

National Information Standards Organization (Ed.): **Guidelines for the construction, format, and management of monolingual thesauri: ANSI/NISO Z39.19-1993**. Bethesda, MD: NISO 1994. ISBN 1-8801224-04-1

Revision of the American national standard for thesaurus construction began in 1988. The new edition of the standard is the work of a committee chaired by Dr. Bella Hass Weinberg, and it bears little formal resemblance to the 1980 Guidelines for thesaurus structure, construction and use which it replaces. While the concise first edition was contained in a total of about 10 pages, the expanded new edition is an impressive document supplemented by an extensive glossary, a large number of useful and non-ambiguous examples, and several informative appendices. Like the other standards for thesaurus development, this one is oriented toward thesauri employed for assignment indexing by humans (as opposed to derivative indexing by machines). The word "use", which appeared in the title of the previous version, has appropriately been deleted from the current title; the scope of the standard does not extend to actual recommendations for the use of the thesaurus after it becomes available, although it does on occasion and provides directions for indexing, e.g. "both descriptors should be assigned to the same document when..." (5-3.1.). The standard applies to the development of monolingual thesauri, and it deals only with the formulation, organization, and display of terms that form a subset of natural language, it is not concerned with headings selected from other types of conventional languages such as mathematical or chemical formulas.

The standard uses the following conventions to indicate the force of its recommendations: *shall* (required for meeting the standard, e.g. "The name of abstract concepts (...) *shall* also be expressed in the singular" (3.5.2.1)), *should* (recommended, e.g. "Each descriptor used in a thesaurus *should* represent a single concept" (3.1)), and *may* (optional, e.g. "Proper names of persons, institutions, organizations, places, and titles *may* be controlled by inclusion in a thesaurus of subject descriptors" (3.6.8.)).

The introduction (Section 1) opens with a general definition of the object "thesaurus" for the purpose of this standard, the "thesaurus is a *controlled vocabulary of terms in natural language* that are designed for postcoordination". This vague definition is less useful, however, than the one found in the Glossary, and to which the underlining of the term "thesaurus" will eventually lead the reader:

"a controlled vocabulary arranged in a known order in which equivalence, homographic, hierarchical, and associative relationships among terms are clearly displayed and identified by relationship indicators which must be employed reciprocally. Its purposes are to promote consistency in the indexing of documents, predominantly for postcoordinated information storage and retrieval systems, and to facilitate searching by linking entry terms with descriptors". (Glossary, p.38).

One will recognize here the most widely accepted definition in the field, a definition which emphasizes nature, form, and purposes of a thesaurus. This standard definition would have been welcome in the introduction.

There are a few significant differences between the recommendations made in 1980 and those made in 1993. The changes have brought the American standard closer in contents to the widely known and used ISO 2788-1986 (*Guidelines for the establishment and development of monolingual thesauri*). In the first edition of the American standard, for example, it was recommended that all terms representing concepts existing in a whole-part relationship be established as related terms (RTs); in 1993, the whole-part relationship has become an acceptable hierarchical relationship for those categories of terms already defined by ISO.

The specific elements of contents of the ANSI/NISO standard are now, for the most part, the same as those appearing in ISO 2788-1986. Main sections are: Scope, form, and choice of descriptors (Sect.3), Compound terms (Sect.4), Relationships (Sect.5), Display (Sect.6), Thesaurus construction (Sect.8), and Maintenance (Sect.9). Each section, however, may differ considerably from the equivalent ISO section in its structure (NISO re-orders the elements of contents, for reasons that are not altogether obvious), its extension (NISO gives more explanations, provides more examples, and integrates up-to-date information), and its wording (NISO uses an updated and more "scientific" terminology, with many terms borrowed from the fields of Linguistics and Terminology).

Those already familiar with ISO-2788 will thus find themselves in well-known territory: ANSI/NISO does not propose radical or even significant changes to existing practice. They will note, however, some interesting additions to the recommended principles and procedures of thesaurus construction. One such addition is the notion of reciprocal scope notes (3.2.2.1). Reciprocal scope notes may be seen as a new way to relate and differentiate descriptors which have closely associated meanings. In a thesaurus using reciprocal scope notes, such as:

information science

X SN library science

the following indicates that the descriptor *information science* appears in the scope note found under the descriptor *library science*.

NISO/ANSI Z39.19-1993 appears more flexible than ISO in its recommended treatment of unique entities, most often represented by proper names. The American standard proposes three ways of dealing with proper names: including them in the topical thesaurus, controlling them in a separate authority file, and not controlling them (3.6.8). The first option has not until now been popular, and most of us have been taught that it was better to maintain the distinction between identifiers (proper names) and descriptors (common nouns). The user of the new standard will note, however, the large number of examples of proper names used to illustrate various recommendations: the working committee was obviously not averse to the idea of integrating proper names into a standard thesaurus structure.

The new standard describes briefly, but quite well, the potential role of machines in thesaurus development. Sections 7 (Screen display) and 10 (thesaurus management systems) are original to this standard; they provide

much welcome guidance for thesaurus specialists wanting to take advantage of contemporary technology.

Section 7 (on screen display) recommends that the needs of each anticipated class of users, defined as thesaurus maintainers, expert users, and end-users, be taken into account in the design of displays. In suggesting ways of presenting information on the screen, it is the capabilities of the new medium that are emphasized: the types of displays (alphabetical, permuted, hierarchical, graphic) remain similar to those displays traditionally recommended for printed editions. Differences between screen and printed displays are noted. In a screen display, for example, a more generous entry vocabulary might be needed (6.1.3). A few examples of screen displays are provided in Appendix A, following numerous examples of traditional displays in existing printed thesauri.

Section 10 offers recommendations for features of thesaurus management software to be used by thesaurus maintainers (typography, sorting, display, searching, editing, error checking, automated cross-referencing, etc.) Although the section brings the standard more in touch with the real needs of contemporary thesaurus designers, it reads like a wish list, it remains very general and one wonders how useful it can really be for software designers. It should be noted in passing that the possibility of using definitions as well as scope notes in a thesaurus, which is not at all evoked in section 3 (Scope, form and choice of descriptors), is presented as a valid option and even as a requirement for thesaurus management systems in section 10 (see 10.10 field definitions).

This reviewer has been particularly impressed with the number, simplicity, and usefulness of the examples provided everywhere they might be needed. Most examples are original to this text. An interesting addition to the body of the standard, is a "Minithesaurus of thesaurus terms" which, as Appendix B, serves as an illustration of several optimal features of thesaurus display described in previous sections (flat display, generic structure, node labels, typeface, etc.). The text of the standard is neatly laid-out. Underlining, highlighting, and italicizing are typographical processes that are used for emphasis. Because many of the sub-sections (e.g. 3.6.1, 3.6.1.1, 3.6.1.2 etc.) are in fact single and short paragraphs, some pages may appear "crowded", with little blank space and too many highlighted headers: one has to get used to the density of most pages.

Specific parts of the standards are easily accessed by way of a detailed table of contents (p.III-VII) or through a good index of significant concepts and terms. Within the text itself, there are numerous references to related sections and sub-sections, allowing for easy navigation into the standard. It was also a good idea to have put the table of abbreviations and conventions used in the standard at the very beginning of the document (p.XII). It was noticed that one code, however, is missing from the list: In section 3.4.2.2 (Economy of cross-references), a *see also* is used as a means of linking an adjective used alone to descriptors beginning with a corresponding noun, e.g. **cardiac** *see also* the descriptors beginning with **heart**. Since this form would seem more appropriate in a list of subject headings, the signification of the *see also* in a thesaural structure should be clearly explained.

The text of a standard is never easy to read, but this one is well written, not too wordy, and obviously carefully edited. Thesaurus designers and specialists will find this a useful addition to their basic reference collection. The new standard will attract by the fact that it looks and "sounds" very modern and up to date at a time when ISO-2788 is showing its age.

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ARNOPOULOS, Paris: Sociophysics: Chaos and Cosmos in Nature and Culture. Commack, N.Y.:

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Professor Arnopoulos is a political scientist who teaches political theory and international politics at Concordia University in Canada. In the past fifteen years he has been engaged in the development of analytic frameworks and theoretical models to describe and explain relationships among various natural, sociological and political factors and variables that contribute to political life. This latest book is an attempt to break down more barriers between the social and natural sciences as can be readily grasped by the title. The work builds on many diverse studies in the areas of micro-analysis and macro-analysis, history and philosophy of science, methodology, systems analysis, chaos theory cosmology, social science theory, theory-building, new physics, quantum mechanics, neurophysiology, bio-philosophy, cybernetics and self-regulation. For the author, 'sociophysics' is a new field of transdisciplinary studies which combines the latest natural and social science theories into a set of significant generalizations about phenomena recognized in a conceptualization process. Professor Arnopoulos attempts to extend the Principle of Universality whereby fundamental laws that apply through space and time are applied to areas of study in the social realm. He does not subsume the social under the natural order but rather subsumes both under a 'larger cosmic order'. A synergistic effect is produced because both areas of knowledge are appropriately broadened. Fundamental similarities between natural and social sciences emerge even though differences remain. Because the differences tend to be emphasized in comparative studies, the author believes that the similarities need more research. *Sociophysics* is an attempt to provide such a perspective. The process of building a new model is part of the larger process of paradigm shift. The author puts forth a 'triadic interface paradigm' which attempts to resolve contradictions in old and new ways of knowing, leading to an eclectic synthesis of old and new elements. The author recognizes that grand unification theory represents an ideal system that may not be applicable to reality as we perceive it. Nonetheless, all theory is to some extent or another unable to fit closely any specific case. Furthermore, what is more important in a period of paradigm shift is to break down the perceptions that natural and social sciences are inherently different. Such differences