

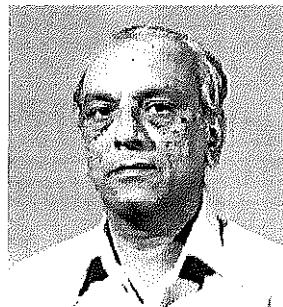
Lateral Relations and Links in Multicultural, Multimedia Databases in the Spiritual and Religious Domains: Some Observations

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ABSTRACT: This paper describes a proposal for a new approach to thesaurus design and construction that could have significant implications for change in the way multilingual thesauri are handled and integrated with each other. The formula presented here has its origin in the work of the German Thesaurus Committee and has had input from a number of scientists and practitioners in the field. The emphasis is on the various types of relationships found among concepts, notions and universals in languages. These relationships are analysed and refined beyond the approach taken in existing thesauri. This proposal is very much at the discussion stage and the author invites the assistance of interested readers through criticisms, discussion and dialogue. Applications of the proposed thesaurus are included and the major goal of this proposal is to provide the basis for improved design and integration of multilingual thesauri.

1. Introduction

Emerging information and communications technologies, powerful software for networking, and hypertext linking enable information seekers rapid access to and retrieval of vast numbers of a variety of information records (texts, directories, tables, graphics, images, sound) from multiple databases, located even at global distances. On the Internet, for instance, even on topics such as Vedanta and Christian Mysticism, the first retrieval hits some 2000 items and if the link 'More like this' is used for search one gets an additional 100,000 hits on each topic! In many cases, it is possible to download selected records onto a PC database. Yet the sheer volume and variety of records retrieved make it difficult to select the really pertinent items for use. As is well known, relevance of information depends on a number of factors. These relate to the original source materials, the way they

were indexed for retrieval, the vocabulary control tools used, if any, at the time of data entry, capabilities of the search engine, user interface, and factors relating to the information seeker including his/her prior experience in using online and other databases. With multiple and cross-cultural databases the difficulties may be more pronounced than with a single database for a well-defined field. Standardization and consistency in the rendering of names or codes used as surrogates, of persons, corporate bodies, subjects, etc., in the databases can improve the efficiency of retrieval and pertinence of the information retrieved.

The observations presented here relate to our experiences in dealing with user interfaces, vocabulary control, thesaurus construction, classification, and related issues while designing, developing and using multimedia, multicultural and mostly non-bibliographic databases in the spiritual and religious

domains. There are three versions: ported on to the Internet [accessible at <http://144.16.72.175/~om/> or <http://ukko.grainger.uiuc.edu/omasp/> (without sound)], CD-ROM [contact: raja@ncsi.iisc.ernet.in] and stand alone PC, which constitute the OM Information Service (OMIS). No definitive solutions are offered; only what is being done at present are mentioned. Specifically Non-hierarchic Associative Relations hereafter called Lateral Relations (LR) among concepts will be considered. Some twenty-five years ago I reported on some thirty types of LR and how they were handled in S.R. Ranganathan's Colon Classification and how to use the LR in generating RTs in thesaurus building.

2. OM Information Service (OMIS) Databases

The technical details of the OMIS are described elsewhere [1]. But some minimum information about the databases, indexing and search facilities of OMIS would help in placing the issues in the proper context. OMIS is multimedia (text, sound and image) and consists of three databases that are inter-linked (hypertext links). The three databases are:

1. OM: A database of extracts (currently about 18000) from the sayings, discourses, poems, writings, etc. of religious leaders, mystics, saints, seers, prophets and scholars and from religious texts and epics (the Bible, the Koran, Ramayana, Bhagavad Gita), together called Sources (about 900), from 3000 BCE to the present, spanning across many faiths, cultures and religions of the world. This is the principal database.
2. OMBIO: A database of life sketches/descriptions of the Sources with pictures where available (about 100 at present).
3. OMBIB: A bibliography of books for further reading (about 250 at present).

Records are added to the databases approximately every six months. The input to all the three databases are from corresponding databases prepared using CDS-ISIS software (of Unesco). The CD-ROM version has the Windows version of CDS-ISIS ported on to it. The usual Boolean, parenthesis, truncation and other operators can be used in the search.

In the OM database the search is essentially concept-based which can be qualified by other concept terms or name(s) of Source(s).

The PC version does not, at present, provide for retrieval of images and sound (speech and music). The PC and CD-ROM versions use a Pascal interface [2] to inter-link the databases, and to search in one or more databases concurrently. A user can select any term or terms from a displayed extract record, formulate a new search expression with them, and continue

the search in the same database or in the other databases.

3. Indexing

The search and retrieval are based mainly on the indexes to the databases. An online thesaurus is in preparation. The fields of the databases and how they are indexed are mentioned below.

3.1 OM Database

The following fields are indexed:

- Subject Heading (Whole heading and each substantive term separately)
- Text of Extract (Each substantive term)
- Source Name (Whole name)
- Context (Each substantive term)
- Notes (Each substantive term)
- Verse number (for extracts from Bhagavad Gita)

3.2 OMBIO Database

The following fields are indexed:

- Name of Source (Whole name)
- Period of Source (Whole, e.g., 16th cent; 15th – 16th cent); specific dates of birth and death are not indexed.
- Life Sketch (Each substantive term)

3.2 OMBIB Database

The usual Author, Title, Descriptor, Subject Heading, Abstract, etc., fields are indexed. Each substantive term of the Title and Abstract fields is indexed.

3.3 Language

Only English language materials (that is, the original is in English or is a translation into English) have been scanned in preparing the records (also in English). This raises some of the problems mentioned below.

3.4 Types of Queries to which OMIS Responds

Typical queries that OMIS responds to include:

- X Texts of what St. John of the Cross and Soren Kierkegaard have said about "control of the senses" or "purity of heart".
- X What does the Bhagavad Gita say about Karma? Interpretations of the relevant texts by S. Radhakrishnan and Anne Besant.
- X The relation between "salvation" and "renunciation" as propounded by Thomas Merton, Meister Eckhart, Sri Ramakrishna Paramahansa, Sri Sankara, and Sathya Sai Baba.

- X Biographical sketch and picture of Mother Teresa of Calcutta.
- X Reading materials on Sufism and Sufi Saints.

4. Vocabulary Control: Usual Requirements

Vocabulary control is necessary within a database and across databases, be it the name of a person, corporate body, or name of a subject/concept to facilitate search across databases using one and the same search expression. In regard to name of Source, the rendering in all the databases is according to some widely accepted cataloguing code, such as AACR2. Alternative names, pseudonyms, popular names, etc., are found in spiritual and religious texts also.

For name of subject/concept again consistency is required not only in all the indexed fields within a database but also across databases, to facilitate hypertext links. The usual problems of spelling variation, grammatical variation, compounded words, synonyms, hyphenation, abbreviations, etc., are all encountered. These are not considered here. Only some additional issues relating to culture-sensitive terminology and LRs in developing the thesaurus to assist online searching in such databases are mentioned.

5. Lateral Relations

5.1 Levels of Lateral Relations

Lateral relations can exist or be perceived at different levels:

5.1.1 LR-3

When a user identifies several sources, such as websites, as possible sources likely to provide information to a query on hand, those sources are related with respect to the specific information need. This is inter-websites or inter-sources relation. This knowledge can be of help in further searches.

5.1.2 LR-2

When several databases are available, identifying those to be searched in relation to a specific information need depends on knowledge of the contents of each of the databases. When a user selects a set of databases for further search, he/she perceives a relation among them. This is inter-databases relation. This knowledge can be of help in subsequent searches in those databases.

5.1.3 LR-1

A search expression, for example, "Mysticism and Christian and Middle Ages", applied to a database may retrieve one or more texts or records. This establishes a relation among the records retrieved in relation to the particular query. This is inter-records relation.

5.1.4 LR-0

Consider the concepts represented by the terms Mysticism, Christian, Middle Ages, in the search expression mentioned in the previous section. The search may identify a similar relation among the concepts in the records retrieved and therefore deemed relevant to the query. This is inter-concepts relation. We shall be considering this type of LR in more detail.

5.2 Equivalent and Near-Equivalent Concepts

Most of the special concepts in the spiritual and religious domains are common to many faiths and cultures, for example, God, liberation, soul, prayer, after-life, bliss, etc. The terms used in the different faiths and cultures for the concept denoted by each of the above English terms, for instance, may not be exact equivalents or are not coterminous in what they signify or refer to. Other examples: Salvation, Moksha, Immortality, and Nirvana. This LR should preferably be distinguished from the usual RT relation. The vocabulary control tool used (e.g., thesaurus) may bring together these near-equivalents, using the symbol NE or ~ for Near-Equivalence. Example:

LIBERATION	ENLIGHTENMENT
NE ENLIGHTENMENT	NE IMMORTALITY
IMMORTALITY	LIBERATION
MOKSHA	MOKSHA
NIRVANA	NIRVANA
SALVATION	SALVATION

Similarly, with each of the other terms Immortality, Moksha, Nirvana, and Salvation.

Again, the terms Atman, Brahman, Self, and Soul are used as near-equivalents.

ATMAN	BRAHMAN
NE BRAHMAN	NE ATMAN
SELF	SELF
SOUL	SOUL
SELF	SOUL
NE ATMAN	NE ATMAN
BRAHMAN	BRAHMAN
SOUL	SELF

In texts, written in English or translated into English, one finds translated or transliterated terms, such as Karma, Atman, Brahman, Nirvana, Einsof, and Sefirot. In some texts a term considered to be equivalent by the translator may be used. In others the transliterated original term may also be given in parenthesis or in a note. In the OM database the English term and the transliterated term will automatically be

indexed. A user may use such terms, that is, English or transliterated, in the search expression.

One and the same English term may be used in a translated text to denote slightly different concepts for which there may be different terms in the original work. For example, the term Mind used for Manas and Chitta, which may be given in parenthesis or in a note in the text. A reverse case is one in which the same term in the original (transliterated into English) may denote slightly different concepts for which different English terms may be used in the text. For example, the transliterated term Buddhi is used for Reason, Intellect, and Intelligence; Prajna for Mind and Understanding (on the other hand, Intelligence may refer to Chetana). These variations may be explained in parentheses in the text or in a note to the text. In the OM database all the terms will be indexed automatically. A searcher can use any of the terms selected from the index and then select other terms from the text displayed and continue the search for further records, a facility provided by the Pascal hypertext link in the CD-ROM and PC versions. Again, in the thesaurus these terms are to be brought together as NE type RTs. In any case the user may need guidance to the different senses in which a term (whether an English term or a transliterated one) may be used in the text, within the same faith or culture and/or across them.

Equivalence Relation is usually a See cross-reference in subject heading lists or USE and UF direction in thesauri. For example:

AVES	AVES	BIRDS
See	BIRDS	USE BIRDS
		UF AVES

In culture-sensitive databases, the preferred term used for search depends on the culture / faith and/or linguistic background of the user. It would be expedient to provide for search using any of the equivalent terms, indicating in the vocabulary control tool (e.g., thesaurus) the nature of LR as EQ or = for Equivalence. Here are some examples:

MONASTIC LIFE	SANNYASA
EQ SANNYASA	EQ MONASTIC LIFE

GOD	ALLAH
EQ ABSOLUTE SPIRIT	EQ ABSOLUTE SPIRIT
ALLAH	CREATOR
CREATOR	DIVINITY
DIVINITY	EINSOF
EINSOF	GOD
INFINITE	INFINITE
ISWARA	ISWARA
PROVIDENCE	PROVIDENCE
SUPREME BEING	SUPREME BEING

EINSOF
EQ ABSOLUTE SPIRIT
ALLAH
CREATOR
DIVINITY
GOD
INFINITE
ISWARA
PROVIDENCE
SUPREME BEING

Similarly, for each of the other terms.

HOLY WORD (The Bible)	UDGIT (Upanishads)
EQ KALMA (Islam)	EQ HOLY WORD
SABD (Indian scriptures)	(The Bible)
SAUT-E-SARMADI	KALMA (Islam)
(Sufi)	SABD (Indian scriptures)
TAO (China)	SAUT-E-SARMADI
UDGIT (Upanishads)	(Sufi)
	TAO (China)

Similarly, for the other terms.

5.3 Attribute

Concepts representing attribute, characteristic, or property of an entity occur frequently. For example, Renunciation is an attribute of Monastic life, Yogi, Spiritual life, etc. This can be represented as follows:

MONASTIC LIFE	SELF-LESS ACTION
EQ SANNYASA	(Attribute)
(Attribute)	RT RENUNCIATION
RT RENUNCIATION	

SPIRITUAL LIFE	YOGI
(Attribute)	EQ SANNYASI
RT RENUNCIATION	(Attribute)
	RT RENUNCIATION

RENUNCIATION (Attribute of) RT MONASTIC LIFE SANNYASA SANNYASI SELF-LESS ACTION SPIRITUAL LIFE YOGI	IMMORTALITY (Attainment through) RT RENUNCIATION	NIRVANA PEACE SALVATION
	LIBERATION (Attainment through) RT RENUNCIATION	
	etc.	

Another example:

GOD (Attribute) RT ABSOLUTE UNDIFFERENTIATION BOUNDLESS CHANGELESS ESSENCE OF EXISTENTS INCOMPREHENSIBLE INEXPRESSIBLE INFINITENESS NON-DUALITY OMNIPRESENCE OMNISCIENCE UNIFIED ONENESS WITHOUT BEGINNING	ABSOLUTE UNDIFFERENTIATION (Attribute of) RT GOD
	BOUNDLESS (Attribute of) RT GOD
	CHANGELESS (Attribute of) RT GOD
	NON-DUALITY (Attribute of) RT GOD
	etc.

5.4 Attained Through/Leads to

Method of or Approaches to achieving or attaining a goal or an object is a frequently occurring relation. Here are some examples:

RENUNCIATION (Attainment through) RT BHAKTI DEVOTION JNANA SACRIFICE SELF-LESS ACTION SELF-ANALYSIS TURNING MIND INWARD UNCEASING WORK YOGA	BHAKTI (Leads to) RT RENUNCIATION
	JNANA (Leads to) RT RENUNCIATION
	SACRIFICE (Leads to) RT RENUNCIATION
	etc.

ENLIGHTENMENT (Attainment through) RT RENUNCIATION	RENUNCIATION (Leads to) RT ENLIGHTENMENT
	ETERNAL, THE IMMORTALITY LIBERATION MOKSHA

5.5 Comparison, Differentiation, Influence

Consider the following:

Comparison of Unselfish Action with Renunciation
The difference between Relinquishment and Renunciation
Influence of Meditation on Mental Stress

These relations can be represented respectively as follows:

RENUNCIATION (Compared with) RT UNSELFISH ACTION	UNSELFISH ACTION (Compared with) RT RENUNCIATION
RENUNCIATION (Differentiated from) RT RELINQUISHMENT	RELINQUISHMENT (Differentiated from) RT RENUNCIATION
MEDITATION (Influence on) RT MENTAL STRESS	MENTAL STRESS (Influenced by) RT MEDITATION

5.6 Model/Case Study

Discussion or discourse on a person as a Model of, say, true Renunciation or Yogi is another LR occurring in the extracts in the spiritual domain. This may be represented as follows:

RENUNCIATION (Model) RT Ramakrishna Paramahansa Ramana Maharshi	YOGI (Model) RT Ramakrishna Paramahansa Ramana Maharshi
RAMAKRISHNA PARAMAHAMSA (Model of) RT RENUNCIATION YOGI	RAMANA MAHARSHI (Model of) RT RENUNCIATION YOGI

5.7 Cause of

The concept of an entity having the capacity to Cause or Generate another entity also gives rise to a LR. For example:

EINSOF	SEFIROT
SN The Infinite in Kabbalah, Jewish mysticism (Causes)	(Caused by) RT EINSOF
RT SEFIROT	

It is not clear whether the ten emanations (Sefirot), Keter, Tif'eret, Yesod, Shekkinah; Hokhmah, Hesed, Netsah; Binah, Geruvah, Hod; and Malkhut should be considered as hierarchical relation or as LR to Sefirot.

6. Work in Progress

Other types of LR occurring in spiritual and religious texts are being examined and will be compared with the thirty types identified more than two decades ago. How a faceted classification scheme, such as the Colon Classification, handles such relations is also being studied.

7. Remarks

Increasingly information access is becoming global. A wide range of information materials are available and a wide variety of users access, for example on the Internet, the globally accessible databases. In the type of databases in the spiritual domain discussed here, terms occurring in the texts and those used for searching are culture-sensitive. Therefore, in a database that uses only English language source materials, use of English language terms for indexing with, say, bias to a particular culture or faith is inexpedient. As discussed in this presentation, providing for search using terms of different cultures (e.g., in transliterated form) is necessary.

The reasons for an English text (either original or translated) for using transliterated terms, such as Dharma, Karma, Nirvana, Einsof, Shekkinah, etc., and giving the meaning or a term deemed to be equivalent or near-equivalent in parenthesis or in a note could be that the English term is less widely known or used, or the English term is only a near-equivalent to the original term, or an English equivalent does not exist or not known to the author. Similar reasons apply to an information seeker to use a transliterated term in the search. The source text may adopt the reverse of the above giving the transliterated term in parenthesis or in a note. In the OM database all the text terms including those occurring in parenthesis and in the notes are indexed. The need to provide the user approaches from different forms of a term has already been mentioned above.

We would like to know of the experiences and methods adopted by the participants who have developed similar multicultural, global information systems.

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