concepts (V 9) within the same system. One should ascertain therefore the genus (V 5), its species (V 6) and the contiguous (neighbouring) concepts, as well as the parts of the object under consideration and the aggregates to which this object belongs.

2.1.3 *Synoptic tables of concepts (Principle No. 5).* It is recommended that the mutual delimitation of concepts (V 2) be illustrated by means of synoptic tables, i.e. by a classified list (V 16) of the concepts or by a graphic representation (V 15) of their genealogical tree.

2.1.4 *Order of preference of equivalent characteristics (Principle No. 6).* The characteristics (V 3) of concepts (V 2) can be considered under two main headings, as follows :

(a) Intrinsic (= inherent) characteristics (V 21), especially those of design (shape and size, material, hardness, etc.).

Examples : *hollow ground* (saw);
straight (saw);
disk (key);
rotating (field).

(b) Extrinsic characteristics (V 22), in particular in technology.

(b1) Characteristics of purpose (V 24) – (application, functioning, scope, location and positioning in an assembly).

Examples : (saw) *for smooth cutting*;
(saw) *for amateurs*;
milling (machine);
rear (wheel).

(b2) Characteristics of origin (V 23) – (method of manufacture; discoverer, describer, inventor; producer, country of origin; supplier).

Examples : *pasteurized* (milk);
Lancashire (boiler);
Woodruff (key);
Ferraris (field).

There is, generally, no doubt from which class the characteristics should be taken in order to form a concept, to define it and to designate it by a term.

Actually, the characteristics are determined in each case by the position which the concept under consideration occupies in the system of concepts (V 9) to which it belongs. In the concept *Ruhr coal,* for instance, the characteristic *Ruhr,* which is a characteristic of origin, cannot be replaced by an intrinsic characteristic such as composition, because this is too complex.

Sometimes, however, the choice is open between several equivalent characteristics (V 25). A *convex lens,* for instance, is always at the same time a *converging lens,* and vice versa.

In this case, it is recommended that consideration be given to the order of the three classes of characteristics as shown above and that, among equivalent characteristics, preference be given to that which comes first in this order.

2.1.4.1 *Justification of the order of preference*

Intrinsic characteristics *(a)* are more convenient than extrinsic characteristics *(b)* because they can be ascertained by inspection, and generally by anyone, as for example by warehouse men and dealers. They are self-sufficient, and a more detailed knowledge as to the purpose *(b1)* or to the origin *(b2)*, is not required.

It is true, however, that intrinsic characteristics *(a)* are better suited to the naming of simple objects than to complex ones. For example, machines should be named in most cases according to their purpose *(b)*.

Purpose *(b1)* offers better characteristics than origin *(b2)* because it generally relates to the essence of a concept, whereas the origin, for instance the person of the inventor, is connected with the nature of the object.

The purpose has the drawback that it is subject to changes without there being a change of intrinsic characteristics.

Origin *(b2)*, as a characteristic, also has a drawback if determined by the name of a person, a legal entity or a geographical location. It is open to doubt whether the indication of origin concerns the product itself or merely the method of manufacture.

Examples :

Do not say	But
F *lame de scie circulaire à coupe lisse* ("circular saw blade for smooth cutting") *(b1)*	F *lame de scie circulaire évidée vers la centre* ("hollow ground circular saw blade") *(a)*
hand saw for amateurs (b1)	*straight-edged hand saw (a)*
sulphuric ether (b2)*	*diethyl ether* BS *(a)*
F *clavette Woodruff* VSM ("*Woodruff* key" USAS, BS; "Whitney key") *(b2)*	F *clavette-disque* NF *clavette disque* N BN ("disk key") *(a)*
F *denture americaine* ("American teeth") *(b2)*	F *denture en BM* ("BM-shaped teeth") *(a)*
Ferraris field (b2)	*rotating field* IEC *(a)*
Kelvin effect IEC *(b2)*	*skin effect* IEC *(a)*

The above examples are terms in which their components (V58) express characteristics.

2.2 Definitions

2.2.1 *Definitions in general*

2.2.1.1 *Definition as a point of departure (Principle No. 7).* In the process of selecting or seeking an appropriate term (V 31) for a concept (V 2) it is essential to achieve clarity concerning the definition of the concept.

For clarifying the concept, its intension (V 4) (i.e. its characteristics (V 3)) and its extensions by abstraction and collection (i.e. its species (V 6) and its parts) have to be determined.

2.2.1.2 *Concordance of definitions (Principle No. 8).* By the definition of a concept (V 2) is meant the determination of the position of that concept within the system of all related concepts (V 9) (see the principle set forth in clause 2.1.2).

Consequently, it is essential to select the characteristics (V 3) to be mentioned in a definition (V 27) so that they delimit the concept against related concepts. Every definition should be established with due regard for all definitions that relate to the same system of concepts. Only by comparing it with other definitions can its full meaning (V 83) be precisely stated.

Example : In some alphabetical dictionaries one can often ascertain that definitions of related concepts do not tally.

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* Diethyl ether is obtained by the action of sulphuric acid on alcohol.

2.2.1.3 *Terms used in a definition (Principle No. 9).* All technical terms (V 31) that appear in a definition (V 27) should be defined in the same or in another reliable publication.

However, the meaning (V 83) of one term should not be defined with the aid of another term, the meaning of which is defined with the aid of the first term, i.e. definitions by cross-reference should be avoided.

2.2.1.4 *Limitation of the scope of a definition (Principle No. 10).* Sometimes a definition (V 27) may be applicable only to a limited number of cases, i.e. it may be valid only for a given publication. In that case, it should be expressly mentioned that the definition is applicable only "for the purpose of this publication (standard, etc.)".

2.2.1.5 *Precision of the definitions (Principle No. 11).* The practical use of a vocabulary should determine the degree of precision sought in the definitions (V 27).

Increasing precision may not only involve greater length of the test (more details), but also lead to the use of more specialized and therefore less well known technical terms (V 31) (see principle stated under clause 2.1.2).

Example : The definition of a mathematical concept (V 2) is bound to be more precise in a text-book on mathematics than in a technical vocabulary.

If, for some reason or other, it is not possible to give a precise or complete definition, at least an approximate one should be given instead ("explanation", "description").

2.2.2 *Definitions by intension*

2.2.2.1 *The nearest genus (Principle No. 12).* The genus (V 5) used for a definition by intension (V 28) should not be simply any genus (V 5) relating to the concept (V 2) defined, but the next wider concept (the nearest genus) that has either been defined already or can be presumed to be generally known.

2.2.2.2 *Incomplete definitions by intension (Principle No. 13).* In establishing an intensional definition (V 28), care should be taken not to omit specific characteristics (V 3).

Example : In dictionaries for general use, one frequently encounters definitions of the following type :

screw = device for fastening, or kind of fastening device.

Such a definition is incomplete, since it does not contain a specific characteristic, i.e. one which distinguishes screws from other fastening elements, such as wedges or rivets, for instance.

An incomplete intensional definition can easily be recognized by the fact that the two sides of the equation cannot be interchanged.

2.2.3 *Definitions by extension*

2.2.3.1 *Value of definitions by extension (Principle No. 14).* Extensional definitions (V 29), unlike intensional definitions (V 28), ("definitions" in the classical meaning (V 28)) can, by their nature, never be exhaustive, since new species (V 6) may be discovered or invented after an extensional definition is established. Extensional definitions vary in the course of time.

Extensional definitions, on the other hand, often convey a clearer picture than intensional ones. They are consequently useful for practical ends, when used either alone or as a complement to an intensional definition.

Example : An English speaking person will take less time to understand the meaning of the word F *clavette* and D *Keil* when, instead of an intensional definition, he is given an extensional definition : *key* or *cotter*.

2.2.4 *Illustrations*

2.2.4.1 *Types of illustrations and their value (Principle No. 15).* Illustrations are often useful to give precision or clarity to a definition (V 27).

The type of illustration to be used varies with the purpose. Illustrations may be either pictorial or diagrammatic, for instance.

Pictures (realistic), either photographs or others, supplement the general definition by showing examples of the class of things defined. Since they are only examples they may be ambiguous. Nevertheless, the use of such illustrations might be useful in many cases.

Example 1 : The picture of a triangular figure might be interpreted as standing for "figure", "triangle" or "scalene triangle".

Example 2 : The various parts of a hammer may be difficult to define exactly and briefly. Less precise definitions, however, would serve the required purpose with the aid of an illustration.

Diagrams supplementing a definition may provide general characteristics of the class of objects defined.

Examples : The graphical symbol for a transformer; a diagram illustrating the connections between windings in a transformer; the genealogical tree of a system of concepts.

3. TERMS

3.1 External form of terms

3.1.1 *Linguistic propriety (Principle No. 16).* Care should be taken that the external form (V 39) of the terms (V 31) suits the language for which they are intended.

3.1.2 *Conciseness of terms (Principle No. 17).* Terms (V 31) should be as concise as possible so long as they can be clearly understood (see principles set forth under clauses 1.2 and 3.2.5).

3.1.3 *Abbreviated terms (Principle No. 18).* New words (V 66) may be formed by abbreviating either a simple word (V 66) or the components (V 58) of a compound word (V 68) or of a phrase (V 72).

Abbreviated terms (V 45) retain either syllables or isolated letters (particularly initials, as in acronyms).

Examples of abbreviation by syllables

full term	abbreviated term
automobile	DEF *auto*, R *avto*, Sv *bil*
omnibus	DE *bus*
D *Oberleitungsomnibus*	D *Obus*
R *avtomobil'nyj obivočnyj material* ("fabric for motor-cars")	R *avtobim*

Examples of abbreviation by acronyms

full term	abbreviated term
radio detecting and ranging	*radar* (international term)
United Nations Educational, Scientific and Cultural Organization	*UNESCO* (international term)

Examples of abbreviation by initials spelled out

full term	abbreviated term
E *International Electrotechnical Commission*	E *IEC*
F *Commission Electrotechnique Internationale*	F *CEI*

The forming or using of abbreviated terms (V 45) should be avoided if the corresponding full terms are sufficiently concise.

Example : The invariable use of spelled out abbreviations like *Kfz*, *Krad* and *Pkw* in the German language instead of the regular words (*Kraft-*) *Fahrzeug*, *Kraftrad*, *Personen(kraft)wagen*.

3.1.4 *Transliteration (Principle No. 19).* If, in a terminological study or in a multilingual vocabulary, it is necessary to write Greek, Slavic, Hebrew or Arabic words (V 66) in the Latin alphabet, the transliteration (V 52) systems recommended by ISO should be used.

So far the following ISO Recommendations are available :

ISO/R 9, *International system for the transliteration of Cyrillic characters;*

ISO/R . . . ,* *Transliteration of Greek into Latin characters;*

ISO/R 259, *Transliteration of Hebrew;*

ISO/R 233, *International system for the transliteration of Arabic characters,*

3.2 Literal meaning of terms

3.2.1 *Correspondence with the definition (Principle No. 20).* The literal meaning (V 54) of a complex (V 56) or transferred (V 80) term should reflect the characteristics (V 3) of the concept (V 2) to be designated or at least it should not contradict them.

3.2.2 *Literal meaning of complex terms (Principle No. 21).* Complex terms (V 56) may be considered as equivalent to abridged definitions (V 27). In other words, complex terms should reflect the combination of concepts (V 2) (characteristics (V 3)) on the base of which they are built, as clearly as is compatible with the chosen degree of abbreviation.

The principles to be followed in forming a complex term are therefore, above all, those governing the formation of definitions (see section 2) and of concepts (see section 1).

A complex term is more or less abridged by comparison with the definition of the concept. In other words, it should, of course, not necessarily include each constituent (V 58) of a combination of concepts shown in the definition, but only those that are needed to distinguish its meaning from related concepts.

3.2.3 *Possibility of forming derivatives (Principle No. 22).* If a new word (V 66) is needed, it should, wherever possible, be constructed in such a way as to permit derivatives (V 69).

Example : The Germanized term D *Fernsprecher* is less suitable than its synonym (V 92) D *Telephon*, since it does not allow the formation of derivatives equivalent to the adjective D *telephonisch* and to the verb D *telephonieren.*

3.2.4 *Complex terms with misleading constituents (Principle No. 23).* Complex terms (V 56) in which the determined constituent (V 76) does not signify the genus (V 5) of the concept (V 2) expressed by the complex term, should be avoided.

Examples :

Do not say	But
v i s viva (in mechanics) (live force)	*kinetic e n e r g y*
number of revolutions	*number of revolutions per unit of time* ~ASA; *speed of rotation* BS, ISA
D *Neu s i l b e r*	D *Argentan*

3.2.5 *Transferred terms (Principle No. 24).* Technical terms (V 32) may be formed by attributing a modified meaning (V 83) to a term current in every-day language or in another subject field, provided this field is sufficiently remote to avoid ambiguity.

A skilfully chosen term with a transferred meaning (V 80) may be more concise than a specially constructed complex term (V 56).

Example :

head (of a key or cotter) = F *talon* (heel)
= D *Nase* (nose)

* At present Draft ISO Recommendation No. 315.