Lexicography and terminography: A rapprochement?

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The development of text linguistics over the last two decades has ensured that questions of textuality can no longer be avoided by those concerned with the description of language in action, whether their purpose is descriptive, pedagogical, or technological. Within the field of stylistics it is now standard practice to discriminate between the aesthetics of literary discourse on the one hand, and the effectiveness and efficiency of a whole gamut of functional styles on the other. This is not simply an opposition between innovative and idiosyncratic use of language and the maximally stereotypical, often even formulaic discourse striven for by "faceless" authors. The whole thrust of such writers is to communicate important information successfully by achieving high standards of expository prose and by establishing a powerful didactic rapport with readers. The study of languages for special purposes (LSP) has shown what a myriad of problems still await solutions in the field of functional stylistics and what an impressive array of techniques lies at the disposal of writers who may, additionally, be confronted with severe operational constraints, as – say – in the composition of "terse texts" such as precis and abstracts.

The linguistic skills needed – actively, in the first instance, passively in the second – by writers and readers alike in the creation and apprehension of LSP texts must be comprehensive enough to embrace a type of logical and semanto-syntactic organisation of text which goes – and always has done! – well beyond the sentence, via the paragraph at least up the "chapter" level, and putatively beyond that too! Linguists recognise that there are two systems, referred to as cohesion and coherence, which act as agents binding text. (It is always salutary to recall the etymological meaning of the word "text" [Latin "textus"]: something that is woven.) Cohesive cross-references may be explicit, via devices such as pro-form substitution; they may also be implicit, relying on element juxtaposition of proximity to create a logical link, either immediately deducible from the text or from presupposed "world knowledge". Any logical reasoning required of the reader can, of course, succeed only if the author's own perception of his readers and his control of coherence is refined. Word order and the introduction into text of comparative or superlative adjectives also play a big role in establishing cohesion. Stylistic cohesion is established by means of repetition of various segments, by rhythmicality and by various types of structural parallelism. One of the principal cohesive devices is that of lexical cross-referencing, achieved by multiple methods:

a) lexical repetition, with or without changes in grammatical form or syntactic role;
b) the use of synonyms, antonyms, derivatives or other simple etymological cognates, including potential conversion to a different part of speech;
c) periphrastic variation, including figurative expressions as well as associative links;
d) the introduction of hyperonyms (to achieve abstraction and generalisation) and of hyponyms (to attain particularity and specificity).

It will be seen that textuality is strongly correlated with referential semantics. Weise (1982) summarises the chief types of semantic correlation (which do not rely on grammar at all) thus:

1. associations between dictionary synonyms (and allonyms),
2. occasional (textual) synonyms,
3. juxtaposition expressed by antonyms,
4. root-related words (derivatives),
5. generic-specific relations, or vice versa,
6. synecdochal relations,
7. words associated by intensity of degree of meaning,
8. associative transference of meaning in the following ways:
   a) cause – effect,
   b) object – material – quality,
   c) action – object – doer,
   d) connection based on any affinity of connotations.

If, then, any piece of discourse is a commingling of the textuality which imparts sequential connectivity and the lexicality which confers conceptual connectivity, it follows that lexicographers have a legitimate professional concern with text, its generation and its perception. This finding is not new, but its formulation is meant to be!

However, some minor "contextualisation" of lexicography is needed. If the meaning of "lexicography" is "the principles and practice of dictionary making" (Longman 1984), then a complementary definition is needed for "lexicology". The primary concern of lexicology is the word as part of the lexicon. Lexicologists investigate the lexicons of languages, seeking to detect and describe structure, systematicity, stratification, change, analogy, and adaptivity. Lexicologists also investigate processes such as: word-derivation and coinage, either evolutionary or caused by extraneous influence; they are above all concerned with: semasiology, dealing with words as atoms and molecules of meaning; denotation and connotation; motivation; polysemy and homonymy; syntagmatics and paradigmatics; hierarchical and associative relationships; synonymy and antonymy. Lexicologists are hence interested in systems, not in disparate items. Unless items can be organised into systems on some taxonomical basis they are of no import for lexicologists.

Lexicographers, on the other hand, are compelled by the nature of their task to deal with discrete units, normally arraying them alphabetically, that is, in a

way which only rarely and accidentally – by contiguity on the left-hand side (LHS) of the dictionary – transmits information about structure. Heroic attempts can be and often are made on the right-hand side (RHS) of the dictionary to offer what is basically gratuitous information of a lexicological profile. There are obviously great variations: the provision of morphology codes is lexicological information, albeit meagre and not usually apprehended in any truly lexicological sense by the dictionary-user. A synonym dictionary, on the other hand, is directly in the business of communicating lexicologically-profiled information, but the many opportunities thereby for metalinguistic comment are actually rather difficult to capitalise on. It is fair to say, to conclude this particular point, that all lexicographers need to be – and usually are – sensitised to lexicological concerns. Lexicologists, on the other hand, generally know little about the realities of dictionary-making. This is a pity because from nearly every lexicological research project there is potentially a useful lexicographical spinoff in the form of a specialised dictionary.

This tension is nicely captured and kaleidoscopically mirrored on the axis between lexicography and the terminological sciences. Once again terminology obtrudes: it is, however, becoming accepted to refer to "terminography" as denoting "terminological lexicography". The proportion statement "terminography : terminology :: lexicography : lexicology" encapsulates the analogy. Licence is, incidentally, assumed for the derivatives "terminographer", "terminographical" etc. What are, then, the chief contrasts between the terminographer and the lexicographer? The most important one – to echo a phrase used above – is that all terminographers are also terminologists. They must be because their primary method of display is the "intelligent" thesaurus rather than a merely alphabetical sequence. If lexicographers can afford to be virtually totally concerned with the isolated, individual lexeme rather than with the lexical system as well, terminographers cannot: their context is concepts, concept formation and concept systems. This means, moreover, that terminographers have an overt onomasiological basis to their work. They proceed from concept to nomination, not from lexeme to definition. The concepts themselves stem from an encyclopaedic context which is another factor distancing terminographers from lexicographers. The principal duty of terminographers is to construct comprehensive, reliable, and authoritative thesauri of domain-relevant concepts denoted by technical terms. The purpose of such compendia is twofold: to assist in the process of effective and efficient information retrieval and to standardise usage.

This latter factor segregates terminography out as a very special type of lexicography. There are many distinct cultural, chronological and even personal emphases in the history of lexicography, predominantly monolingual lexicography. There have been times and places where normativism reigned, where prescription and proscription were the order of the day, so much so that the description "authoritarianism" seems entirely appropriate and justified. At the present time, however, most lexicographers – wherever they work – would

readily concede that their task is to codify and describe their local vernacular made manifest in the "vox populi". The efforts of terminographers, however, are directed to eliminating lexical variants and other idiosyncrasies in technical nomenclatures. "Technical" is, incidentally, to be taken sensu largissimo! To this end, all synonyms (i.e. "condenser", for "capacitor") must disappear, leaving one approved representative and only one in the given nomenclature. How this representative, known as a "descriptor", is actually chosen is a moot point: very often, frequency of use is the determining factor; sometimes, however, terminographers make an arbitrary choice and seek to impose it on a community of experts to which they themselves do not belong – this can provoke considerable resistance and can therefore be counter-productive and definitely not conducive to the harmonisation which all parties usually see as beneficial. There are other problems of a similar nature: often the in-house terminology developed by a large industrial organisation and used by its technical writers looms so large, in terms of both extent and usage, that it can effectively pre-empt the work of terminographers. National standards bodies can recount many instances of this. In the field of bi-/multilingual terminological work it often falls to technical translators to coin terms in their native languages. Translators – notably, freelancers – are, of course, often forced to operate in isolation of terminographical efforts, relying on technical translating dictionaries which, by age or coverage, are not sophisticated enough tools for their delicate task.

The regularisation of terminologies is helped by the fact that their individual terms have denotational meaning but no connotational meaning. In bi-/multilingual terminographical work the assumption is that of a shared professional culture leading to an identical structuration of field of discourse across all the languages involved; thesauri may be expected to be orthogonal with each other too, even though they are written in different languages. Occasionally this assumption of a shared culture does not hold: a classical example is the term *machine tool* and its French equivalent *machine-outil.* The English term has as its denotation a machine for cutting whereas the French term denotes a machine for forming as well as cutting. The harmonisation of multi-lingual thesauri is hence a subtle business fraught with difficulties. The selection of one term from a synonymic series and its promotion to descriptor status (plus the relegation of the other contenders to oblivion) is undertaken for the purpose of establishing a systematic thesaurus and domain map. This process is conducted, with some important differences, whenever information retrieval thesauri are needed; in this case a descriptor is still chosen for the purpose of building a controlled vocabulary but the net is cast so as to catch all antonyms as well as all synonyms appearing in actual documents, the point being that whenever something is discussed its opposite is also being discussed by implication. Vickery (1965) quotes the telling example:

HARDNESS:

rigidity; rigescence; firmness; renitence; inflexibility; stiffness; temper; callosity; durity; induration;

(negatively)

softness; tenderness; flexibility; pliancy; pliableness; pliantness; pliability; litheness; suppleness; sequacity; ductility; malleability; tractility; plasticity; laxity; flaccidity; flabbiness; limpness.

One important – and intrinsically lexicological – question arises in terminological studies in many languages: the transparency or, conversely, the opacity of technical terms. Should terms be "international" or analysable lexemes, usually calques from English? Is it more important for cadres of experts to be immediately able to recognise the international morphemes or should ordinary members of the populace be able to reproject, via morphemic analysis, the linguistic motivation of terms? There is a secondary but significant problem in that internationalisms have, more often than not, etymological origins in Greek and Latin and that they are, in any case, opaque to most people, including the overwhelming majority of the speakers of the Romance languages and most speakers of Modern Greek as well! Be that as it may, which German term is "better": *Telefon* or *Fernsprecher*? Do Russian speakers have an advantage from the Russian biological term *kruglorotye* (literally "roundmouthed [ones]") over English speakers with their term *cyclostomata*? Are speakers of languages like Czech, severely affected by puristic thinking in the 19th century, at any disadvantage because their words for "theatre", "music" and "gas" are, respectively, *divadlo, hudba* and *plyn,* all calques rather than pan-European vocabulary items? Is Arabic going in the right direction with its efforts at "ta^{c}riib" or Arabicisation, when this leads, inter alia, to a type of diglossia between ordinary and technical language, e.g. "kimaama" ("muzzle" and "gas-mask"), or "Halazuun" ("snail" and "spiral")? Whatever personal opinions may be about such matters, one thing is certain: the linguistic and sociolinguistic processes involved have a momentum of their own and are normally not ultimately amenable to rational control. In fact, these processes create additional problems and compromise much effort.

One vital enterprise in terminography is the systematic elaboration of reliable facet and feature sets which can be used to partition and classify nomenclatures. Many of the methods used are common to general lexicography, such as the search for the intrinsic characteristics of artefacts and abstract concepts, which permit a classical, that is, an intensional definition to be formulated and a genus-species relationship to be established. Extensional definitions are also used when either necessary or appropriate, although it should be noted that terminographers normally try to plug any gaps in their taxonomical hierarchies by inventing new concepts and naming their intrinsic characteristics. Particular care has to be devoted to those cases where non-equivalent characteristics are involved and may interact with each other in the formation of vertical series of concepts. Ontologi-

cal relationships are very widely used in terminography: their use in general lexicography has never been really prominent – many instances occur but the definitional basis of such instances tends to remain very much implicit. The most significant ontological relationship is the partitive, "part-whole" relationship but there are many others, for example:

AGENT	: ARTEFACT	spider	: web
PROCESS	: TOOL	calculation	: computer
PROCESS	: STEP	operation	: incision
CAUSE	: EFFECT	fatigue	: sleep
MATERIAL	: ARTEFACT	wood	: cabinet
PROPERTY	: QUANTITY	boiling point	: 100 degrees Celsius
PERSON	: ARTEFACT	Bessemer	: converter
SUCCESSOR	: PREDECESSOR	chrysalis	: larvae
OBJECT	: PROPERTY	mountain	: altitude

Other relationships used are associative and loose rather than hierarchical and precise, for instance:

	PROXIMITY	crockery	: cutlery
	SIMILARITY	hill	: mountain
ORGANISATION	: BOSS	regiment	: colonel
LOCOMOTION	: METHOD	journey	: car
STATE	: DOCUMENT	illness	: sick-note
MISDEMEANOUR	: PENALTY	theft	: fine

Some of these associative networks can be very extensive but they perhaps need to be described by metalanguage too, so as to reflect the encyclopaedic linkages inherent in, say:

> design – prototype – testing – analysis – production – marketing – negotiation – sale – delivery – payment – profit – after-sales service – re-investment

or:

> assault – injury – alarm – policy – suspect – arrest – charge – court – plea – witness – solicitor – magistrate – conviction – sentence – appeal – imprisonment – parole – remission – release – re-habilitation.

A very significant area of logistic overlap between lexicography and terminography is the use of computers. Information retrieval systems and other information science activities such as indexing have been computerised for some time and many individual projects are worthy of detailed investigation by lexicographers, especially those involving terminological databases (TDB's). These latter systems are continuing to evolve rapidly and are currently on the threshold of significant transformation as the accent gets placed more fairly and squarely on knowledge engineering and transfer. International efforts are under way to harmonise, as far as possible, record structures in non-terminological, ordinary lexical databases (LDB's) and it is to be hoped that similar moves can be made in the area of TDB's. There is as yet no standard, purpose-built software for

LDB's but useful options are beginning to emerge. The COMPULEXIS system certainly commends itself to serious workers in LDB's and the prototype TDB software developed at UMIST (Manchester, UK) for the British Term Bank Project will no doubt soon enter the public domain. Even proprietary database management systems like Batelle's BASIS have many facilities of immediate utility, such as a thesaurus module. IBM's SQL should also commend itself by reason of the fact that it is being used for the New Oxford English Dictionary Project. Apart from that, it is possible and fruitful – particularly for those translators mentioned above – to consult facilities such as the European Commissions's EURODICAUTOM on a dial-up basis. Urgent experimentation is, however, needed to evaluate the functionality and ergonomics of all extant systems, as well as their development potential.

Thought needs, too, to be given to the question of enhancing the value of LDB/TDB facilities, firstly by making them more widely available and secondly, by deriving from them satellite systems intended for familiarisation and training purposes. This applies particularly to TDB's which could be developed to include "learner's thesauri" for individual domains, the purpose of which would be to help those who are not subject specialists to become such. This could be done by a special software module designed for strictly didactic purposes, embodying a number of learning paths and proficiency tests. It should also be possible – rather more significantly – to make explicit in TDB's the characteristics of division applying on each arc, in a way very similar to the standard techniques of quoting each axiom invoked during the development of logical proofs: this would provide, en masse, valuable new information that could have great significance for both terminography and lexicography.

If lexicographers and terminographers wish to maintain the primacy of their expertise they are going to have to move – and most eagerly want to do so! – more rapidly into the arena of Information Technology (IT). There are many challenging and exciting tasks awaiting those who, without abandoning in any way their present professional profile or intellectual commitment, can make the shift. They stand, in fact, to act as leaven in the currently rather stodgy dough being kneaded by the AI community. First, however, an easier shift is required: lexicographers and terminographers need to discover each other and to cross-fertilise each other's work. The auguries for such a rapprochement and marriage of lexicography and terminography are very good: the computer would seem to be an ideal match-maker!

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