ONTOLOGY, ONTOLOGIES, GENERAL LANGUAGE AND SPECIALISED LANGUAGES

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0. Introduction

The inspiration for this paper came from Barbara Lewandowska-Tomaszcyk who organised a round table on the topic 'Ontologies' during the conference PALC – Practical Applications of Language Corpora at Lodz, Poland on 6-9 September 2001[1]. The full discussion will be published later, but I shall develop my own contribution to the round table more fully here, since the ideas expressed address fundamental problems that those of us in the humanities, who have been trained to study general language, encounter during research in the area of terminology.

The topic draws attention to the fact that, although general language and specialised languages share many features, the approaches to studying them differ in certain essential ways. This paper will look briefly at these approaches and then go on to examine developments in knowledge engineering that demonstrate the complex activity of systematisation of concepts and, by implication, the lexical items that represent them.

1. Definitions

Since we are in an area where definitions are necessary for the understanding of the nature of the debate, we shall start by examining the words used in the title.

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[1] The other members of the round table were Barbara Lewandowska-Tomaszcyk (University of Lodz), Wolfgang Teubert (University of Manchester), Josef Schmied (University of Chemnitz), John Osborne (Université de Savoie) and Michael Oakes (University of Sunderland).

1.1. Ontology and Ontologies

Ontology has been an area of philosophical debate related to metaphysics since the word was coined in the 18th century. Corazzon[2] supplies a long list of definitions by philosophers over the ages of which those below are a selection:

> Ontologia seu *Philosophia Prima* est scientia entis in genere, seu quatenus ens est.
> (Ontology or *First Philosophy* is the science of Being in general or as Being)[3].
> Ontology is the first part that actually belongs to metaphysics. The word itself comes from the Greek, and just means the *science of beings*, or properly according to the sense of the words, the *general doctrine of being*. Ontology is the doctrine of elements of all my concepts that my understanding can have only a priori[4].
> All ontology has to do with fundamental assertions about being as such. Assertions of this sort are precisely what we call categories of being[5].
> Ontology is the theory of objects. And it is so of every type of object, concrete and abstract, existent and non-existent, real and ideal, independent and dependent. Whatever objects we are or might be dealing with, ontology is their theory. 'Object' is used in this sense as synonymous with the traditional term 'being'[6].

Ontology is frequently found in texts that discuss the existence, or otherwise, of God, and other metaphysical debates. A quick search of the British National Corpus (BNC)[7] will return plenty of examples that refer to the ideas of Hegel, Husserl, Heidegger, Lacan, Sartre, Barth, Levinas, Merleau-Ponty and others. The Portuguese corpus CETEMPúblico[8] also produced several philosophy-related examples. The plural form appears once in both cases, which is itself indicative of the fact that this usage has developed over the last eight or nine years, or since the BNC was finished and after most of the material in CETEMPúblico was published. Yet a search with the Google browser[9]

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[2] See http://www.formalontology.it/. It provides plenty of material on the whole problem of ontology in the past and in the present.

[3] From: Christian Wolff (1729) *Philosophia Prima sive Ontologia.*

[4] From: Kant *Lectures on metaphysics* – Part III *Metaphysik L2* (1790-1791?) Translated and edited by Karl Ameriks and Steve Naragon – Cambridge University Press 1997 p. 307 and 309.

[5] From: Nicolai Hartmann (1949) *New ways of Ontology.* Translated by Reinhard C. Kuhn – Chicago, Henry Regnery Company, 1953 (pp. 13-14).

[6] From: R. Poli, «Ontology for knowledge organization», in R. Green (ed.), *Knowledge organization and change*, Indeks, Frankfurt, 1996, (pp. 313-319).

[7] Accessible at: http://sara.natcorp.ox.ac.uk/.

[8] Accessible at: http://www.portugues.mct.pt/.

returns about 80,900 answers to the singular and 32,900 to the plural – so something must be happening.

Dictionary definitions quoted by Corazzon are:

1. A science or study of being: specifically, a branch of metaphysics relating to the nature and relations of being; a particular system according to which problems of the nature of being are investigated; first philosophy.
2. A theory concerning the kinds of entities and specifically the kinds of abstract entities that are to be admitted to a language system[10].

Corazzon then goes on to give his own definition of ontology as 'the theory of objects and their ties'.

It is the reference to 'ties' and the second definition above, which refers to 'a language system', that give us the clues to understanding modern interpretations of *ontology* and, more significantly, the plural, *ontologies*. It is beyond the scope of this paper to trace the development of the modern use of the words[11], but there is no doubt that they now would appear to apply more often than not to the organisation of concepts/things, and the words that represent them, into what are sometimes referred to in lexicological circles as *subject fields*. A related notion is that of *conceptual fields/frameworks* used in traditional lexicology and terminology.

Ontology and *ontologies* are used nowadays in the scientific literature related to artificial intelligence, knowledge engineering, machine translation, information retrieval, lexical semantics, and related areas. Perhaps, given the fact that so much of the work being developed is formalised for use by machines, one could explain the preference of *ontology* over phrases that involve the word *concept* by the fact that the latter has such intimate connotations with the human capacity to think and understand. Less consideration has been shown for another word found in the literature, *cognitive*, which is used rather promiscuously to relate to both human and artificial intelligence, presumably on the understanding that the two are sufficiently close for no distinction to be made[12]. This assumption of the relationship between human and artificial intelligence underlies much work in the areas described above.

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[9] Accessible at: http://www.google.com.

[10] From: Webster's Third New International Dictionary.

[11] For those who wish to follow up this subject, Corazzon and his fellow-authors provide plenty of information at http://www.formalontology.it/.

[12] For a discussion of this problem – see Maia (1994).

There is also an obvious link to *epistemology*, defined by Webster's as 'the study or a theory of the nature and grounds of knowledge especially with reference to its limits and validity', and, on occasion, it is natural that the methods and theories of the two areas should be intertwined. We shall be looking at aspects of language study that touch on these areas, and hope to show how they affect the study of general language and specialised languages.

1.2. General language and specialised languages

It is common to hear people making the distinction between general language and specialised languages, and yet, given the limited resources of any language, it is not always that easy to demonstrate where general language becomes specialised, and vice versa.

1.2.1. General language

The notion of *general language* is suitably vague. The difficulties in defining it relate to descriptions like 'everyday language', and 'language that any normal person can understand', since they call into question the meaning of 'everyday' and 'normal person'. There is also the fact that, despite an understanding that the level of the general language text should be accessible at the level of style and register, the lexical level will receive a more specific focus. Even if one describes it as 'the most generic use of items of language', or tries to restrict it to the language found in an 'average' dictionary, it is still difficult, even with the help of dictionaries built using modern corpus based methods, to restrict and contain areas of language in any way.

Many people have tried to systematise the study of the lexicon for different reasons, amongst which are various attempts to find and establish language universals, and there are several well-known examples of the ways this has been done. Berlin & Kay (1968/1999) worked on discovering how colour terms were distributed in different languages in order to find the extent to which colour could be seen as a universal phenomenon, or as relative to different languages and cultures. Bendix (1966), Lehrer (1974) and Nida (1975) worked on finding basic features of meaning in work known as componential analysis, the objective of which was to make it possible to describe the entire lexicon in terms of basic components of meaning. This reductionist method soon sank under the weight of the rules it needed to create, rather as the idea of transformations in transformational-generative did in syntax, but some of the more practical work emerging from it has proved useful in exercises in distinguishing between synonyms and words belonging to particular subject fields.

Wierzbicka (e.g.1996) still perseveres in her search for universals, using a basic set of lexical items to describe 'scenarios' according to which all con-

cepts/words can be categorised. The main problem with this kind of research is that one can never get outside language to discuss language, and there is always the difficulty of deciding which words should be used to describe the 'basic elements of meaning', since all words are subject to changes of meaning in context, even, or perhaps particularly, apparently general words like *good* and *bad*, *big* and *small*.

A lot of more recent work has derived from or been influenced by the work of Rosch (1978) on prototypes and Lakoff (1980) on metaphors and Lakoff (1987) on categories. There is also all the work in cognitive linguistics deriving from works like Jackendoff (1983) and Langacker (1987). Much of this work is devoted to examining how we conceptualise aspects of our lives like time and space, as well as the many metaphors with which we express our interpretation of other aspects of our lives. The long-term objective of today's linguists varies wildly, from those claiming to demonstrate a revolutionary new approach in Western philosophy, like Lakoff and Johnson (1999), (see also: Lakoff & Nunez, 2001), to those who wish to organise and harness linguistically organised databases to the needs of computational linguistics, knowledge engineering and related areas.

1.2.2. Specialised languages

Many people look upon specialised languages as simply the vocabulary of subjects to which, it is assumed, the average person will not have access. Nowadays, it is also recognised that there is more to special language than its vocabulary, and the study of genre analysis and text typology is an important part of the research into the use of specialised languages[13]. However, for the purposes of this paper, the focus will be domain specific terminology and the categories into which it is organized.

One fact that soon becomes obvious to anyone embarking on terminology work is that, despite the theoretically almost unlimited possibilities of producing and combining lexical items, most languages actually have a limited number of words with which to express everything in the experience of the people who use them. There may be a general consensus on what scientific terms like *magnesium* or *hydrochloric acid* mean, or what type of animal or bird is signified by a certain Latin name, but the fact is that a lot of terms are built out of apparently more general lexical items.

Traditional terminology of the kind encouraged by Wüster (1959), and continued by the Vienna school of terminology, assumed that concepts could

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[13] For example, simply knowing the correct vocabulary for legal terms in another language – if, indeed, a corresponding concept and term exists in that language –, is not sufficient to translate from the legal genre of one language into that of another.

be clearly delineated by the subject experts involved, that these concepts could be given a place in a concept system, and then clearly defined and designated by a word or combination of words which, in turn could be institutionalised by usage and, when necessary, by the semi-legal process of standardisation. For many practical purposes, this process, which grew out of structuralist semantics, has obvious advantages, particularly when the understanding of the concept is fairly straightforward and refers to something easily identifiable by common sense processes in the real world.

The nature of realism is the subject of many philosophical debates. However, for the purposes of this paper, we agree with Lakoff & Johnson (1999:109) when they say: «What we mean by 'real' is what we need to posit conceptually in order to be realistic, that is, in order to function successfully to survive, to achieve ends, and to arrive at workable understandings of the situation we are in." When we assume the reality of a concrete thing or scientific theory for such practical reasons, we are making an ontological commitment which 'can therefore be used to make predictions and can function in explanations' (ibid: 109). The real world functions, for better or worse, by assuming that the use of language implies such ontological commitments to everything that forms part of our daily lives. With standardised terminologies, this commitment is made explicit by an organised attempt to stabilise the fluidity of language.

1.2.3. Fuzziness

The dichotomy between general and specialised languages is far fuzzier than the above distinctions would suggest. As already pointed out, many terms are simply the result of the polysemic usage of single, or combinations of, general lexical items. Making these units into official terms helps to restrict their usage to a particular interpretation when used in a pre-determined context. It is only natural that the general language item and the specialised use of it will share a certain amount of semantic content, but, by deciding which of a possible selection of synonyms may be used in certain circumstances, it is possible to avoid misunderstanding.

This theoretical problem has practical consequences. One of the reasons why unqualified, or badly trained, translators make so many lexical mistakes when translating specialised texts is because, being ignorant of the subject matter, they often simply select one such synonym from a general dictionary, without consulting any further reference or other literature to discover whether their choice is actually relevant or correct. Another result is that, at least in the past, one of the arguments in favour of teaching students 'general' language studies and ignoring specialised language was that specialised vocabulary was considered to be of minimal importance when considering texts as a

whole[14]. This sort of observation was often based on crude analyses of corpora that simply listed words in isolation. Today more sophisticated methods of term retrieval lead to quite different conclusions[15].

Lakoff & Johnson (1999) extension of their theory of metaphors to all aspects of language has implications for both general and specialised language, which Temmermann (2000) develops explicitly in relation to terminology. Using the relatively new area of biotechnology for her examples, she demonstrates how metaphorical notions also shape usage in the creation of terms, and argues that these processes are just as common in specialised as in general language. Cognitive linguists suggest that the way in which we understand and express anything – whether it is a primitive emotion or a highly sophisticated scientific concept – is governed by the metaphors that reflect the positioning of the whole human being in relation to the surrounding environment. In this sense, the difference between general and specialised language is often a matter of perspective, and the choice of synonym in a particular specialised context is probably governed by the metaphorical usage adopted in the discipline, rather than by a choosing a synonym from a dictionary. Since specialists may adopt different metaphorical usages in different languages for socio-cultural reasons, these factors also further complicate the life of the translator.

To illustrate the problems of polysemy, metaphor and socio-cultural usage, in relation to this fuzzy area between general and specialised language, let us take an example that is well known in Portuguese engineering circles, where a certain technical meaning of the polysemous English word *plate*[16] is translated by both *placa* and *laje*, also polysemous[17]. The definitions in general dictionaries do not provide any directly equivalent notions either between the English word and the Portuguese ones, or between the two Portuguese words, although several of the

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[14] It should be obvious that students of English for Special Purposes need to start with a reasonable knowledge of general English. However, once this has been acquired, there are plenty of practical reasons why they should be trained to specialise in certain areas of language, both from the point of view of proficiency in the language itself, and as a tool for studies in other areas.

[15] See Veronis (Ed) (2000) and Bourigault et al (2001).

[16] *Webster's Encylopedic Unabridged Dictionary of the English Language* lists 34 entries under *plate*, of which the most relevant for our purposes is Entry 8: a thin flat sheet or piece of metal or other material, esp. of uniform thickness.

[17] The *Dicionário da Língua Portuguesa Contemporânea* lists 4 entries for *laje* and 14 for *placa*.
Entry 2 for *laje* gives: Pedra grande, achatada e lisa.
Entry 4 for *laje* gives: *Eng.* Placa em betão armado, de altura reduzida, usada para cobrir superfícies, com pavimentos, tectos...
Entry 1 for *placa* gives: Folha ou lamina de um material relativamente rígido.
Entry 3 for *placa* gives: *Constr.* Estrutura de betão armado que numa construção cobre um determinado espaço.

definitions supply semantic notions that relate to some sort of hard, flat, man-made/crafted piece of a material used in construction engineering[18].

A detailed historical, socio-cultural and psychological study might result in some interesting explanations as to why there should be such an argument over which Portuguese word to use. Here are a few clues one could follow up. The more general dictionary definitions seem to show *placa* as being made out of some man-made substance, whereas *laje* is associated with natural stone. An older dictionary[19] sees *placa* in the building sense as 'afrancesado' or of French influence (*plaque*). *Laje* has an important definition that associates it to tombstones in churches[20]. Perhaps the engineers who support *placa* have been influenced by a French education or, possibly unconsciously, reject the associated image of the tombstone and its metaphorical associations with death. The supporters of *laje*, on the other hand, may be influenced by the possibly more Portuguese origin of the word which, combined with a certain fashionable chic attached to using natural materials, gives the word a blend of positive connotations. In any case, neither word has much to do with the most generally recognised use of the English word *plate*, which is best translated into Portuguese as *prato*, and there are meanings for *placa* and *laje* in engineering that are distinguishable from each other.

2. The systematisation of the lexicon

The debate on how we categorise the world around us goes back to early philosophy, and the relationship between entities, concepts, and words is an essential part of this discussion. Lexicography develops our awareness of words, and lexicology theorises about the conceptual frameworks underlying the alphabetically arranged contents of dictionaries. Technological developments over the last twenty years have also helped to change traditional lexicographical work in ways that can benefit from increased awareness of lexical relations and networks.

2.1. Lexicography and the possibilities of technology

The influence of corpora on the preparation of dictionaries over the last twenty years has revolutionised certain theoretical approaches to lexico-

[18] This would seem to be a special meaning that is independent of that in which *placa* and *laje* refer respectively to the structures above and below a living space/room in a house, for example (information provided by a lay person with a knowledge of building techniques).

[19] *Grande Dicionário da Língua Portuguesa* by Cândido de Figueiredo (1939).

[20] The *Dicionário da Língua Portuguesa Contemporânea* – entry 1.

graphy. However, the impact on the dictionaries available has not yet reflected all the possibilities offered by technology. Even the dictionaries on CD-ROM remain in a similar format, with the main observable advantage being a certain sophistication of the look-up facility. However, the advantages of hypertext, and underlying relational databases, have not been ignored by the more theoretical researchers in the field.

There have been pragmatic attempts to systematise the lexicon into explorable networks. Fillmore's frame semantics, which classifies words according to their semantic closeness and the type of situation in which they occur, is behind the project FrameNet, (see Fillmore & Atkins 1998) at the University of Berkeley. As they explain:

For practical reasons, frames in the FrameNet project are organized by domain, which are very general categories of human experience and knowledge. Domains serve as useful groupings of semantic frames, but their theoretical significance is slight and indirect. All the important information about lexical items is captured by their associations with specific frames and by constraints on their syntactic expression of the elements of those frames[21].

For example, after being assigned to one of the general categories of the frames, verbs are described according to the syntactic structure in which they occur, with a semantic analysis of the roles or valencies of the subjects, objects and complements to be found with these structures.

A more lexically orientated project is WordNet, run by George Miller and Christiane Felbaum at Princeton University, which is described in Felbaum (1998). The result can be consulted on-line or downloaded[22]. It is a project which not only gives fairly traditional information on general lexical items, it also provides information on synonyms, hypernyms, hyponyms, antonyms, syntax and a variety of other aspects of the words being examined. This implies an underlying conceptual framework, which, however, is not immediately obvious to the casual observer. There is also a projected EuroWordNet for several European languages[23], but little information is available yet.

2.2. Electronic Thesauri

Lexicographers have made other attempts to organise the lexicon by subject, rather than in alphabetical order. The most well known example of this for general language is probably Roget's thesaurus, and there is also Wordtree (1984), which works by relating words to each other semantically. However, these refe-

[21] Accessible at http://www.icsi.berkeley.edu/~framenet/.

[22] Accessible at http://www.cogsci.princeton.edu/~wn/.

[23] Accessible at http://www.hum.uva.nl/~ewn/.

rence books have always been restricted by their two dimensional paper format.

The electronic encyclopaedias like Encarta, the Encyclopaedia Britannica and the Portuguese Diciopedia have accustomed us to the delights of hypertext. There is also an interesting exercise in a dictionary-thesaurus at the site called Wordsmyth[24], which allows one to follow links to related words in hypertext fashion, as can be seen in Figure 1. The 'synonym' and 'similar words' divisions are links to the relevant lexical entries in the database – and one thing leads to another.

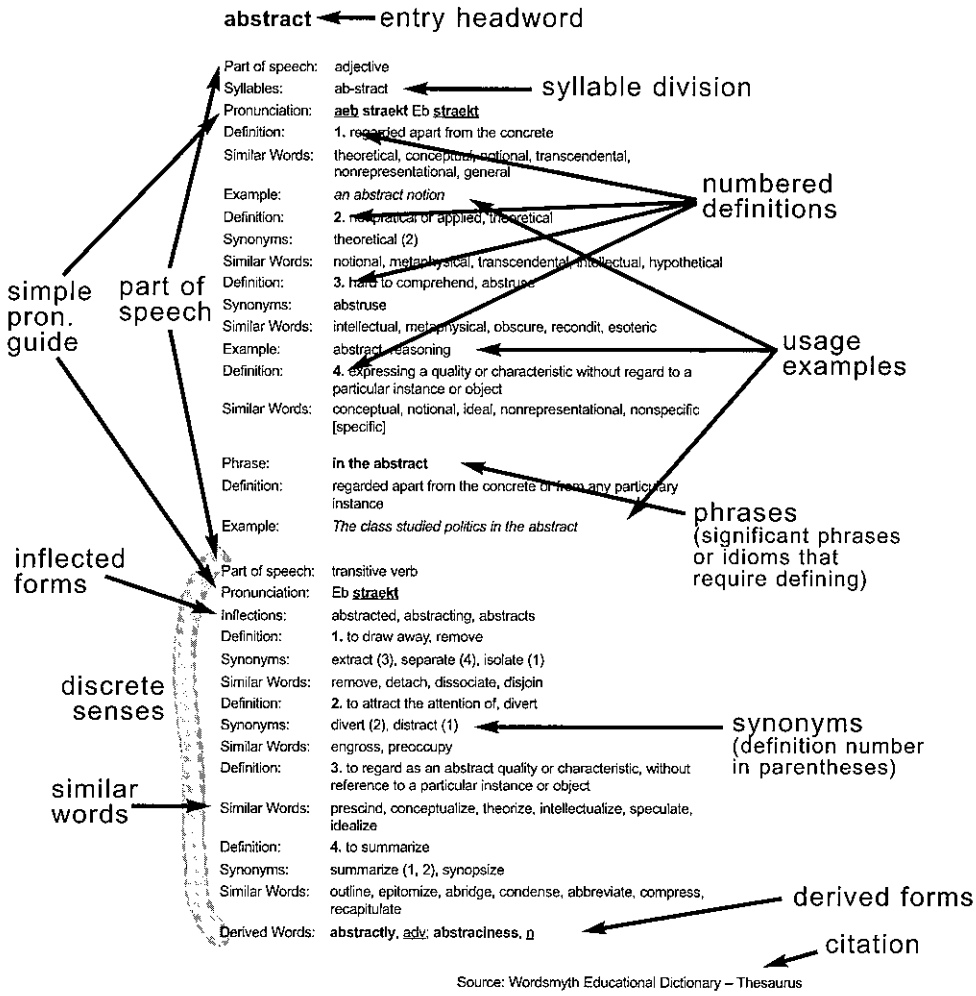

Figura 1 – From http://www.wordsmyth.net/home.html.

[24] Accessible at http://www.wordsmyth.net/home.html.

There are also a large variety of thesauri in special domain languages, the objective of which is to systematize the concepts in that area, rather than simply the words that represent them. Some of those in technical and scientific areas – like engineering, medicine, chemistry or law - are important works of classification and essential works in a specialised library. The name of thesaurus is also given to more general works, but the principal function of these works is to serve as reference to documents in specific areas. This type of work is closely related to library organisation and documentation.

Until recently, such attempts at systematisation were governed and restricted by the need to produce them in two-dimensional printed form, with cross-references indicated in the text with expressions like 'see also'. Now, hypertext and relational databases have opened up new vistas as to how knowledge can be organised, categorised and represented in an easily accessible form. Examples of on-line thesauri that serve largely as guides to bibliography are HASSET - Version 2.1 Humanities And Social Science Electronic Thesaurus[25] and the NASA Thesaurus[26]. These thesauri, in turn, owe much to well-known library classifications like the Universal Decimal Classification (UDC)[27] and the Dewey classification[28].

2.3. Terminology and conceptualisation

It is a truism that the difference between lexicography and terminology is that the latter deals essentially with concepts and that the words or terms used to express these concepts are the result of an agreement between the subject specialists, with or without the help of linguists. The International Standards Organisation[29] ISO/DIS standard 1087-1.2 on *Terminology work – Vocabulary – Part 1: Theory and application* (2000) goes to some lengths to diagram and describe the various aspects of concepts.

The concept is seen as 'a unit of knowledge created by a unique combination of characteristics' that can be explained either by its 'designation' or representation of a concept by the sign which denotes it or a 'definition' or 'representation of a concept by a statement which describes it'. Concepts are individual and general, superordinate – sub-divided into generic and comprehensive concepts, and subordinate – sub-divided into specific, partitive and coordinate concepts. Apart from the usual considerations of the intensional and extensional nature of concepts and their characteristics, the standard also

[25] Accessible at: http://dasun1.essex.ac.uk/services/intro.html.

[26] Accessible at and downloadable from http://www.sti.nasa.gov/98Thesaurus/vol1.pdf.

[27] Accessible at: http://www.udcc.org/.

[28] Accessible at: http://www.oclc.org/dewey/.

[29] Accessible at: http://www.iso.ch/iso/en/ISOOnline.openerpage.

draws attention to other considerations like the relations between concepts – hierarchical (generic and partitive) and associative (sequential, temporal and causal) – as well as general aspects of terminology work.

3. Ontologies and knowledge engineering

Even the relatively small proportion of the general public who use libraries are often unaware of the way they are organized, because they are organised in real space and time and there is usually someone to point the way to the appropriate shelf. The virtual space of the Internet has, however, given rise to various attempts to systematise, organize and make easily accessible the enormous amount of material on-line. The browsers typically present a list of categories that lead to sub-categories and then to finer and finer distinctions. Most of this is based on the UDC and Dewey categories.

In the early days of the Internet, the three main ways of finding information were a) to have the address of site required, b) to 'surf' using the categories already mentioned or to c) use keywords to help localize suitable sites. However, as the amount of information increases, and one-word searches return hundreds of thousands of possible leads, more sophisticated methods of searching are being developed. The emerging discipline for this work is 'Knowledge Engineering', the objective is 'information retrieval', and the term used for the attempts at semantic organisation of this information is 'ontologies'.

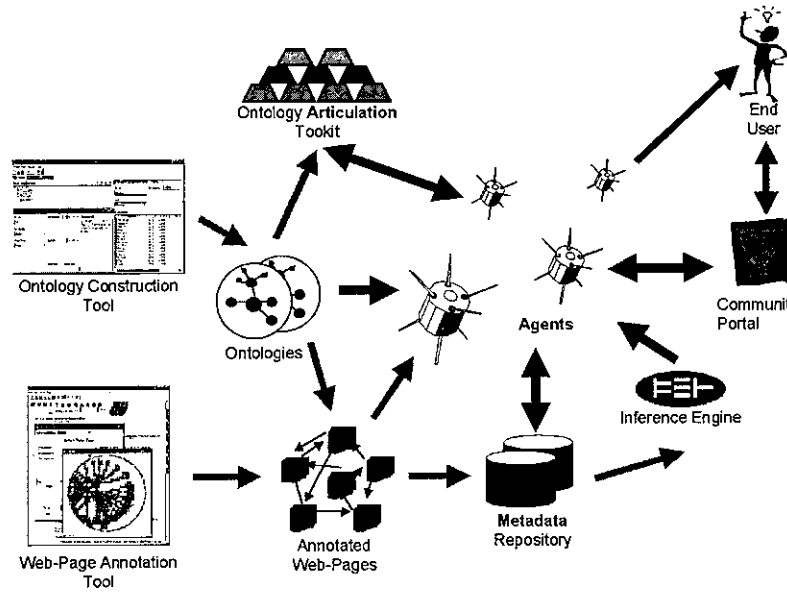

Figura 2 – From: http://www.semanticweb.org/semanticwebfoodchain/gif

The type of work can be seen at the Semantic Web[30], where we found Figure 2. This diagram shows how ontologies function in the wider context, or 'foodchain', to use their own expression. There are also links on this site to ONTOLINGUA[31] organized by Stanford University, where one may register, use their software and make suggestions on how to create an ontology for a specific area. The tutorial they offer on-line demonstrates how one would do this if one needed to create an ontology for one's used car salesroom. This example draws attention to the multiple uses to which this technology can be put. Rather than restrict people to strict philosophical and academic classifications, people are invited to use and contribute to the ontologies created, although suggestions are given on how to use the framework offered.

The DARPA Agent Markup Language (DAML) Program and the DAML ontology library[32] brings together project work done at Stanford University, the Semantic Web and about sixteen other organisations. They are all working in conjunction with the World Wide Web Consortium (W3C), which 'develops interoperable technologies (specifications, guidelines, software, and tools) to lead the Web to its full potential as a forum for information, commerce, communication, and collective understanding'[33]. These projects seem to be in their early stages. The ontologies are compiled into relational databases and lists can be accessed according to class, properties, instances and topics, as well as according to the project or organisation sponsoring them.

The ontology lists represent totals of 21,692 classes, 4,640 properties and 12,387 instances. Such numbers leave the linguist in a state of disbelief, until one begins to analyze and understand what lies behind them. For a start, the lists contain a lot of repetitions because the numbers represent the total contribution of the entries to the database by a collection of unrelated projects. The classes they describe are essentially classification codes to be found in various areas. One such list of 9,975 classes that is included is taken from the UNSPSC – Universal Standard Products and Services Classification Code[34], which "was created when the United Nations Development Program and Dun & Bradstreet merged their separate commodity classifi-

[30] Accessible at http://www.semanticweb-org/.

[31] Accessible at http://www-ksl-svc.stanford.edu:5915/.

[32] Accessible at http://www.daml.org/ontologies/.

[33] See the W3C site at http://www.w3c.org/.

[34] Accessible at http://www.unspsc.org.

[35] See http://www.ksl.stanford.edu/projects/DAML/UNSPSC.daml.

cation codes into a single open system. The UNSPSC Code is the first coding system to classify both products and services for use throughout the global marketplace"[35]. The properties listed make one understand even better why lexicologists gave up on the componential analysis theories of the 1970s, and the relatively small number of instances demonstrate that the projects are largely in the theory phase, although there are ontologies which consist only of instances, – one such example has 1,208 instances – and are still waiting to be categorised.

4. Conclusions

And where, one may ask, does this leave us, the linguists who will, we hope, be reading the articles in this volume produced by a research centre devoted to linguistics? Some may argue that we still have plenty to do working out the metaphors of everyday life, a prospect that appeals to us with our humanities training. As I write this, a message arrives from COGLING, the Cognitive Linguistics list[36], from an Italian researcher asking for advice on research into 'erotic metaphors in mystical literature in mainstream religions'[37]. What a lovely ivory tower to build for oneself in the interests of research!

However, it would seem that our colleagues in knowledge engineering, computational terminology and related areas could benefit from linguistic insights as they hasten to build a system that needs to be accessed by words – representing concepts – but still words, with all the power words have in organizing perception and knowledge. It is not the stuff of ivory towers, but there is an enormous amount of work out there that needs to be done. Perhaps we linguists should offer to help.

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