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Harmonization of Terminology - An Overview of Principles

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Harmonization is the process in which diverse positions are largely reconciled and assimilated into a single unified position. In terminology work there are four basic things needing to be harmonized: 1. concepts, 2. concept systems, 3. definitions, and 4. terms. These are briefly discussed, along with the related notions of extension and archetype (intension). Other factors covered include: participation, consensus, required attitudes, tools of explication, and stages of the harmonization process. Although traditional literature has generally focused on multilingual harmonization of terminology, the primary focus here is monolingual. (Author)

1. Introduction

Harmonization is the process in which diverse positions are largely reconciled and assimilated into a single unified position. Given this broad definition, synonyms for harmonization include reaching agreement, conflict resolution, synchronization, unification, etc. We might add standardization to this list, although this term often implies the development of formal documents called standards. Here are some synonyms and their antonyms for the condition of harmony:

<i>Synonyms</i>	<i>Antonyms</i>
harmony	disharmony
agreement	disagreement
compatibility	incompatibility
concordance	discordance
consonance	dissonance
unity	disunity

Harmonization is a very broad concept, applicable far beyond the boundaries of terminology science. In fact the need to harmonize conflicting positions pervades all human activity. Some of the common objects of harmonization are:

- | | | |
|--------------|------------|------------------------|
| - values | - parts | - practices |
| - goals | - inputs | - standards |
| - means | - products | - laws & regulations |
| - budgets | - services | - specifications |
| - procedures | - theories | - tests & measurements |
| - formats | - tactics | - activities |

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2. Harmonization of Terminology

In this article we shall focus on harmonization in terminology work. Here four basic things need to be harmonized:

1. Concepts
2. Concept systems
3. Definitions
4. Term-Concept designations

These are explained shortly. For slightly different conceptions of this list, see Felber (1, p.11) and ISO/R860 (2, p.7).

2.1 Participants in Harmonization

In terminology standardization, participants in the harmonization process are usually members of standards developing committees. Their goal is to develop the harmonized document known as a terminology standard. Similar in function are committees which develop controlled vocabularies for special domains. These are participants at the formal level. However, harmonization is by no means limited to such formal activities. In fact most harmonization occurs informally — for example, between individuals co-authoring an article, between people who frequently communicate, and within the personal lexicons of single individuals. Consequently, virtually everyone participates in the harmonization process.

2.2 Advantages of Harmonization

The main advantages of harmonization are better communication and better terminological products. [See also Strehlow (3)]. Especially with term-concept designations does harmonization foster better communication. The products are the basic objects (concepts, systems, definitions and terms), as well as applications such as terminology databases and glossaries, thesauri, etc. Harmonization and scientific development are closely paralleled. When two conflicting positions become harmonized, the result is often a step in scientific development. This occurs when both positions have some validity and the resulting synthesis is better than either position alone. In summary, the main justifications for harmonization are better communication, better terminological products, and closely related to these, better science in general.

2.3 Monolingual vs. Multilingual Harmonization

As Felber (1) notes, "The endeavour of unification of terminologies ... is not restricted to different languages, it is also applied to one language ..." (p.11). Thus, terminological harmonization has two basic forms — monolingual and multilingual. In the literature most attention has been focused on multilingual harmonization. For example, see ISO/R 860 *International Unification of Concepts and Terms* (2), which is currently being revised and renamed *International Harmonization of Concepts and Terms*.

Sometimes in the literature, *harmonization* is equated with *multilingual harmonization*, with the monolingual dimension being overlooked. For example in the Draft International Standard ISO/DIS 10241 *Preparation and Layout of International Terminology Standards* (4), the statement is made: "One aim of an international terminology standard is to harmonize the concepts, systems of concepts, and the terms of *different languages*." (p.1). [Emphasis is my own.] This statement is true but misses the important function of international terminology standards in promoting monolingual harmonization.

Within the English language there is great need for internal harmonization. Different vocabularies of different individuals, technical committees, subject specialties, schools of thought, et cetera, are all in need of (monolingual) harmonization. In this article we are concerned largely with monolingual harmonization. The language is English but the principles apply to any single language. At the same time they also apply largely to multilingual efforts, for concepts and concept systems are fundamental there too. As ISO 1087 *Terminology - Vocabulary* (5) notes: "Concepts are not bound to particular languages." (p.1)

2.4 Stages of Harmonization

Before we consider how each of the four basic objects are involved in harmonization, a few comments are appropriate on the order or sequence in which each is developed. In the literature [e.g. Sager (6), Wuster (7) and ISO/R 860 (2)] there is general agreement that 1. concepts and concept systems must be developed and harmonized first, 2. definitions are next, and 3. only then can terms be harmonized. Since there is a degree of mutual interdependence among the objects, harmonization is somewhat iterative, though still along the general lines of this model.

3. Harmonization of Concepts

In this paper most attention is given to concepts, rather than concept systems, definitions and terms. The latter are briefly mentioned but must remain topics for further research at this time. Let us begin with the need for explicitness.

3.1 Explication Device

After recognizing disharmony, the next step is summarized in one word — explication. This involves making

positions as clear as possible, so that rationality can prevail. For this goal, three devices are needed: 1. concept description 2. concept exemplification, and 3. graphic representation.

3.1.1 *Concept description* has two facets: formal definitions and non-definitional elaborations. All too often in the literature, elaborations are given without definitions. Since the two are complementary, full explication requires both.

3.1.2 *Exemplification* involves citing elements (examples) in the extension of the concept. Like formal definitions, examples are often neglected in the literature. A common abbreviation of "for example" is e.g. (from the Latin idiom *exempli gratia*). We should take seriously its literal meaning, at your service with examples, and regard the service as fundamental and indispensable. As a practical matter, two or three clear examples seem to be generally sufficient for full explication, although certain well-understood concepts may need no exemplification at all.

3.1.3 *Graphic representation* usually takes the form of network diagrams (flowcharts and semantic networks), although sometimes iconic figures and matrix diagrams are useful. Generally, it is attributive systems (see archetypes below) and generic systems (typologies) which are represented in network diagrams. When full explication of a position is desired, there is much wisdom in the proposition that a diagram can be worth a thousand words.

3.2 Some Definitions

Here are some concept-related definitions which I propose:

concept harmonization

Harmonization involving the extension and archetype of a concept.

concept

A unit of knowledge having an extension, an archetype, and usually one or more names.

extension

The collection of particular elements covered by a concept.

element

A particular member of the extension of a concept. (Syn: member, instance, example, case, token, particular, object, etc.).

archetype (Syn: intension)

The system of attributes which all elements in the extension of a concept have in common.

attribute (Syn: characteristic, property, feature, aspect, quality, etc.)

Note that *concept* is conceived slightly differently from ISO 1087 (5), which gives the following definition:

concept (ISO 1087)

A unit of thought constituted through abstraction on the basis of properties common to a set of objects.

In the ISO definition the *common properties* make up the *archetype* and the *set of objects* is the *extension*. Thus, the two definitions are not as different as they might first appear. As for the unit of knowledge vs. unit of thought, I agree with Dahlberg (8) that a concept is best regarded as a unit of knowledge, since unit of thought implies that a concept is "something subjective, something that is in the head of someone who happens to think it." (8, p.143). The latter is the sense frequently intended in cognitive psychology. For example, see Smith and Medin (9, p.10). However, it is important to distinguish the *psychological concept* from the *epistemological concept*, which might also be called the *terminological* or *taxonomic concept*.

The term *extension* has several different meanings in terminology science. ISO 1087 (5, p.2) defines it as the "Totality of all specific concepts included in a generic concept." In contrast, Sager (6, p.24) states "The range of objects a concept refers to are called its extension." This is the same sense which I use. In addition, ISO 704 (10, p.2) takes extension to mean both. It states: "The totality of all species ... or the totality of objects that have all the characteristics of the concept is called the extension." Clearly there is a need to harmonize the conflicting meanings of extension. This problem, however, is one of harmonizing terms (see 4.3) and should not be confused with the following concept.

3.3 Extensional Harmonization

There are two phases to concept harmonization. First, there must be *extensional harmonization* (agreement about which elements are covered by the concept). When one party holds that a given element is included and another holds that it is not included, there is need for extensional harmonization. Of all the basic objects in terminology work needing harmonization, the extension is first, in the sense that subsequent harmonization is virtually impossible without agreement on a concept's extension. Note that agreement about a concept's extension does not automatically bring agreement about its archetype.

3.4 Archetypal harmonization

is agreement about the common attributes of elements covered by a concept. This includes not only the attributes per se but how they are structured within the archetype system. Whenever there is disagreement about the significance, validity or relative position of an attribute within the archetype, there is need for archetypal harmonization.

Archetype vs. Intension. Here a note is appropriate about my usage of the term *archetype* instead of the widely used *intension*. This usage is not unprecedented and follows Panova and Shreider (11)(12). Archetype has a special meaning in the psychology of C. G. Jung (13) and a related meaning in literary theory (14). However, *archetype* is largely unequivocal within terminology science and classification theory, and it does not have the homophonic problem associated with *intension* and *intention*. These homophones are especially troublesome because in discourse they are likely to be collocated (i.e. used together). In other words, discussions about intentions (archetypes) often involve intentions (intended meanings). Not unexpectedly, the two are sometimes confused in the literature, not to mention in spoken form.

4. Harmonization of Concept Systems, Definitions, and Terms

4.1 Harmonization of concept systems

is agreement about the structure and components of generic or attributive concept systems. We have just mentioned archetypes, a major form of attributive system, so this leaves generic systems (syn: *taxonomies*, *typologies*, *classification systems*, etc.). Whenever there are conflicting typologies for a given application (e.g. Dewey Decimal Classification, Universal Decimal Classification, Library of Congress Classification) there is need for generic harmonization. As noted above (3.1.3) graphic representation, especially with network diagrams, can be very useful in explicating and subsequently harmonizing diverse systems.

4.2 Harmonization of definitions

is agreement about the contents and wording of definitions. Without first agreeing on a concept's extension, archetype, and place within a broader concept system, it is difficult to agree on definitions. Thus, this form is highly dependent upon the previous forms. See also Strehlow (3) and Ellis (15).

4.3 Harmonization of terms

is agreement on 1. the meaning of a term or 2. the name for a concept. In a subject specialty, harmonization is generally needed whenever there is *synonymy* (several names per concept) or *equivocalness* (related concepts having the same name). *Harmonizing term meanings* results in *monosemy* (one concept per term) and *harmonizing concept names* results in *mononymy* (one term per concept).

The following outline summarizes these objects of terminological harmonization.

1. Concepts
 - Extension
 - Archetype
2. Concept systems
 - Generic
 - Attributive

3. Definitions

4. Term-Concept designations

- Term-meaning
- Concept-name

5. Requirements for Harmonization

We have already considered the requirement of explicitness for harmonization. Let us now look at several other important ones: consensus, awareness, motivation, openness, and flexibility.

5.1 Consensus

Harmony and *consensus* are so closely related as to be nearly synonymous. We cannot have one without the other. Nor are the processes of harmonization and building consensus significantly different. Let us consider some formal definitions: The first two are my own and third is taken from IEC/ISO Directives, Part 1 (16).

harmonization

Process in which diverse positions are largely reconciled and assimilated into a single unified position.

harmony

General agreement on substantial issues by different parties.

consensus

General agreement, characterized by the absence of sustained opposition to substantial issues by any important part of the concerned interests and by a process that involves seeking to take into account the views of all parties concern and to reconcile any conflicting arguments. (16, p. 19)

ISO notes that *consensus* need not imply unanimity and holds that agreement by 2/3 of the participants is an operational indicator that consensus has been reached. For certain final stages of the standardization process, a stronger 3/4 consensus is required.

Given the above designations we can say that consensus is more specific in meaning than harmony. In the following scale, according to ISO's operational definition, the top three are forms of consensus, whereas majority and plurality are not.

Grades of Harmony

Unanimity	100 %
3/4 Consensus	75 %
2/3 Consensus	66 %
Majority	51 %
Plurality	— %

5.2 Awareness

Perhaps the most pernicious of all harmonization problems is disharmony that is unrecognized. In such quagmires scientific progress is greatly impeded and miscommunication is certain. The essential first step, then, is to recognize disharmony wherever it exists. Only then can rational steps be taken toward resolution.

5.3 Motivation

Ellis (15) discusses the question of why we do not harmonize definitions. A primary reason, he points out, is that subject specialists "don't have the time or the inclination to harmonize". This is clearly the problem of motivation, and it is solved only when would-be participants become aware of the advantages of harmonization. (See also 2.2 *Advantages* above.)

5.4 Openness

The term *openness* in this context could mean two things. It could refer to the required *attitude* of participants in harmonization to be open and receptive to rational arguments. And it could refer to the requirement of standards-developing bodies that *participation* in the process be *open* to all who are interested. The reasons for the latter are revealing about the nature of effective harmonization.

5.4.1 *Open participation* is justified not only by the ideal of fairness to the individual but also by two practical factors. First, it insures that the best possible product will emerge, for the process is enriched by broad participation. Second, and perhaps equally important, it enlists the support of the general community for having participated. As in any human endeavor, people are more likely to accept and use terminology products which they have helped to develop. This is true of individuals per se but also membership organizations like professional societies, whose participation, commitment, and endorsement are usually crucial in the harmonization process.

5.4.2 *Flexibility*. Some attitudes which are conducive to harmonization are 1. openness or receptivity to rational arguments, 2. willingness to compromise, and 3. viewing the product as more important than any disputed part. In a word, the attitude is *flexibility* — of course, easier said than done.

6. Further Research

In closing let us identify several areas for further research. At a basic level, further understanding of conflict resolution and the nature of *rational argumentation* (logic) will contribute to our understanding of harmonization in general.

Also, we need to understand the *conditions* in which harmonization is possible or impossible. As Dahlberg (8, p.142) and Riggs (17, p.8-9) point out, disciplines of

technology and the natural sciences have a greater disposition to standardize (harmonize) their terminologies than do those of the social sciences. A better understanding of the reasons for this phenomenon will allow us to recognize and differentiate between areas where harmonization is impossible and areas where it is overdue.

Perhaps most importantly, we need a better understanding of the basic objects themselves: *concepts, archetypes, attributes, taxonomies, definitions, terms*, etc. Along with this, we need to develop better *metrics* (18) for objectively evaluating these artifacts.

7. Conclusion

In this article we have only briefly touched upon some basic issues involved in terminology harmonization. We do not have to understand harmonization for it to occur. However, as with other natural activities, understanding allows us to improve our techniques. Of course there is much work to be done before we can claim to have a science of harmonization.

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