AUTOMATED ANALYSIS OF LEGAL TEXTS
Logic, Informatics, Law
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THES GIUR: DEFINITION OF AN EXPERIMENTAL LEGAL THESAURUS IN TLS (THESAURUS AND LINGUISTIC INTEGRATED SYSTEM)

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1. THE PURPOSES AND FUNCTIONS OF "THESAURI"

The main purpose of an information retrieval system is when it is searched, to supply all the pertinent information contained in the system. It must therefore meet two requirements: to retrieve all the relevant information (recall capacity) and to exclude all irrelevant information (precision capacity). A system which does not meet these requirements is defined in the first instance as silent (poor recall capacity) and, in the second, as noisy (poor precision capacity).

Information retrieval is based on a technique which compares two sets of linguistic signs. The former is the indexing language which expresses the information and the latter is the query language which expresses the request for information.

The difficulty in retrieval lies in making the query language match the language of the data base and the failure to make them match causes a deterioration in the performance of the system creating silence and noise. The fact that all large information systems now adopt (pure or corrected) natural language for indexing is a major problem in retrieval and aggravates the difficulties related to matching these languages which have already been mentioned.

Information retrieval systems therefore ought to provide a very sophisticated research tool which helps bring the indexing and query languages together. These tools ought to produce expansions and restrinctions in the user's recall capacity, depending on his given requirements.

Thesauri have played a prominent role among the traditionally more effective tools for improving the quality of the information retrieved both in relation to recall and precision[1].

There have been many definitions of "thesaurus" and still others could be given, depending on the particular aspect of a thesaurus which is being underlined. One of the definitions which, in our opinion, most clearly expresses the intention (intentional aspect) of the concept is the following: an ordered set of signs (descriptors) which constitutes an open system designed to classify and organize concepts or terms according to subject matter, problems or some other criteria.

This definition has, perhaps, the advantage of unifying the two functions which co-exist in any genuine "thesaurus", namely the classification and organization of concepts. As classification system it attempts to allocate an univocal and reciprocal concept to each descriptor. As an organizational system it attempts to identify relations between concepts through a relation between descriptors. This means that a "thesaurus" is made up of a set of descriptors and a set of relations between those descriptors.

It can be said that the relations between descriptors are defined in such a way that an unambiguous, reversible association between the descriptor and its extention and intention is obtained. Referring to the two main functions of a "thesaurus" we can say that a "thesaurus" as a classification system ("thesaurus" of substitutions) aims at identifying an association between a descriptor and it intended meaning while a "thesaurus" as an organizational system ("thesaurus" of relations) seeks to define the extension of a descriptor and therefore its related concept through semantic relations or paradigms of meaning.

By extension we mean the objects or in other words, the class of elements or real things to which the descriptor actually applies or refers. Conversely, intension indicates the meaning, or in other words, the set of attributes or properties characterizing each element to which the descriptor is correctly applied.

Extension and intension vary inversely in relation to each other: the wider the extension of a descriptor, the narrower its intension and viceversa. For example, the extension of delitto (crime) is wider than that of rapina (robbery) as the former refers to more objects or entities. On the other hand, the intension of rapina (robbery) is wider than that of delitto (crime), as the characterization or definition of rapina (robbery) must make reference to a wider set of attributes than those which are sufficient to describe delitto (crime).

Solutions to the problems relating to homonymy and polysemy must be found if we wish obtain satisfactory results and construct a real "thesaurus", and, where possible, the concept of synonymy should be defined. Likewise, the paradigmatic relations of meaning of hyponymy, or inclusion and of incompatibility must be defined as strictly as possible if we are to obtain an association between a descriptor and its extension[2].

1.1. Homonymy and synonymy.

These linguistic phenomena depend on the fact that each form does not have only one meaning and that each meaning is not associated with only one form. This kind of linguistic "ideal" does not occur in any natural language. Generally two or more

meanings may be associated with the same form (in this case the words are homynyms) and two or more forms may be associated with the same meaning (in this case the words are said to be synonyms). In dealing with languages in which the spelling differs and does not correlate with the phonology, a further distinction between homography and homophony can also be made.

A "thesaurus" must resolve the problem of homonyms and endeavour to define synonyms so that descriptors can be given the meanings intended for them in an unambiguous and reversible way.

The usual method of eliminating the problems caused by homonyms is to further define the descriptors. For example, in Italian law the homonym azione can be further defined as azione giudiziaria (judicial proceedings) and azione di società (company share). The same result can be achieved with the term abbattimento which can be further defined as abbattimento d'imposta (tax rebate), abbattimento d'animale (animal slaughter) or abbattimento d'edificio (demolition of buildings) etc.

The definition of synonymy, in practice, is rather complex. Linguistically the concept of synonymy has been strictly defined using the notion of bilateral implications of meanings or semantic equivalents between phrases.

If a phrase F1 semantically implies (direct implication) another phrase F2 and F2 semantically implies F1 (converse implication) then F1 is the semantic equivalent of F2. (See Fig. 1).

If F1 and F2 have the same syntactical structure and only differ from each another because in one the lexical element X appears and in the other Y appears, then X and Y are synonyms in these limited contexts.

In order to build a "thesaurus" obviously it is necessary to distinguish between two types of synonyms that is between synonymy stricto sensu (also called perfect, true or total) and synonymy lato sensu (also called imperfect, partial or quasi-synonyms). Complete synonymy exists when the set of F(x) phrases which contain X imply and are semantically implied by the set of F(y) phrases which contain Y. Partial synonymy exists where only some F(x) phrases imply and are implied by F(y).

In our experiment the relation between synonyms was constructed using DMI the "Dizionario Macchina Italiano" as a basis[3].

1.2. Hyponymy

The principle heirarchical relation is hyponymy or inclusion (also referred to as abstraction) between a higher concept or term (called hyperonym or superordinate) and lower concepts or terms (called hyponym or subordinate).

Hyponymy, together with incompatibility, is one of the main elements in the organisation of a dictionary. Although it is frequently referred to as inclusion where it refers to meanings this term is ambiguous as inclusion among meanings is different from inclusion in classes and elements of a class. It is for example incorrect to say that the meaning of automobile

(automobile) is included in that of veicolo (vehicle) or the meaning of compravendita (agreement of sale) in that of contratto (contract). In fact, from a certain point of view, a more general term is more inclusive than a more specific term (contratto (contract) is more inclusive than vendita (sale) and delitto (crime) is more inclusive than rapina (robbery) since it refers to a broader class of things; but from another point of view the more specific term is more inclusive because it contains more components of meaning. The difference between these points of view concerning inclusion corresponds to the difference in traditional logic between the extension and intension of the term. Therefore if we consider the extensional aspect of a term or in other words, the class of entity to which it is applicable, it is correct to say that the generic includes the specific, but if we consider the intension, or in other words, the attributes of the elements of a class, then it is incorrect to say that the specific is included in the generic. A strict linguistic definition of hyponymy which is also useful for documentary purposes is the one given in terms of unilateral (semantic) implication. (See Fig. 2).

Let us take a legal example: rapina (robbery) implies delitto (crime) while delitto (crime) does not imply rapina (robbery).

if F1 => F2 & F2=>1 then F1=F2

=> semantically implies
= semantic equivalent

Fig. 1. Definition of Synonymy (Semantic Equivalence)

1.3. Cohyponymy

In the construction of a thesaurus, the relation of cohyponymy which unites two or more terms having the same hyperonym term, is very important.

Cohyponymy can be defined in terms of "implications of meaning". The first element of implication is the conjunction of two unilateral implications whilst the second is a bilateral implication (See Fig. 3).

Let us take a legal example: "if vendita (sale) is the hyponym of (implies) contratto (contract) and if permuta (barter) is the hyponym of (implies) contratto (contract) then (it is implied that) vendita (sale) and permuta (barter) are cohyponyms" and therefore they have a semantic correlation which may be of affinity, analogy or proximity (the French speak of the relation de environnement and the English, of related terms).

1.4. Incompatibily

Incompatibility is one of the main paradigmatic relations of meaning on which a language is structured. Paradigmatic relations

can be defined in terms of implications of meaning. Two lexical elements are incompatible when the assertion of one implies the negation of the other and the negation of one does not imply the assertion of the other. (See Fig. 4).

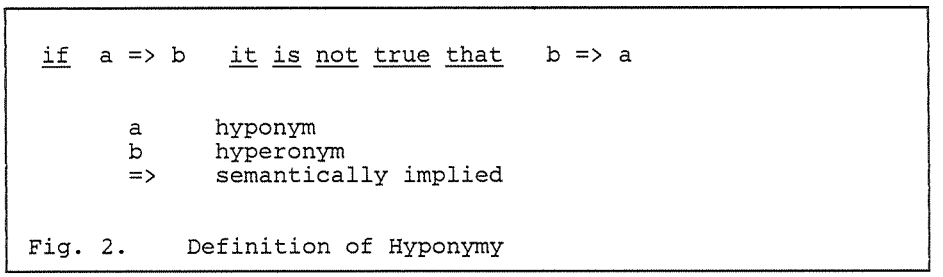

Fig. 2. Definition of Hyponymy

Let us take a legal example where by substituting the terms furto (larceny) and rapina (robbery) for a and b we find that rapina (robbery) necessarily implies non furto (not larceny) and non rapina (not robbery) does not necessarily imply furto (larceny).

The substitution of any one of the descriptors indicating an object belonging to the class headed "delitto" (crimes) for "furto" (larceny) would imply the negation of "furto" (larceny) and all other objects in the class headed "delitto" (crimes). "Delitto" (crimes) form a class of objects which are incompatible among themselves and their respective meanings are semantically incompatible descriptors. As a rule cohyponyms are incompatible among themselves (for example, the class of "delitto" (crimes), the class of "contratti" (contracts) etc.

Relational thesauri generally make provision for a specific relation where cohyponymous terms are concerned, as distinct from other forms of incompatibility, called relations of semantic opposition (complementary, antonomy, inversion or reciprocality).

1.4.1. Relations of Semantic Opposition

It is useful to distinguish broadly between different kinds of opposition in meaning within the concept of incompatibility. Three kinds of opposition can seen: complementarity, antonomy and inversion. All three kinds can be defined through semantic implication and by whether or not they belong to particular classes. The same principles which are valid for incompatibility generally apply to all of them. Furthermore, apart from unilateral semantic and logical implication, a further principle which identifies them as subclasses and which distinguishes them from each other applies to each of them.

if a => c & b => c then a <=> b

a,b hyponyms
c hyperonyms
=> semantically implies

Fig. 3. Definition of Cohyponymy

1.4.1.1. Complementarity

Complementarity is strictly defined in terms of bilateral semantic implications. Two terms are complementary when the following two conditions occur: the assertion of one implies the negation of the other and the negation of one implies the assertion of the other.

Complementarity can be defined therefore as the conjunction of two implications (direct and converse) or equivalence (a ===> b, b ===> a, a <===> b, a = b). Let us take as an example the terms colpevole (guilty) and innocente (innocent):

colpevole ===> non innocente
non innocente ===> colpevole
non colpevole ===> innocente
innocente ===> non colpevole

The propositions "Smith is guilty", "Smith is not innocent" and the propositions "Smith is not guilty" and "Smith is innocent" are equivalents.

Hence, we can say that two terms are complementary when one is synonymous with the negation of the other. Complementarity can be considered as a special case of incompatibility existing between two terms. The assertion of one member of a set of imcompatible terms implies the negation of every other member of the set and the negation of a member of a set of incompatible terms implies the assertion of the disjunction of all the other members.

1.4.1.2. Antonomy

Two concepts or two terms are antonomys when they are at the extremes of a scale or range of values whose continuity is interrupted in passing from one extreme to the other.

It is characteristic of the opposites in these scales that they can, generally speaking, be graduated. This graduation is linked to the operation of comparison which may be either explicit or implicit. Two things can be compared to a particular property. For example, the right of usufruct is broad, or two "states" of the same thing can be compared with respect to the property in question: for example, today the powers of the President of the Italian Republic are wider than they were under the previous regime.

a implies not b & not a does not imply b

a,b lexical terms

Fig. 4. Definition of Incompatibility

1.4.1.3. Inversion

A third relation of meaning considered to be opposition is that which exists between comprare (to buy) and vendere (to sell) and moglie (wife) and marito (husband). This relation is called inversion or reciprocality. (The term complementarity has also been used but it creates confusion with the definition of complementarity which we have already given).

Inversion differs from complementarity because, as in the case of antonomy, the principle that the negation of one implies the assertion of the other does not hold and it differs from antonomy in so far as inversions cannot be graduated or compared. There is, however a parallel between antonyms and inversions which is worth noting.

Just as the phrase

Smith buys a horse from Jones

semantically implies and is implied by

Jones sells a horse to Smith

so the phrase

The offence of insulting a public official is more serious than the offence of libel

implies and is implied by

The offence of libel is less serious than the offence of insulting a public official

In both cases the lexical substitution of one term with the corresponding inversion or antonomy, associated with a syntactical transformation which changes the subjects into the objects of phrases, does not produce any alteration in the meaning of the phrases which have been transformed or changed. They have a different syntactical structure but the same semantic value, Incompatibles which are incapable of graduation or comparisons, for which this rule of reciprocality applies, can be defined as inversions.

1.5. A "Thesaurus" of Legal Terms for the "Dottrina e Dibattito Giuridico"

The "Istituto per la Documentazione Giuridica" (IDG) of the Italian National Research Council (CNR) began, at the beginning

of 1976 building a data bank of legal data, which was subsequently stored and processed for data base management utilizing STAIRS/VS[4].

The purpose of our work is to construct a "thesaurus" as a research aid for this data bank.

As we have already mentioned the building of a "thesaurus" (the structured organization of keywords) is seen as a natural step in the development of any documentation retrieval system.

By documentation we mean the whole field encompassing the acquisition and processing of documents so that certain individual items of data out of a mass of potential information give exact answers to specific queries. Ours cannot, however, be considered a classical "thesaurus", or in other words an instrument which has the duel task of indexing and retrieving documents during searches, but as a documentary base and an instrument permitting free full text searches of documents are already available, it is our aim to create a further research tool which will guarantee greater precision in information retrieval.

1.6. The Need for a "Thesaurus" which can be consulted "on line"

Because of the flexibility of natural language, the meaning of a word varies according to the context in which it is used. In order to make an information retrieval system and to identify the inflexions of a word, different keys must be used for each inflexion. Consequently, when a key is searched during a session at the terminal only the documents relating to that particular inflexive form are retrieved from the data bank. This sometimes gives a reply which does not altogether satisfy the user's needs. This is not so with data banks such as the one under consideration where the information made available to the user begins with the text of a document written in natural language without using different keys to denote the inflexions of words. Nevertheless experience shows that when a considerable quantity of data are involved, the different terminologies used to express the same concept frequently result in a system which is incapable of giving the user conprehensive replies to his queries.

This is the reason why an information retrieval system needs backing up with an instrument such as a thesaurus which, as it is built up from relations between terms in the data bank, becomes a very useful aid to users of a documentation retrieval system, regardless of whether it is an expert system, as it improves information search strategies.

The actual implementation of decisions taken concerning language analysis led to the utilization of the STAIRS/VS - Integrated Thesaurus and Linguistic System (TLS)[5] which is an extension of the STAIRS/VS retrieval system.

This system is available at CNUCE in Pisa, for which reason, we had to transfer a corpus of documents from the data bank referred to above CNUCE and process them with STAIRS/VS before we could begin testing TLS. The test data bank which compiled is known as PENA and contains about 13.000 documents from the "Dottrina e Dibattito Giuridico" file. It can also be searched

via the network from Florence by using AQUARIUS.

Once the thesaurus has been implemented in TLS, the user can gain access to it by formulating pertinent queries and then by passing to the STAIRS retrieval system.

1.7. The TLS

The TLS expands the STAIRS/VS retrieval system. It has two components:

(a) online retrieval;

(b) thesaurus generator.

Component (a) expands the retrieval capacities of STAIRS/VS allowing for easier conversation with the user whom it permits to work through the "thesaurus" and then pass directly from TLS to STAIRS for searching the data bank.

Component (b) permits "thesauri" to be created and updated. The output from this procedure is the instrument which in phase (a) permits the conversation between the user and the "thesaurus". For more information on component (a) see while the following details are given in relation to the generator phase of a thesaurus.

1.7.1. What a "Thesaurus" Means in the TLS

In the TLS the term thesaurus does not refer to the vocabulary of the documents in the data bank, that is, the set of all the words which occur at least once in the texts of the documents but it refers to a set of terms connected to each other by indicators where these connections are determined by relations defined through the terms themselves. All thesauri have in common the fact that relations are defined by a number of descriptors, called thesaurus entries and each descriptor can be related to one or more codescriptor. The relations are based mainly on semantic considerations depending on their particular usage.

1.7.2. Definition of Relations in the TLS

Relations are defined by their names, identifiers and properties (symmetry, existence of opposites, transitivity etc.).

Subsequently, the relations between descriptors and codescriptors are written in a format acceptable to the generator programmes. Starting from this input and the table of definitions of the the relations these programs are able to generate automatically all the other relations which are the logical consequence of their properties.

R1, R2, R3 and R4 are the four relations stated in the TLS which have the following properties: R1 symetrical, R4 transitive, and R2 and R3 inversions of each other. a, b and c are the three terms from the thesaurus used in Figure 5 to illustrate cases of the automated generation of new relations.

Relation at input	Generated Relation
a R1 b	b R1 a
a R2 b	b R3 a
(a R4 b) & (b R4 c)	a R4 c

Fig. 5. Example of the Automated Generation of relations

If required to do so, the TLS is capable of automatically generating "multiple word" relations, or, in other words, relations between the phrase and the individual words. For example, if a = "gara d'appalto" (call for tenders) an entry, b = "gara" will automatically be generated connecting the "multiple-word" with "gara d'appalto".

2. INITIAL EXPERIMENT

In our first experiment, lexical, semantic and syntactical relations thought to be fundamental were chosen and implemented. To these we added the so-called Multiple Word (MW) which is written in the program and therefore automatically generated by the TLS.

In particular the definition "equivalent" (EQ) indicates those lemmata which have the same morphological roots and which by the use made of them, can modify the syntax of a phrase but not its meaning. This lexical relation appeared to us to be useful not only in widening naturally the user's field of inquiry but, above all, because it could make material of an even richer linguistic quality available in the processing of legal language where, although lexical equivalences are frequently found, they are placed in different semantic levels (e.g. adozione (adoption), adottabilità (adoptability)).

As far as semantic relations are concerned synonyms (SN), narrower terms or hyponyms (NT) which have inverse broader terms or hyperonyms (BT) were defined and implemented. Where synonymy is involved, keeping in mind all the limits associated with the definition of a difficult linguistic concept, we confined ourselves to those relations indicated as synonymous by the DMI. It is also of fundamental importance for the structure of a "thesaurus" to define its semantic heirarchy which, in this case, we identified with BT and NT to signify, respectively, "broader terms" and "narrower terms". A satisfactory definition was in fact arrived at through a critical analysis of the DMI propositions. For example in reference to the term contratto (contract) there is

BT convenzione (agreement)
intesa (understanding)

impegno (undertaking)
NT abbonamento (subscription)
assicurazione (insurance)
concordato (deed of arrangement)

The related term (RT) relation denotes those terms which are not linked either lexically or semantically but are linked by ideological and conceptual connections. This involves a reasonably areas where legal language is concerned (e.g. the lemmata contratto (contract) can be linked to the terms: disdetta (notice to quit), socio (partner), liquidazione (winding-up), società (company), caparra (deposit) etc.

The relation of homography (OM) deserves separate consideration. For example the system retains the terms accollo (tender), rivendita (sale of monopoly goods) etc. as homographs of the descriptor appalto (tender) although they are obviously not linguistically homographs of appalto (tender). We preferred to depart from the linguistic concept so that the corpus would not be burdened with the more correct definitions of appalto1 and appalto2 which would undoubtedly confuse the user. If we consider the output of the thesaurus generation in this first experiment, we can certainly say that the results are satisfactory where the legal-linguistic compatibility of related terms is concerned. Obviously, the implementation must be constantly checked but already we can to forsee that compiling a thesaurus, with the assistance of the TLS, is of real benefit in improving information retrieval in a large data base where documents are available to users in natural language.

In Fig. 6 the list of implemented relations is given.

name	Identifier
MULTIPLE WORD	MW
EQUIVALENTS	EQ
SYNONYMS	SN
RELATED TERMS	RT
HOMOGRAPHS	OM
NARROWER TERMS	NT
BROADER TERMS	BT

Fig. 6. Table of Implemented Relations

2.1. Properties of Implemented Relations

Relations we have defined along with their respective properties are given below:

- EQ (equivalents) having the following properties:
  - transitivity: if "a EQ b" and "b EQ c" then "a EQ c" is generated;
  - symmetry: if "a EQ b" then "b EQ a";

- SN (synonyms) having the following properties:
  - transitivity: if "a SN b" and "b SN c" then "a SN c" is generated;
  - symmetry: if "a SN b" then "b SN a" is generated;
- RT (related terms) having the following properties:
  - symmetry: if "a RT b" then "b RT a" is generated;
- OM (homographs) having the following properties:
  - symmetry: if "a OM b" then "b OM a" is generated;
- NT (narrower terms) having the following properties:
  - there is inversion: if "a NT b" then "b BT a" is generated.

Using this information the table of definition for the TLS "thesaurus", which is shown in Fig. 7, was compiled.

1	2	3	4	5	6	7	8	9
MULTIPLE WORD	MW	010	N		N	*	N	0
EQUIVALENTS	EQ	030	Y		Y		N	0
SYNONYMS	SN	031	Y		Y		Y	0
RELATED TERMS	RT	032	Y		N		N	0
HOMOGRAPHS	OM	033	Y		N		N	0
NARROWER TERMS	NT	034	N	BT	N		N	0
BROADER TERMS	BT	035	N	NT	N		N	0

1 RELATION DESCRIPTION
2 RELATOR
3 INTERNAL RELATION CODE
4 SYMMETRIC RELATION? Y/N
5 RELATOR OF CONVERSE RELATION
6 TRANSIVITY RELATION? Y/N
7 SYSTEM RELATION
8 CYCLES ALLOWED? Y/N
9 NUMBER OF DEFINITION SCHEMES

Fig. 7. Table of Definitions for a "Thesaurus"

Notes

(1) On thesauri generally and on questions concerning the formulation of legal thesauri see Knapp V., Alcuni problemi relativi alla costruzione di un thesaurus giuridico, in: Logica, informatica, diritto, 5, 1979, 1, pp. 175-195.

(2) Here and in the following pages in our effort to deal, with then related linguistic problems, we refer to Lyons J.,

Introduzione alla linguistica teorica, Laterza, 1978, Vol. III: La Semantica, Vol. II & V, 1979, No. 1, p. 175-195.

(3) Dizionario Macchina Italiano, edited by A. Zampolli and others, Istituto di Linguistica Computazionale of the CNR, Pisa; see also Calzolari N., Ceccotti M.C., Roventini A., Documentazione sui tre nastri contenenti il DMI, ILO-DMI, 2, 1983.

(4) Storage and Information Retrieval System/Virtual Storage, General Information - Program Number 5740-XR1.

(5) Storage and Information Retrieval System/Virtual Storage-Thesaurus and Linguistic Integrated System-Program RPQs: Online Retrieval - P 71044, Thesaurus Generator - P 71045.

APPENDIX A

EXAMPLES OF GENERATION

The following are example of TLS's generating capacities beginning with the definition given of it in paragraph "2.1 Properties of Implemented Relations" and by the descriptors given below.

The figure shown below show descriptors with their corresponding codescriptors which were chosen for the actual experiment.

ACCOLLO			
EQ	RT	SN	BT
- accollamento - accollare - accollatario - accollatore	- appalto privato - appalto pubblico - capitolato d'appalto - conducente - creditore - debito - debitore - gara d'appalto - pagamento	- assunzione	- accordo

Fig. 7. Table of Definitions of the Descriptor "ACCOLLO"

ACCORDO				
EQ	RT	SN	NT	BT
- accordanza - accordare - accordato	- concordato - convenzione - matrimonio - mediatore - trattato	- intesa - patto	- alleanza - armistizio - coalizione - collusione - compareggio - compromesso - concordanza - contratto - convivenza - protocollo	- consenso - rapporto

Fig. 8. Table of Definitions of the Descriptor "ACCORDO"

AFFITTO				
EQ	RT	SN	NT	BT
- affittanza - affittare - affittuale - affittuario - fittuario	- canone - inquilino - pigionante - subaffitto - terratico	- fitto - pigione	- compenso - noleggio	- accordo - patto

Fig. 9. Table of Definitions of the Descriptor "AFFITTO"

APPALTO	
EQ	OM
- appaltante - appaltare - appaltatore - appaltatrice	- accollo - rivendita

Fig. 10. Table of Definitions of the Descriptor "APPALTO"

Starting off from these definitions the TLS began generating the structure of the "thesaurus". In Fig. 12 we give an example in graphic form of part of the structure which the TLS generates by referring to a few relations concerning the case under examination.

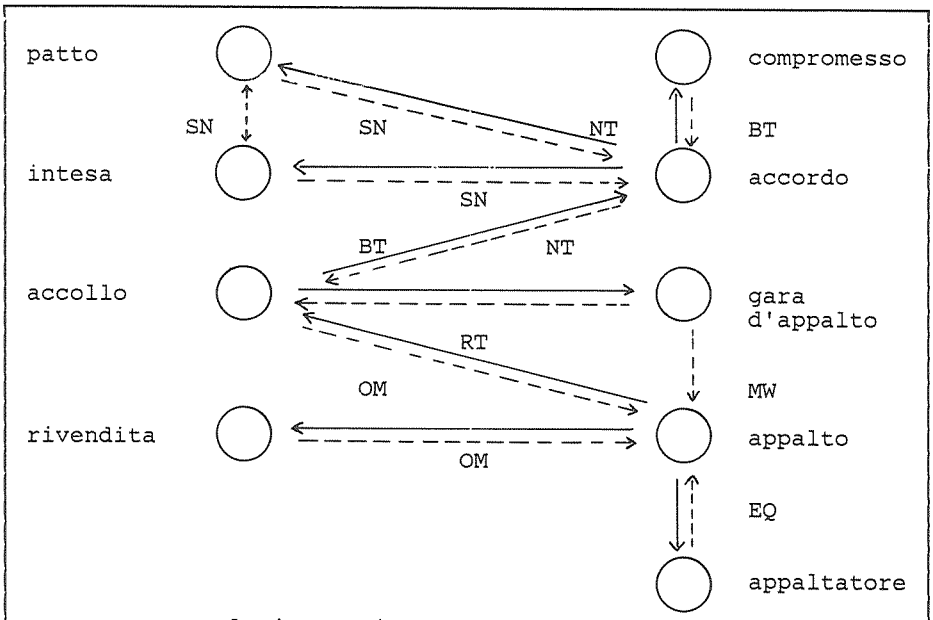

Fig. 12. Graphic Representation of the "Thesaurus" for the TLS

A.1 Generated Output

The "thesaurus" generated by the TLS beginning with the definitions given in Fig. 8, Fig. 9, Fig. 10 and Fig. 11 are shown below.

The relations generated automatically by the TLS beginning with their definitions given in Fig. 7 are indicated with an asterisk.

```
ACCOLLAMENTO

          EQ   ACCOLLARE                *
               ACCOLLATARIO             *
               ACCOLLATORE              *
               ACCOLLO                  *
```

ACCOLLARE		
EQ	ACCOLLAMENTO	*
	ACCOLLATARIO	*
	ACCOLLATORE	*
	ACCOLLO	*

ACCOLLATARIO		
EQ	ACCOLLAMENTO	*
	ACCOLLARE	*
	ACCOLLATORE	*
	ACCOLLO	*

ACCOLLATORE		
EQ	ACCOLLAMENTO	*
	ACCOLLARE	*
	ACCOLLATARIO	*
	ACCOLLO	*

ACCOLLO	
EQ	ACCOLLAMENTO
	ACCOLLARE
	ACCOLLATARIO
	ACCOLLATORE
SN	ASSUNZIONE
BT	ACCORDO
RT	APPALTO PRIVATO
	APPALTO PUBBLICO
	CAPITOLATO D'APPALTO
	CONDUCENTE
	CREDITORE
	DEBITO
	DEBITORE
	GARA D'APPALTO
	PAGAMENTO
OM	APPALTO

ACCORDANZA		
EQ	ACCORDARE	*
	ACCORDATO	*
	ACCORDO	*

ACCORDARE			
	EQ	ACCORDANZA	*
		ACCORDATO	*
		ACCORDO	*

ACCORDATO			
	EQ	ACCORDANZA	*
		ACCORDARE	*
		ACCORDO	*

ACCORDO			
	EQ	ACCORDANZA	
		ACCORDARE	
		ACCORDATO	
	SN	INTESA	
		PATTO	
	BT	CONCORDATO	
		CONSENSO	
		RAPPORTO	
	RT	CONVENZIONE	
		MATRIMONIO	
		MEDIATORE	
		TRATTATO	
		UNANIMITA'	
	NT	ACCOLLO	*
		AFFITTO	*
		ALLEANZA	
		ARMISTIZIO	
		COALIZIONE	
		COLLUSIONE	
		COMPARAGGIO	
		COMPROMESSO	
		CONTRATTO	
		CONVIVENZA	
		PROTOCOLLO	

AFFITTANZA			
	EQ	AFFITTARE	*
		AFFITTO	*
		AFFITTUALE	*
		AFFITTUARIO	*
		FITTUARIO	*

AFFITTARE			
	EQ	AFFITTANZA	*
		AFFITTO	*
		AFFITTUALE	*
		FITTUARIO	*

AFFITTO		
EQ	AFFITTANZA	
	AFFITTARE	
	AFFITTUALE	
	AFFITTUARIO	
	FITTUARIO	
SN	FITTO	
	PIGIONE	
BT	ACCORDO	
	PATTO	
RT	CANONE	
	INQUILINO	
	SUBAFFITTO	
	TERRATICO	
NT	COMPENSO	
	NOLEGGIO	

AFFITTUALE		
EQ	AFFITTANZA	*
	AFFITTARE	*
	AFFITTUARIO	*
	FITTUARIO	*

AFFITTUARIO		
EQ	AFFITTANZA	*
	AFFITTARE	*
	AFFITTO	*
	AFFITTUALE	*
	FITTUARIO	*

ALLEANZA		
BT	ACCORDO	*

APPALTANTE		
EQ	APPALTARE	*
	APPALTATORE	*
	APPALTATRICE	*
	APPALTO	*

APPALTARE		
EQ	APPALTANTE	*
	APPALTATORE	*
	APPALTATRICE	*
	APPALTO	*

```
APPALTATORE

          EQ   APPALTANTE              *
               APPALTATORE             *
               APPALTATRICE            *
               APPALTO                 *
```

```
APPALTATRICE

          EQ   APPALTANTE              *
               APPALTARE               *
               APPALTATORE             *
               APPALTO                 *
```

```
APPALTO

          MW   APPALTO PRIVATO         *
               APPALTO PUBBLICO        *
               CAPITOLATO D'APPALTO    *
               GARA D'APPALTO          *
          EQ   APPALTANTE
               APPALTARE
               APPALTATORE
               APPALTATRICE
          OM   ACCOLLO
               RIVENDITA
```

```
APPALTO PRIVATO

          RT   ACCOLLO              *
```

```
ARMISTIZIO

          BT   ACCORDO              *
```

```
ASSUNZIONE

          SN   ACCOLLO              *
```

```
CANONE

          RT   AFFITTO              *
```

```
CAPITOLATO

          MW  CAPITOLATO D'APPALTO *
```

CAPITOLATO D'APPALTO		
RT	ACCOLLO	*

COALIZIONE		
BT	ACCORDO	*

COLLUSIONE		
BT	ACCORDO	*

COMPARAGGIO		
BT	ACCORDO	*

COMPENSO		
BT	AFFITTO	*

COMPROMESSO		
BT	ACCORDO	*

CONCORDANZA		
BT	ACCORDO	*

CONCORDATO		
RT	ACCORDO	*

CONDUCENTE		
RT	ACCOLLO	*

CONSENSO		
NT	ACCORDO	*

CONTRATTO		
BT	ACCORDO	*

CONVENZIONE		
RT	ACCORDO	*

CONVIVENZA		
BT	ACCORDO	*

CREDITORE		
RT	ACCOLLO	*

DEBITO		
RT	ACCOLLO	*

DEBITORE		
RT	ACCOLLO	*

FITTO		
SN	AFFITTO	*
	PIGIONE	*

FITTUARIO		
EQ	AFFITTANZA	*
	AFFITTARE	*
	AFFITTO	*
	AFFITTUALE	*
	AFFITTUARIO	*

GARA		
MW	GARA D'APPALTO	*

GARA D'APPALTO			
	RT	ACCOLLO	*

INQUILINO			
	RT	AFFITTO	*

INTESA			
	SN	ACCORDO	*
		CONCORDANZA	*
		PATTO	*

MATRIMONIO			
	RT	ACCORDO	*

MEDIATORE			
	RT	ACCORDO	*

NOLEGGIO			
	BT	AFFITTO	*

PAGAMENTO			
	RT	ACCOLLO	*

PATTO			
	SN	ACCORDO	*
		INTESA	*
	NT	AFFITTO	*

PIGIONANTE			
	RT	AFFITTO	*

PIGIONE			
	SN	AFFITTO	*
		FITTO	*
PRIVATO			
	MW	APPALTO PRIVATO	*
PROTOCOLLO			
	BT	ACCORDO	*
PUBBLICO			
	MW	APPALTO PUBBLICO	*
RAPPORTO			
	NT	ACCORDO	*
RIVENDITA			
	OM	ACCOLLO	*
		APPALTO	*
SUBAFFITTO			
	RT	AFFITTO	*
TERRATICO			
	RT	AFFITTO	*
TRATTATO			
	RT	ACCORDO	*
UNANIMITA'			
	RT	ACCORDO	*