We are IntechOpen,
the world's leading publisher of
Open Access books
Built by scientists, for scientists

6,100
Open access books available

149,000
International authors and editors

185M
Downloads

154
Countries delivered to

Our authors are among the

TOP 1%
most cited scientists

12.2%
Contributors from top 500 universities

BOOK CITATION INDEX
CLARIVATE ANALYTICS
INDEXED

WEB OF SCIENCE™

Selection of our books indexed in the Book Citation Index
in Web of Science™ Core Collection (BKCI)

Interested in publishing with us?
Contact book.department@intechopen.com

Numbers displayed above are based on latest data collected.
For more information visit www.intechopen.com

Queries and Predicate – Argument Relationship

Savina Raynaud
Università Cattolica del Sacro Cuore – Milan
Italy

1. Introduction

Queries are essential for retrieving information. For those who surf the net they can play a crucial role. But the relationship between questions and answers involves many classical topics, not only in the language sciences, especially in pragmatics, but also in philosophy. It would be surprising if the results of such an old, even ancient, inquiry did not inspire interesting solutions to present-day research.

In fact, semantics was born at the beginning of philosophical enquiry, for its own sake. Philosophy, conceived as a demand of wisdom and truth requesting the exercise of thought (and good will), has the *logos* as its specific resource. Given that *logos* is both uttered thought and thoughtful word, the mood of reflecting upon speeches and their role in finding and telling the truth, asking questions and giving answers, has been present since the beginning. As is often the case, an important motivation to meditate and speculate upon logos came out of a crisis, with its attacks and instrumental claims about language and human discourse. We could identify the Sophist movement, during the development of democracy in the Greek *poleis*, in the fifth century B.C., as such a factor.

Plato and Aristotle are the obvious significant responses to the Sophists' extraordinary argumentation skills, resting upon relativistic claims. Dialogue between master and disciple as well as an inspection of *organon* structures emerged as conditions which granted a positive and safe attitude towards truth, knowledge, virtue... in short, a good life.

What was Aristotelic Organon about? The name, meaning instrument, designated, according to Andronicus of Rhodes (40 B.C.), Aristotle's works on logic, philosophy of language and of sciences, valid arguments and fallacies. These treatises were so specifically designed as *praeambula* to assuring a self-conscious and self-controlled intellectual activity, that they constituted a basic *corpus* providing safe methodological – deontological premises to those who wanted to cultivate philosophy, or simply true knowledge, concerning good and happiness in personal and socio-political life, moral virtues or human skills such as art, persuasion, the creation of laws and cathartic tragedies. Even more fundamentally, however, they concerned being in the physical world and beyond it: through living beings (animals and humans) and celestial bodies, up to their first causes to their final end.

How could this huge scenario disclose its secrets and reveal its hidden structure without a self-confident appeal to human powers, and above all to the capacities of human knowledge? How was it possible to observe the human way of proceeding from thought to

truth without observing those "observable forms of thought" which were human discourse, arguments, propositions and their constituents? Was it even conceivable to grasp the inner organisation of thoughts without articulating them into nouns and verbs, premises and conclusions, while inquiring into their mutual relations? After Plato's evaluation of dialogue as the genuine path to remembering apparently unknown truths and to conquering uncontroversial knowledge, it was Aristotle's enterprise to direct attention to that object-making of our thinking activity which, during his day, was particularly evidenced by the wide diffusion of writing. Written words meant linguistically shaped thoughts.

To follow a human way of thinking meant following a human way of speech. This is why semantics entered the heart of human inquiry about human pretention of truth. The same pretention which motivates queries expecting answers. A kind of tension towards avoiding mistaken and misleading steps which caused another great philosophical movement, that of the Stoics, who cultivated logic in order to argue about ethics. Many of us are unaware that most of the grammatical tools through which we still analyse language today come from the Stoics: the names of cases (nominative, genitive …), of verbal diatheses (active, passive, reflexive) etc.

This speculative attitude towards language did not only occur in the philosophical schools of the classical world.

For the same reasons – the unavoidable relations between the adventures of thought, especially the most audacious and universal on one side and its linguistic expression and importance for communication and dialectic argumentation on the other – semantics was also considered highly important in the Medieval universities. This took the form of *gramaticae speculativae* and grammars *de modis significandi*, and the relationships between *modi essendi, intelligendi* and *significandi* were explored.

Another crisis marked a new historical turn, from the Middle Ages to the modern era. The multiplication of national languages, the progressive neglect of Latin as a common language, the scientific revolution together with political conflicts led to another crisis. It was a semiotic crisis together with a new semantic demand. From Locke to Leibniz, from Port-Royal to the *Encyclopédie*, many new questions arose: about the affordability of ideas linking words and world, or – from a reduced horizon - about connections between words and thoughts and their invariant structures in spite of the diversity of idioms, or otherwise about the possibility of building artificial languages to provide good demonstrations, to allow the construction of *machines à penser*.

It would be sufficient to look at the categories of ancient grammars to see how heavily they were charged with semantic functions: nouns called substantives, adjectives characterised as qualifiers, possessives, demonstratives, conjunctions labelled as final, causal, concessive etc.

One of the permanent aims animating linguistics as a science over the last two centuries remains the distinction, if not a separation between form and function, between the description (or generation, or historical reconstruction) of formal linguistic devices (often conceived as a sufficient task) and the ascription of prototypical, but not unexceptionable functions.

Over the last two centuries, in fact, language has been a focus of attention for a multitude of disciplines: linguistics, semiotics, philosophy of language, psycholinguistics and cognitive

sciences were born and developed while sharing the same basic area but seen from quite different perspectives.

What characterises philosophical semantics above all is the triangular relation among signs, thoughts, things (states of affaires, events, situations): whereas linguistic semantics has mainly dealt with, and still deals with, intra-linguistic relations. Referential semantics has thus become central to the philosophy of language, going from existential judgements (does what is spoken about exist?) to the role of determinants (definite vs. indefinite descriptions, indexicality, singular vs. plural reference), up to the different ways of referring (proper names vs. common nouns), or to the scope of operators such as quantifiers or negation etc.

Cognitive semantics is devoted rather to the skills and performances involved in processing semantic information.

Very often, in semantic inquiries, the order of magnitude has gone from the minimum of single words (searched as terms of synonymic or antonymic relations, for instance) to the maximum of propositional units evaluable as true or false. Only gradually and rather recently have intermediate structures such as noun- and verb phrases with their determinants, syntactic relations, nominal or pronominal substitutions, up to single speech acts or conversational turns become objects of inquiry.

In the following paragraphs we shall see how and why.

2. The structure of a query

2.1 Questions … about queries, questions and /or queries

Let us begin by stating whether a question and a query are the same.

A question is a sort of speech act, with its particular illocutionary force and standard structure.

In ordinary language, it is marked either by a typical intonation (in oral communication) or by a dedicated interpunction, a question mark (in written communication), often together with further markers, such as introductory interrogative lexical items (pronouns, adjectives, adverbs, such as the 5 *wh*), a typical word order (e.g. VSO vs. SVO etc.), some special devices (auxiliary verbs, correlated adverbial or adjectival forms, such as, in English, 'to do', 'ever' vs. 'never', 'any' vs. 'some' etc.).

'Query' is the term used to define what users enter into a web search engine, in order to retrieve information. Its normal form is that of an item being identified as a query by being placed in a special field designed to be filled in with some subject, key-word or quotation in the context of a search-engine interface. Such a context helps the authors of queries to save time and energy in the self-activation of their queries as such. Formats for queries already serve as devices to make the subject of a query recognisable as such.

In computing, a query language is a language in which queries are passed to and information retrieved from a database or information system.

2.2 The problem of ranking and the struggle for escaping carelessness

Usually, grammars introduce interrogative structures after the affirmative ones.

Such an expository and explanatory order seems to suggest the idea of a sort of precedence in ranking of so-called declarative or assertive sentences vs. interrogative and also negative ones.

Is this ranking the right one?

a. On the linguistic/grammatical side, it seems more a matter of didactical priorities than of intrinsic communicative dynamics. In fact, answers follow questions. Furthermore, both in interrogative and in declarative moods negation comes as a meta-operation, something which intervenes upon an already imposed structure, a super-imposed structure.

b. Another trend in favour of such ranking has been the long-held attitude in philosophy of considering only statements as sentences *par excellence*. Their excellence is due to their relationship to truth. They were known as *orationes perfectae*, both in the sense of accomplished, (and therefore complete), utterances, and in the sense of being able to reach the top, the truth. Austin calls such an overestimation of declarative sentences compared to all other kinds of sentences a 'descriptive fallacy': "To overlook these possibilities in the way once common is called the 'descriptive' fallacy". Which possibilities? "It was for too long the assumption of philosophers – Austin claims – that the business of a 'statement' can only be to 'describe' some states of affairs, or to 'state some fact', which it must do either truly or falsely. … But now, in recent years, many things which would once have been accepted without question as 'statements' by both philosophers and grammarians have been scrutinized with new care. … First came the view … that a statement (of fact) ought to be 'verifiable', and this led to the view that many 'statements' are only what may be called pseudo-statements. First and most obviously, many 'statements' were shown to be … strictly nonsense… so that it was natural to go on to ask, as a second stage, whether many apparent pseudo-statements really set out to be 'statements' at all. … for example, 'ethical propositions' are perhaps intended, solely or partly, to evince emotion or to prescribe conduct or to influence it in special ways. … It has come to be seen that many special perplexing words embedded in apparently descriptive statements do not serve to indicate some specially odd additional feature in the reality reported, but to indicate (not to report) the circumstances in which the statement is made or reservations to which it is subject or the way in which it is to be taken and the like."(Austin, 1962). We shall return to this fallacy shortly.

2.3 Different kinds of questions: yes-no questions vs. completive questions, closed vs. open questions

In any case, what traditionally has contributed to establishing such a questionable ranking, or the idea that interrogative structures are modifications, transformations[1] of declarative

---

[1] Cf. (Chomsky, 1957) and beyond, minimalism included (Chomsky, 1995), for his transformational grammar.

Indeed, "Under generativist approaches, non-subject questions - like passives – are formed by movement. However, whereas passives are formed by NP-movement, questions are formed by movement of the auxiliary from I to C (**subject-auxiliary inversion**) and - for *wh*-questions – by movement of the *wh*-word from within VP to SPEC CP (***wh*-movement**) […]. Interestingly – observe Ben Ambridge and Elena V.M. Lieven – a preferential-looking study […] has shown that children aged

ones, is, in my opinion, an unconscious preference shown towards one kind of questions only, the so-called "oriented" ones.

In a case such as:

1.   Peter won the game →
2.   Did Peter win the game? the proper order seems to be the proposed one. But if we consider
3.   Who won the game? or
4.   What did Peter win?

(3) and (4) clearly show that to ask is something which comes first – has a certain priority - in the development of our knowledge, and pushes forward the development of knowledge itself[2].

According to the usual classification, interrogative sentences are of two kinds: partial and general, completive (wh-questions) or oriented (yes-no questions)[3].

The purpose of completive questions is to inquire about the identity of a missing element in the information available to the speaker. The questioned identity may be that of a person

---

as young as 1;8 are able to respond appropriately (i.e. differentially) to subject and object *wh*-questions (*What hit the book?* Vs. *What did the book hit?*), suggesting early knowledge of (from a generativist perspective) inversion.

The challenge for generativist account is therefore to explain why, given that knowledge of subject-auxiliary inversion is acquired early (or, indeed, is innate), errors are relatively common among learners of English. […] Most common are **non-inversion** (or **uninversion**) **errors** (e.g. **What she can eat?* […] where the auxiliary appears in post-subject position. Various types of **auxiliary-doubling errors** are also observed, particularly for negative questions (e.g. **What does she doesn't like*?) […]

Under constructivist approaches, questions are not formed by movement. Rather, questions are independent constructions and undergo the same acquisition process as any other: children begin with rote-learned holophrases (e.g. *What is he doing?*; *What is he eating?*) and gradually schematize across these to form low-level lexically specific slot-and-frame-patterns (e.g. *What is [THING] [PROCESS]?*). Finally, children analogize across these schemas (or instances of these schemas in the form of actual utterances) to yield fully abstract constructions (e.g. *Wh-word AUX SUBJECT VERB?*).

The prediction of this account is that children will show effects of lexical-specificity: they will show good performance with question that can be formed using a well-learned schema, but poor performance for questions where a ready-made schema is unavailable and a more creative strategy is acquired. […] Rowland and Pine (2000: 164) argue that 'the child lexically specific knowledge is likely to centre round wh-word + auxiliary combinations, rather than auxiliary + subject combinations' [apparently, completive rather than oriented questions]. This is because the range of *wh*-words and auxiliaries is relatively narrow (perhaps especially in speech to young children), whereas the range of subjects is potentially infinite." (Ambridge, Lieven, 2011).

Concluding their paragraphs about the acquisition of questions, Ambridge and Lieven propose some solutions for both the generativist approach and the constructivist one, such as "to posit some role for lexical learning" in the first case, or to specify "the precise nature of the early schemas themselves", "to explain precisely how children move from lexically-specific construction schemas to a fully abstract *wh*-question construction".

Evidently, such an interesting "theoretical contrasting" should be developed not only about English as an object-language, but also about highly typologically differentiated languages.

[2] The skill of asking questions seems typical of humans and cannot be learned by primates, not even by those who were trained to learn human languages: see Jordania (2006).

[3] See, among others, Gobber, 1999, Weber 1993.

('who'), a thing ('what'), a time ('when'), a place ('where'), or a reason ('why'), according to the typical pronominal or adverbial heads of interrogative phrases.

The purpose of oriented questions is to ascertain the truth or falsity of a statement, or at least to make explicit the assent or dissent given by the addressee to the state of affairs under question.

Both completive and oriented questions belong to the so-called "closed" questions, because the task given to the answerer is a rather quick and delimited one. Alternatively, "open" questions are those which cannot be answered in a way correspondent to the structure of the question, i.e. just confirming or disconfirming the set-up orientation, or by just completing the missing constituent. Open questions are those which require an active and long-lasting cooperation by the addressee: the task of answering has to be articulated step by step, and it is not excluded that the goal of a definite answer cannot be achieved. Some well-known or lesser known questions remain open for a long time, even for centuries[4].

2.4 A larger scale: questions vs. requests

Beyond these two classes of questions another kind of speech acts needs to be recalled: that of requests. Latin distinguished these two acts at a lexical level: while *petere* means "to ask" for knowledge, *quaerere* means "to ask" in order to obtain something. 'Queries' may just be questions asked in order to obtain/retrieve information.

The distinction between questions and requests always deserves to be taken into consideration, in order to avoid that "intellectualistic" or theoreticist attitude, according to which we just speak for the sake of knowledge. As Austin claimed, with words we do things. Nevertheless we have to bear in mind that sometimes we ask questions instead of requiring something, accomplishing a so-called indirect speech act: e.g., when we ask "are you getting down at the next stop?", when we need to get past to get off the bus.

This whole family of speech acts (asking questions, making requests etc.) was already included by Wittgenstein in his *Philosophical Investigations*[5] among the (almost innumerable) language games which he claimed needed to be taken into consideration without restricting one's attention to declarative sentences.

It was quite probably "the first" Wittgenstein, i.e. the author of the *Tractatus Logico-Philosophicus*, that Austin had especially (but not exclusively) in mind when he reminded philosophers of the descriptive fallacy. "Grammarians, indeed", - Austin admitted – "have regularly pointed out that not all 'sentences' are [used in making] statements: there are, traditionally, besides (grammarians') statements, also questions and exclamations, and sentences expressing commands or wishes or concessions " (Austin, 1962). In any case, the difficult balance between assertiveness and its counterparts deserves to be put in evidence much earlier, in the roots of Western philosophical tradition. After Plato's sympathetic witnessing of Socrates' midwifing ability, with its connected erotetic method (the art of asking questions), a whole tradition came down to us, according to which apophantic speech only (the term is Aristotelic: declaratory) had to be considered in logic. Questions,

---

[4] http://www.openquestions.com/
[5] §§ 21-23.

being neither true nor false, disappeared from the philosophical investigations for a long time.

This happened in spite of the role assigned by Aristoteles himself to wonder: "For it is owing to their wonder that men both now begin and at first began to philosophize; they wondered originally at the obvious difficulties, then advanced little by little and stated difficulties about the greater matters, e.g. about the phenomena of the moon and those of the sun and of the stars, and about the genesis of the universe" (*Metaphysics*, Book I).

A pioneer's exception in introducing questions in logic was Richard Whately's *Elements of Logic* (1826), which included erotetic logic (see now Brozek, 2011), i.e. the logic of questioning. "Every Argument" – he writes – "consists of two parts; that which is *proved*; and that *by means of which* it is proved: the former is called, *before* it is proved, the *question*; *when proved*, the *conclusion* (or *inference*)" (Whately, 1826). Thus questions move inferential activity. Furthermore, Whately devotes two chapters of his work to introducing proper distinctions, the ignorance of which produces "*undetected* Verbal Questions and fruitless Logomachy".

Such distinctions – warns Whately - allow us to avoid confusion between Verbal and Real Questions. "For to trace any error to its source, will often throw more light on the subject in hand than can be obtained if we rest satisfied with merely detecting and refuting it."(*ibid.*). Such was his reply to George Cambell's *Philosophy of Rhetoric* (1776), where he had "maintained, or rather assumed, that Logic is applicable to Verbal controversy alone". Evidently Whately intended to sweep away those controversies which are merely verbal, in order to deal just with those which are genuine, real ones.

He states: "*Every* Question that can arise, is in fact a Question whether a certain Predicate is or is not applicable to a certain subject, or *what* Predicate is applicable […]. But sometimes the Question turns on the meaning and extent of the *terms* employed; sometimes on the *things* signified by them. If it be made to appear, therefore, that the opposite sides of a certain Question may be held by persons not differing in their *opinion of the matter* in hand, then that Question may be pronounced Verbal; as depending on the different senses in which they respectively employ the *terms*. If, on the contrary, it appears that they employ the terms in the same sense, but still differ as to the application of one of them to the other, then it may be pronounced that the Question is Real, that they differ as to the opinions they hold of the *things* in Question. […] It is by no means to be supposed that all Verbal Questions are trifling and frivolous; it is often of the highest importance to settle correctly the meaning of a word, either according to ordinary use, or according to the meaning of any particular writer, or class of men; but when Verbal Questions are *mistaken* for Real, much confusion of thought and unprofitable wrangling will be generally the result. […] It is evidently of much importance to keep in mind the above distinctions, in order to avoid, on the one hand, stigmatizing as Verbal controversies, what in reality are not such, merely because the Question turns on the applicability of a certain Predicate to a certain subject; or, on the other hand, falling into the opposite error of mistaking words for things, and judging of men's agreement or disagreement in opinion in every case, merely from their agreement or disagreement in the terms employed." (Whately, 1826).

2.5 Performing questions / queries and formalising them

This connection between judgement and agreement should lead to overcoming the threshold that divides the theoretical and practical sides involved in our subject, questions and queries.

Indeed, Austin plays an important role in opening[6] new paths to pragmatics, identifying the character of questions, promises and the like.

"To perform a locutionary act is in general, we may say, also and *eo ipso* to perform an *illocutionary* act, as I propose to call it. To determine what illocutionary act is so performed we must determine in what way we are using the locution: asking or answering a question […] When we perform a locutionary act, we use speech: but in what way precisely are we using it on this occasion? […] These issues penetrate a little but not without confusion into grammar […], but we constantly do debate them, in such terms as whether certain words (a certain locution) *had the force of* a question, or *ought to have been taken as* an estimate and so on. […] I shall refer to […] the doctrine of 'illocutionary forces'" (Austin, 1962).

It was few years later, in 1969, that John Searle published *Speech Acts*. In the very first pages it was stated: "The unit of linguistic communication is not, as has generally been supposed, the symbol, word or sentence, or even the token of the symbol, word or sentence, but rather the production or issuance of the symbol, word or sentence in the performance of the speech act." (Searle, 1969). " The general form of (many kinds of) illocutionary acts is

$$F\ (p)$$

where the variable "F" takes illocutionary force indicating devices as values and "p" takes expressions for propositions. We can symbolize different kinds of illocutionary acts in the form, e.g.,

├ (p) for assertions	! (p) for requests
Pr (p) for promises	*W* (p) for warnings

? (p) for yes – no questions

and so on. Except for yes-no questions the symbolism for questions must represent propositional functions and not complete proposition, because except in yes –no questions the speaker asking a question does not express a complete proposition. Thus, "How many people were at the party?" is represented as

? (*X* number of people were at the party)

"Why did he do it?" is represented as

---

[6] For truth's sake, the evaluation about who opens what is the result of a historical judgement. To be well informed and impartial, the historians of culture and ideas should open their views towards the global scene: what happens, on the contrary, is too often that different kinds of barriers (linguistic, ideological, due to mutually ignored traditions and so on) forbid such a world-wide view. On our specific subject, a widespread mistake or simply a naiveté is to take the deep and well-known unity of pragmatics belonging to the English-speaking world of analytic philosophy as the very first trend in metalinguistic thought overcoming the gap between theoretic and pragmatic approach, viewing the speaking activity as related not only to the domain of knowledge, but also to that of action. Just confining ourselves to the Western/Central European situation, we shouldn't ignore the old and large stream of German-speaking scholars, who however do not belong to/create an actual common school, such as Bernard Bolzano, Gottlob Frege, Alexius Meinong. They all well understood that questions do not only reveal a lack of something, but also compel their addressees to fill such a gap. See Gobber, 2011.

$$? \text{ (He did it because …)}$$

But "Did you do it?", a yes –no question, is represented as

$$? \text{ (You did it)}$$

In so far as we confine our discussion to simple subject predicate propositions, with a singular definite referring term as subject, we can represent the distinctions in the form

$$F \text{ (RP)}$$

"*R*" for the referring expression and the capital *P* for the predicating expression." (Searle, 1969, as the following table).

		Request	*Question*
	Propositional Content	Future act *A* of *H*	Any proposition or propositional function
	Preparatory	1. *H* is able to do *A*. *S* believes *H* is able to do *A*. 2. It is not obvious to both *S* and *H* that *H* will do *A* in the normal course of events of his own accord.	1. *S* does not know "the answer", i.e., does not know if the proposition is true, or, in the case of the propositional function, does not know the information needed to complete the proposition truly (but see comment below). 2. It is not obvious to both *S* and *H* that *H* will provide the information at that time without being asked.[7]
Types of rules	Sincerity	*S* wants *H* to do *A*.	*S* wants this information.
	Essential	Counts as an attempt to get *H* to do *A*.	Counts as an attempt to elicit this information from *H*.
	Comment	*Order* and *command* have the additional preparatory rule that *S* must be in a position of authority over *H*. *Command* probably does not have the 'pragmatic' condition requiring non-obviousness. Furthermore in both, the authority relationship infects the essential condition because the utterance counts as an attempt to get *H* to do *A in virtue of the authority of S over H.*	There are two kind of questions (*a*) real questions, (*b*) exam questions. In real questions *S* wants to know (find out) the answer; in exam questions, *S* wants to know if *H* knows.

Table 1. Types of illocutionary act.

---

[7] A further preparatory rule should be: "S believes that H knows 'the answer', i.e. if the proposition is true or, in case of propositional function, the element needed to complete the proposition truly". I owe the suggestion of this addition to Aldo Frigerio.

In 1985 Searle and Vanderveken publish *Foundations of Illocutionary Logic*. Questions are, once more, mentioned among speech acts considered as illocutionary acts. Therefore questions too consist of an illocutionary force F and a propositional content P. Illocutionary logic aims to formalize the logical properties of illocutionary forces. In the case of questions, the authors consider requests and asks within the class of English directives.

According to the meanings attributed to the occurring symbols[8], definitions of 'request' and 'ask' are as follows:

"*request* (!)

A request is a directive illocution that allows for the possibility of refusal. A request can be granted or refused by the hearer. Thus ‖request‖ differs from ‖direct ‖only by the fact that mode (‖request‖) (*i*, P) = I iff *i* $\widehat{\prod}_!$ *P* and the speaker in *i* allows the hearer the possibility of refusing to carry out the future course of action represented by *P*. "Request" is the paradigmatic directive verb, but since it is special in having a rather polite mode of achievement of its illocutionary point, it cannot be taken as the primitive directive.

ask.

"Ask" has two quite distinct uses. One is in the notion of asking a question and the second is in the notion of asking someone to do something. Questions are always directives, for they are attempts to get the hearer to perform a speech act. In the simple directive sense, "ask" names the same illocutionary force as "request". In the sense of "ask a question" it means request that the hearer perform a speech act to the speaker, the form of which is already determined by the propositional content of the question. Thus if the question is a yes-no question requesting an assertive, the speaker expresses the propositional content of the answer in asking the question; and all that the hearer is asked to do is affirm or deny that propositional content. For example, to ask someone whether it is raining is to request him to perform a true assertion with the propositional content that it is or that it is not raining.

The illocutionary force of the illocutionary act that is requested to be performed in case of asking a question is not necessarily assertive. When the minister in the wedding chapel asks "Do you take this woman to be your lawful wedded wife?", he is asking for a response

---

[8] ‖ ‖ is the function that assigns to each illocutionary verb the force or type of speech act that it names;
i is a variable for possible contexts of utterance;
P is a variable for propositions;
$\widehat{\prod}$ names a relation between contexts of utterance and propositions that determines the condition of commitment to illocutionary point $\prod$;
I names the integer one or the truth value: truth, or the success value : success;
∈ is the sign of membership;
Prop names the set of all propositions;
A is a variable for illocutionary acts;
b_i is a variable for hearers;
a_i is a variable for speakers; it names the speaker of context of utterance *i*;
t is a variable for moments of time;
l is a variable for places of utterance;
w is a variable for possible words
Prop $_{‖ask‖}$ (*i*) is the set of all propositions which respect the conditions imposed by the illocutionary force ‖ask‖ on the propositional content P in a context *i*.

("Yes I do", or "No I do not") that is a declaration and not an assertion. Thus ‖ask‖ (in the simple directive sense) = ‖request‖ and ‖ask?‖ in the sense of yes-no question differs from ‖direct‖ only by the fact that $P \in$ Prop $_{\|ask\|}$ (*i*) iff, for some illocution *A* , *P* (w) = I iff for some $t > t_i$, *A* is performed in < b_i, a_i, t, l, w >.

In wh-questions the form of the question contains a propositional function, and the hearer is requested to fill in a value of the free variable in the propositional function in such a way as to produce a true complete proposition. Thus, for example, the question "How many people went to the party?" is of the form "I request you, you tell me the correct value of *x* in '*x* number of people went to the party'." A full characterization of the logical form of wh-questions cannot be made in this study, because it would require the definition of the notions of a property, a relation and an elementary proposition, all of which are part of first order illocutionary logic." (Searle, Vanderveken, 1985).

2.6 Triggers

Sometimes old mythology helps to show simply and synthetically the deep roots – the foundations – of what technical treatments of ever-green topics just foreshadow.

If we read Plato's Symposion, we find the story told by Diotima to Socrates about the birth of Eros (love) from Poros (Πόρος, "resource" or "plenty") and Penia (Πενία, poverty).[9] According to Plato, love "is also a philosopher: or lover of wisdom, and being a lover of wisdom is in a mean between the wise and the ignorant."

This tale can serve as a helpful hint to understand the formal affinity between indefinite and interrogative adjectives/pronouns: constantly related throughout typologically different languages[10].

What does this structural similarity mean? It underlines the strong relationship between lack of determinacy (poverty) and the need to overcome it (in order to attain plentifulness). If somebody is not able to determine, to define something, s/he is in a position of having to ask somebody else to fill this gap. To be in this position does not necessarily imply acting upon it, adopting those decisions, using those devices where triggers such as *wh*-words are at work for retrieving missing information, for extracting knowledge, mining data or for receiving the cooperation requested.

---

[9] "What then is Love?" I asked; "Is he mortal?" "No." "What then?" "As in the former instance, he is neither mortal nor immortal, but in a mean between the two." "What is he, Diotima?" "He is a great spirit (daimon), and like all spirits he is intermediate between the divine and the mortal." "And what," I said, "is his power?" "He interprets," she replied, "between gods and men, conveying and taking across to the gods the prayers and sacrifices of men, and to men the commands and replies of the gods; he is the mediator who spans the chasm which divides them, and therefore in him all is bound together, and through him the arts of the prophet and the priest, their sacrifices and mysteries and charms, and all, prophecy and incantation, find their way. For God mingles not with man; but through Love all the intercourse, and converse of god with man, whether awake or asleep, is carried on. The wisdom which understands this is spiritual; all other wisdom, such as that of arts and handicrafts, is mean and vulgar. Now these spirits or intermediate powers are many and diverse, and one of them is Love. "And who," I said, "was his father, and who his mother?" "The tale," she said, "will take time; nevertheless I will tell you…" The tale can be read in The Internet Classics Archive:
http://classics.mit.edu//Plato/symposium.html.
[10] http://wals.info/chapter/46

We are all familiar with the expression "to break the ice". To ask proper questions at the right moment may be a good way to break the ice. But sometimes it is so difficult to detect the extension and the boundaries of what we ignore that no questions arise, whereas at some other times correct, precise, punctual questions addressed to the right addressee at the right moment can pave the way to quite important self-disclosures, intelligent and far-seeing insights, real turning points. The quality of interviews and interrogatories depends on the skills of their authors and on the cooperation they are able to gain.

There are crucial structures which are capable of building answers, as well as questions and requests. These structures are the strategic means to order words syntactically and semantically, in a way which is suitable for "filling" the gaps (of knowledge/action) identified by questions/requests; strategic insofar as they themselves are non-saturated tools, unaccomplished structures, and yet still able to activate accomplishments, and form a bridge to the expected items.

Predication is such a structure, propositional functions are its developments on the way towards complete propositions.

3. The structure of an answer

3.1 From interrogative/indefinite items to definite references

Basically, an answer looks like an assertion (affirmative or negative) or a consent / refusal, perhaps accompanied by the requested action or even converted into it, without words. It depends on the trigger, whether a question or a request[11].

According to Paul Grice, in order for our wording to be effective, our interaction with one another has to follow the "cooperative principle": "make your contribution such as it is required, at the stage at which it occurs, by the accepted purpose or direction of the talk exchange in which you are engaged."

To complement a question or a request means, therefore, to replace indefiniteness with definiteness, thanks to the force appointed to an item to be fulfilled or to the confirmation/disconfirmation of the suspended orientation included.

Too often these alternative possibilities have been replaced in the metalinguistic representation by an oversimplification, i.e. by the reduction of answers to judgements, because of the importance of truth values.

Our choice here, however, is whatever the reply is, to consider its core, or rather the condition of the possibility not only of answers but of queries too; that is to say predication and the structure it involves.

Generally speaking, predicates are conceived as terms of a relation, the output of the act of saying something about something else, of attributing (or applying) something to something

---

[11] Nevertheless, we have to consider this distinction not as a clear-cut one: indeed with the notion of indirect speech act Searle recalls that "for example, a speaker may utter the sentence *Can you reach the salt?* and mean it not merely as a question but as a request to pass the salt […], cases in which one illocutionary act is performed indirectly by way of performing another." (Searle, 1975)

else, as expressions of properties or relations belonging to one or more objects, or the result of making concepts fall into one another.

Actually, in logical-grammatical training, we meet predicates first. Predication as such remains in the background. On the contrary, it is consistent with a pragmatic framework to put the act first and its result afterwards.

Our claim is that without predication we cannot ensure neither the right assessment of the interrogative items in questions (where *wh*-placeholders need to be substituted and their empty place filled), nor the nuclear structure upon which the illocutionary force of the answers can be exerted.

Moreover, we think that while underlining predication as a main device, at the same time we show answers as works in progress, towards the identification of definite references or events, or towards the definition of a yes- or no-answer. In fact, if we consider that, according to a certain semantic paradigm (the Fregean and the Neo-fregean one), truth values are the referents of assertions, we can say that predication allows answers to gain reference both locally and globally (at the level of single constituents and at the level of whole sentences, if assertive, as such).

Once the primacy of the act of predication upon predicates and consequently upon predication as a result is stated (words like predic-*ation* always work both as a *nomen actionis* and as a *nomen rei actae*), we can proceed as follows:

- first we will treat predication as the basic syntagmatic act,
- then we will see its correlates and
- eventually we will consider the whole structure it builds, from the point of view of the two main paradigms according to which such a structure has been conceived, the Aristotelian and the Fregean one.

3.2 The basic syntagmatic act is predication

Let us consider the etymology of 'predicate', in English a noun with exactly the same form as the verb (but in the infinitive, not participle mood). Why is this so? According to the reconstruction offered by the Oxford English Dictionary 'predicate' comes from "Middle French *predicat* (French *prédicat*) that which is said of a subject (1370), quality (1466) and its etymon post-classical Latin *praedicatum*[12] that which is said of a subject (6th cent. in Boethius; earlier in senses doctrine, precept (4th cent.), prediction (late 2nd or early 3rd cent. in Tertullian), use as noun of neuter past participle of classical Latin *praedicāre*. ''.

Therefore, if somebody predicates something of something else or of somebody else, then we obtain predicates. We can sum up the whole scene as a predication. Why do I underline such an obvious remark? Because sometimes this "ontogenetic", dynamic reconstruction has been forgotten, leaving as a result the static relation between predicates and their correlates as ready-made.

---

[12] Gr. *kategoroúmenon*, from *kategoréo*, a typical expression recalling the *agorà* in the *polis*, and its role of attracting citizens called to select (*katà*, in front of everybody, publicly) candidates submitted to public evaluation for the future governance of the *polis* itself.

Beyond this, what was the result of an operation of junction and construction has been considered to be something already given, to be analysed, resolved into its parts. This is why traditionally we became acquainted with the practise of grammatical *analysis* centred upon the parts of speech (the whole, i.e. the speech, remaining almost completely out of systematic consideration), and with the practice of logical *analysis* centred upon logical terms (literally, ends of the proposition: see predicate calculus), rather than upon the unity of proposition itself and of propositions with each other (propositional calculus).

Moreover, the two analyses tended towards reciprocal emancipation: instead of a systematic correlation among forms and functions, a frequent matter was that of the "liberation" or "emancipation" of grammar from the yoke of logic and of logic from the yoke of grammar[13].

This caused some confusions and worry throughout long history of Western logic and philosophy.

It would be useful, to begin with, to recall that some technical terms on the matter could work, as *predication*, both as *nomina actionis* and as *nomina rei actae*, such as *articulation, proposition* and *function*. Similarly, not only *predicate*, but also *subject* come from Latin *praedicatum* and *subjectum*, in their turn translations of the past *and* passive Greek participles *kategoroumenon* and *hypokeimenon*: the first one a real passive form, the latter an interesting deponent.

But what could be seen "on the run" was, and still is, rather considered as an achieved goal.

Two independent developments in the 20th century helped to change this point of view, in linguistics as well as in philosophy, the first, functionalism in classical structuralism and the second, pragmatics in analytical philosophy.

"*The basic syntagmatic act*, and at the same time the intrinsic sentence-forming act, is *the predication*", states the second of the 1929 theses of the Prague Linguistic Circle (Vachek 1983). Behind the collective authorship of that text, there was one particular author, Vilém Mathesius, the founder of the Circle, with his syntactical investigations[14]. In 1926 he wrote:

---

[13] See (Sériot, Samain, 2008), with a precious extension of the *status quaestionis* to Eastern European and Russian studies.

[14] Although being a detail in the huge panorama here sketchily outlined, it is worth mentioning the particular approach developed by Mathesius himself and by a Swedish Anglicist he quotes as well, K.F. Sundén, in the previous decades (Sundén 1904, 1916) : they both ended up researching "sentencehood" through predic*ation*, and elliptical predication especially, i.e. through effective, though reduced structures, deviating from the canonical bi-member sentences, yet recognisable and understandable as true sentences only via a cooperative inference of the addressee, who had to capture specific semantic intentions orienting each act of predication. Sundén (1916) begins his essay *The Predicational Categories in English* thus: "It is a matter of general observation that the connexion between subject and predicate may from a semological point of view be of different kinds. We are not then alluding to the particular and accidental relation brought about by the different tenses, moods or tense-aspects of the predicate, but to the general qualification of the subject conditioned by the material import of the predicate itself. In other words, we are referring to the different manners in which the predicate qualifies the subject. It

"A full analysis of the basic grammatical function – e.g. the function of the subject and predic*ation*, […] the real nature of sentence form*ation* – can be achieved only with the help of the static [not genetically comparative] method by which linguistic phenomena are not unduly separated from the *action of speaking*. […] In the field of *syntax* the general shift of interest from the external aspect of *language* to its *inner life* is exemplified by the emphasizing of the stylistic principle and by the substitution of the functional conception for the traditional formal point of view. Finer methods of linguistic analysis have brought *to light the importance of what I should call the* double-faced character of linguistic phenomena. It consists [of] a *continuous fluctuation between the general and the individual*. […] Linguistic research can either concentrate on what has already become a common possession of all members of the linguistic community or it can study the individual efforts of linguistic creation. The traditional school of linguistics has so exclusively limited itself to the study of commonly accepted means of expression that the individual speaker has disappeared from its ken. As a reaction against this too objective conception of language, a school of an extreme linguistic subjectivism chiefly represented by Professor K. Vossler has appeared, which following the ideas of Wilhelm von Humboldt and Benedetto Croce regards the act of linguistic expression as something [as] individual as artistic creation. […] The proposition maintained by Professor Spitzer '*Nihil est in syntaxi quod non fuerit in stylo*' very clearly shows how the greatest stress is laid by him and his friends on the individual share in linguistic expression. Linguistics as a whole can derive from stylistic syntax and stylistic semasiology a double benefit. [But, Mathesius replies,] It is good that the rule, often neglected, has been emphasized again […] In the study of language, of course, individual utterances are analysed as specimens of the linguistic possibilities of the whole community… . The time has really come for general linguistic problems to be systematically studied. […] The basic functions of linguistic expression should be analysed and the means of linguistic expression catalogued. This means *showing how in all kinds of languages the subject and the predicate are expressed*, which are *the possible forms of* the active, passive, perceptive, qualificative, possessive, etc. *predication*, how the attributive qualification is expressed, *which aspects* of activity or of status *can be expressed in the predication*, etc. It is self-evident that such problems cannot be solved but by the functional and static [i.e. synchronic, as opposed to diachronic] method of research." (Mathesius, 1926; italics mine).

---

is this difference that should be the leading principle for a classification of the predicative connexions […] or for short 'predication'. […] Thus 'connexion' is meant to denote one of the two principal categories of combination of morphemes that occur in language ['connexion', term employed by Noreen, on the whole corresponding to Wundt's '*geschlossene Wortgruppe*', as implies that a principal and an accessory element are being combined, in this case equivalent to a subject and a predicate, in contradistinction to 'adjunctive (adjundct) connexion' (Wundt's '*offene Wortverbindung*', that implies a combination already made between a principal and an accessory member, in this case a determinatum and a determinandum: *the laughing child* vs. *the child is laughing*], the other [combination] being called 'adhexion', in which the members combined are independent of each other, e.g. 'You *and* I'; 'he is reading, *but* she is writing'.

A distinction of the different kinds of predicative connexion as met with in Indo-European languages, has not yet been instituted by current grammar. This neglect renders it difficult, may impossible to deal properly with the predicational changes of verbs […] It is indispensable to make this classification if we want to view the verbal changes of meaning we are going to deal with [the phenomenon of transitive verbs used in English as predicate-verbs in the active form with a passive sense: close (of a flower), conjoin (of roots), divide (of a shell)], in the light of their predicational functions."

In a nutshell, syntagmatic acts precede syntax as composition precedes its metalinguistic analysis[15].

With a strong similarity, in his *Speech Acts* John Searle identifies predication and reference within the level of expressions, before inquiring into their meaning and their being speech acts. He states: "… in the utterance […] a speaker is characteristically performing at least three distinct kinds of acts: (*a*) the uttering of words (morphemes, sentences); (*b*) referring and predicating; *c*) stating, questioning, commanding, promising etc.

Let us assign names to these under the general heading of speech acts:
a. uttering words (morphemes, sentences) = performing *utterance acts.*
b. referring and predicating = performing *propositional acts.*
c. stating, questioning, commanding, promising etc. = performing *illocutionary acts.*

[…] The distinction between reference and predication holds, and the correct description is to say that the predicate expression is used to ascribe a property. I do not claim that this description has any *explanatory* power at all. Nobody who does not already have a prior understanding of what it is to use a predicate expression can understand this remark […] At this stage I only claim that it is literally true […] (Searle 1969).

Essentially, summing up cause and effect, act and result has to be done not only for the sake of completeness, but also on the assumption that linguistic structures and their semantics largely underdetermine their meanings and the meaning of their relations, which are often defined by the context in which they occur[16]. In other words: predicates are not prefab, they are just semi-processed products. They need to be determined within the sentences they belong to, and further assigned to the utterances they are constituents of.

Now that this primacy of predication upon predicates (so to speak) has been grasped, let us move on to the two main models about predicates, that of Aristotle and that of Frege[17].

Before sketching an essential outline of their doctrines, it is worth noting the wide influence of models, especially the Aristotelian one, with which not only philosophers became (and still become) acquainted, but also ordinary people, usually young pupils during their first years of school.

3.3 Predicates and their correlates, or the sentence as a unit

Predication is the act of predicating (saying) something about something else. So we have, *in nuce*, the legitimate expectancy of a second term of relation, of the predicative relation: what is predicated about.

---

[15] On this very point, of the border between generality and individuality, ten years later Mathesius stated: "The sentence is not entirely the product of a transitory moment, is not entirely determined by the individual situation, and, consequently, does not entirely belong to the sphere of speech, but depends in its general form on the grammatical system of the language in which it is uttered. […] In language we have the word in its conceptual meaning and the sentence as abstract pattern, whereas in speech we have the word as referring to concrete reality and the sentence as concrete utterance." (Mathesius 1936). See (Raynaud, 2008).

[16] See (Frigerio, 2010 a), (Frigerio, 2010 b).

[17] The eminency of Aristotle's and Frege's contributions throughout the whole history of logic are widely recognised: see (Dummett, 1973).

Nearly everybody would label this second term of relation 'subject', due to a more than bi-millenarian tradition: a really successful transmission of high culture (Aristotelian logic) to basic education, passed down from the school-teaching of ancient languages to that of modern ones, without so much as a blink.

This so well-known schema has induced and still induces another apparently obvious expectancy: that predication involves a two-element structure, be it a question or an answer, or whatever.

Rather than a relation, this should grant a correlation: if P, then C (= Correlate to P). Immediately after, or even simultaneously, a further if-then (→) prevision: if P, then S (= Subject).

But even the briefest glance at real conversations, texts, or messages of any sort would contradict such a prevision, a prevision to be contradicted in many ways, upwards and downwards. Sometimes only one element is enough, sometimes even five or six constituents take place. What has to be corrected? The idea of a correlation to be expected? Its structure as a regular two-element structure? Its epistemological status as a regulative ideal instead of a statistical regularity?

Let us proceed step by step.

Firstly:

The expectancy of a correlation is a legitimate one; on one condition however, that of recognising it as a regulative ideal only. This means that we cannot take for granted that in each sentence we will find such an evident correlation. We have elliptical sentences, condensed utterances, such as '*Why?*', '*What?*', '*Fire!*', '*Come!*' '*Yes.*', '*No*'. Sometimes the predicate is absent /cut off because it is the same as in the previous sentence, sometimes it is present but includes the person it refers to, sometimes just an adverb of affirmation or negation is sufficient to substitute the whole predicative correlation. In any case the correlation seems, though not always , to be active.

But is the predicative relation always a relation to one element (typically the subject), i.e. a monadic relation?

The short (though not careless) answer should be: what is necessary is the unity of the sentence (query or answer), whether the unity be simple or complex.

If we look for a classical image suggesting the idea of one thing being able to look like (and also function as) two, we should recall the image of an elbow or of a knee: being part of an arm or leg does not prevent them articulating the movement of their own limbs. As demonstrated, this basic biological image supports the concept of *articulation*, an ancient and evergreen metalinguistic tool (Laspia, 1997).

Such a deep feeling of the original and fundamental unit of any sentence (in this case, specifically, and especially, queries and answers), and, at the same time, of the dynamic role of predication in the sentence, is well attested to by nearly all of the major authors , those who represent real milestones along the path of metalinguistic thought, such as Aristotle, Humboldt, Frege, Peirce, Bühler and Tesnière, to mention some of the most eminent.

Nevertheless, the tone with which this eminent choir has sung throughout the centuries deserves our careful attention.

Let us begin with Aristotle's insistence upon the "equivalence" between a noun and a definition (Laspia, 2005), expressed through a judgement of identity:

"Since definition [*horismòs*] means 'an account [*lógos*] of what a thing is', obviously one kind of definition will be an explanation [*lógos*] of the meaning of the name, or of an equivalent denomination [*e logos héteros onomatódes*]" (*Analytica posteriora* B 10, 93 b 29-31).

"The starting-point is from definition; and definition results from the necessity of […] meaning something; because the formula, which […] term implies, will be a definition." (*Metaphysica* Γ 7, 1012 a 23-4).

A reading of the whole dialogue "The Sophist" would be helpful in revealing the reasons why nouns and verbs came on to the philosophical scene: they actually fulfill the requirements of those who seek to discern truth from falsity, or rather of those who contrast the thesis of the indiscernibility of truth and falsity. From this point of view Plato and Aristotle are much closer to each other than usually thought. "Discourse is never composed of nouns alone spoken in succession, nor of verbs spoken without nouns. […] For instance, 'walks', 'runs', 'sleeps' and the other verbs which denote actions, even if you utter all there are of them in succession, do not make discourse for all that. No, - replies Theaethetus to the Stranger – of course not. And again, when 'lion', 'stag', 'horse', and all other names of those who perform these actions are uttered, such a succession of words does not yet make discourse; for in neither case do the words uttered indicate action or inaction or existence of anything that exists or does not exist, until the verbs are mingled with the nouns; then the words fit, and their first combination [*symploké*] is a sentence, about the first and shortest form of discourse.[…] When one says 'a man learns' […] he does not merely gives names, but he reaches a conclusion by combining (*symplékon*) verbs with nouns. […] So, then, just as of things some fit each other and some do not, so too some vocal signs do not fit, but some of them do fit and form discourse (*lógos*)." (Plato *Sophista* 261 d - 262 e)

"Verbs by themselves, then, are nouns, and they stand for or signify something, for the speaker stops his process of thinking and the mind of the hearer acquiesces. However, they do not as yet express positive or negative judgements. […] A sentence is significant speech, of which this or that part may have meaning – as something, that is, that is uttered but not as expressing a judgement of a positive or negative character. […] But while every sentence has meaning, […] not all can be called propositions." (*De interpretatione* 3, 16 b 22-5; 4, 16 b 27-29; 4, 17 a 1-4).

Although not all sentences prove to be units as in the case of a definition, Aristotle nevertheless explains what, in each case, keeps the noun and the verb together, the subject and the predicate: it is the verb 'to be', which paraphrases the relating function of the verb: "The two propositions, 'man walks', 'man is walking' mean just the same thing. "(*De interpretatione* 12, 21 b 9-10)

The term 'copula', although first introduced only in the XIIth century, by Abelard, and therefore not originally Aristotelian, with its huge diffusion, testifies to the "popularity" of the Aristotelian model.

We have already mentioned the objection of descriptive fallacy (§ 2.2) which can be recalled as important due to the reductionism of the proposed formalisation: S is P[18] .

Less attracted by the referential and defining purport of speech and more focused on its building dynamics is Humboldt's view.

Perhaps it would be worth mentioning the subjectivist turn (not yet about sentences, but rather concerning nouns and verbs) taken in the modern era and testified to by Arnauld and Lancelot's *Grammaire générale et raisonnée*,: "The subject of our thoughts, are either things, such as the earth, the sun, water, wood, what we normally call substance. Or the way things are; like being round, being red, being hard, being wise etc. what we call accidents. […] Because those [the words] which refer to substance, are called "substantive nouns or names"; and those which refer to attributes, signalling the subject to which these attributes pertain, adjectival nouns.

And that is the origin of substantive and adjectival nouns. But we didn't stop there: and it so happens that we didn't so much stop at meaning [*signification*], but rather at the manner of meaning [*manière de signifier*]. Because the substance is what exists in its own right, we have given the name substantive nouns to all those which exist by themselves in the discourse, without needing any other name, even if they signify accidents. […] The verb itself should have no other use than to signify the link that we make in our minds between the two terms of the proposition. But there is only the verb "to be" which we call substantive which has this simplicity, we can even say that it only has this simplicity in the third person of the present tense, "is" and in certain contexts."(Arnauld-Lancelot, 1660; italics, beyond examples and technical terms, are mine).

The reflexion on language takes its leave of an insurmountable correspondence between linguistic and world structures. The shape of speech –as is now accepted - depends largely on the activity of speakers. Wilhelm von Humboldt, after a life-long and world-wide empirical research on languages, sums up his theoretical views with great efficacy:

"*Framing the sentence.* The grammatically formed *word* […] in the composition of its elements, and in its unity as a whole, is destined to enter, again as an element, into the *sentence*. So language must here form, higher unity – higher, not merely because it is of greater extent, but also because it depends more exclusively on the ordering inner form of the sense of language, in that sound can only operate on it an auxiliary fashion. […] If *we start from the sentence, as is originally more correct, since every utterance, however incomplete, does really constitute a closed thought in the speaker's mind*, then languages which employ this method [as the Mexican] by no means shatter the unity of the sentence, but try, rather, to knit its construction even more tightly together. But they manifestly derange the boundaries of verbal unity by carrying them over into the domain of sentential unity. […] The Mexican method of incorporation testifies in this to a correct sense of sentence-formation, that it attaches the designation of its relations precisely to the verb, and thus to the point at which the sentence ties itself together into unity. […]

---

[18] While attending corpus linguistics studies, I was prompted to reconsider the role of predication in the vast field of illocutionary forces and in relation to a variety of objects. It was a rather shocking experience, similar to that of going out in the open air rather than contemplating a panorama from a single window.

Sound forms and grammatical requirements. Grammatical formation arises from the *laws of thinking* in language, and rests on the *congruence of sound-forms* with the latter. […] But deficiency on the one point always reacts back at once upon the other. The perfecting of language demands that every word be stamped as a specific *part of speech*, and carry within it those properties that a philosophical analysis perceives therein. It thus itself presupposes inflection. So the question now is as to how the simplest part of completed language formation, the minting of a word by *inflection* into a part of speech, can be supposed to proceed within the mind of a people? Reflective *consciousness* of the language cannot be presumed in connection with its origin, and would also harbour no creative power for the forming of sounds. Every advantage that a language possesses in this truly vital portion of its organism proceeds originally from the living *sensory world-outlook.* […] An intuition proceeding from the liveliest and most harmonious exertion of powers exhausts everything presented in the intuited, and does not confound the particular, but separates it out in clarity. Now from recognition of this dual relation of objects, from the feeling of their right relationship and the vividness of the impression evoked by each one of them, inflection[19] arises, as if automatically, as the verbal expression of what is intuited and felt.

At the same time, however, it is remarkable to see in what various ways the mental outlook arrives here at *sentence-formation.* It does not set out from a prototype, does not laboriously put the sentence together, but achieves this without any forethought, in that it merely confers shape in sound upon the sharp and fully-registered impression of the object. In that this happens correctly each time, and according to the same feeling, the thought becomes coordinated out of the words so formed. […]

Spontaneous positing in languages. There are points in the grammatical structure of languages at which this synthesis, and the power that produces it, come nakedly and directly in view, as it were, and with which all the rest of the language-structure is then also necessarily most intimately connected. Since *the synthesis* we are speaking of *is not a state [Beschaffenheit], nor even properly a deed [Handlung], but itself a real action*, always passing with the moment, there can be no special *sign* for it in the words, and the endeavour to find such a sign would already in itself bear witness to a lack of true strength in the act, in that its nature was misunderstood. The real presence of the synthesis must reveal itself *immaterially*, as it were, in the language. […] We may call this act in general – as I have done here in this particular case [if, in a language, a root is marked out by a suffix as a substantive] – the act of *spontaneous positing* by bringing-together (synthesis). It recurs everywhere in language. […]

The *verb* (to speak first of this by itself) *differs in a sharply determinate way from the noun*, and from the other parts of speech that might possibly occur in a simple sentence, in that to it alone is assigned the act of *synthetic positing* as a grammatical function. Like the declined noun, it arose through such an act, in the fusion of its elements, with the stem, but it has also received this form in order to have the office and capacity of itself again performing this act with regard to the sentence. Between it and the other words of the simple sentence, there is therefore a difference which forbids us to count it along with them in the same category. *All the other words of the sentence are like dead matter lying there for combination; the verb alone is the*

---

[19] Regarding Leibniz's idea of reducing relations to properties, and therefore the possibility of conceiving, for instance, a declinable root of a verb, with the entities around it as a basis of property with its modifications, see (Orilia, 2000).

centre, containing and disseminating life. Through one and the same synthetic act, it conjoins, by *being*, the *predicate* with the *subject*, yet in such a way that the being which passes, with an energetic predicate, into an action, becomes attributed to the subject itself, so that what is *thought* as merely capable of conjunction becomes, in *reality*, a state or process. [...] *The thought, if one may put it so concretely, departs through the verb, from its inner abode, and steps across into reality.*" (Humboldt, 1999; italics added).

We note with surprise both the profound consonance and the logical and semantic refinement which are apparent between these last lines and the following, written some decades later (1835-1892), always in Germany, by Gottlob Frege:

"[...] In every judgement, [a judgement, for me, is not the mere comprehension of a thought, but the admission of its truth] no matter how trivial, the step from the level of thoughts to the level of reference (the objective), has already been taken.

One might be tempted to regard the relation of the thought to the True not as that of sense to reference, but rather as that of subject to predicate. [...] The truth claim arises [...] from the form of the declarative sentence [...] It follows that the relation of the thought to the True may not be compared with that of subject to predicate. Subject and predicate (understood in the logical sense) are indeed elements of thought; they stand on the same level for knowledge. By combining subject and predicate, one reaches only a thought, never passes from sense to reference, never from a thought to its truth value. One moves at the same level but never advances from one level to the next. A truth value cannot be a part of a thought, any more than, say, the Sun can, for it is not a sense but an object. (Frege, 1952) [...]

Judgements can be regarded as advances from a thought to a truth value. Naturally this cannot be a definition. Judgement is something quite peculiar and incomparable. One might also say that judgements are distinctions of parts within truth values. Such distinction occurs by a return to the thought." (Frege, 1952)

One year earlier (1891) Frege had stated a parallelism between equations and statements. "The linguistic form of equations is a statement…. " (Frege, 1952)[20]

"I am concerned to show that the argument does not belong with the function, but goes together with the *function to make up a complete whole*; for the function by itself must be called incomplete, in need of supplementation or 'unsaturated'. And in this respect functions differ fundamentally from numbers. Since such is the essence of the function, we can explain why, on the one hand, we recognize the same function in '$2 \cdot 1^3 + 1$' and '$2 \cdot 2^3 + 2$', even though these expressions stand for different numbers, whereas, on the other hand, we do not find one and the same function in '$2 \cdot 1^3 + 1$' and '$4 - 1$' in spite of their equal numerical values. Moreover, we now see how people easily led to regard the form of the expression as what is essential to the function. We recognize the *function* in the expression by imagining the latter *as split up*, and *the possibility of thus splitting it up is suggested by its structure.*

The two parts into which the mathematical expression is thus split up, the sign of the argument and the expression of the function, are *dissimilar*; for the argument is a number, a whole complete in itself, as the function is not. (We may compare this with the division of a line by a point. One is inclined in that case to count the dividing-point along with both

---

[20] Cf. (Raynaud, 2002).

segments; but if we want to make a clean division, i.e. so as not to count anything twice over or leave anything out, then we may only count the dividing-point along with one segment. This segment thus becomes fully complete in itself, and may be compared to the argument; whereas the other is lacking in something – vid. the dividing-point, which one may call its endpoint, does not belong to it. Only by completing it with this endpoint, or with a line that has two endpoints, do we get from it something entire." (Frege, 1952 [24-25]).

The "entirety" of the whole starts to become the *Leitmotiv* of so many and so various contributions. Frege emphasises the idea by using two different images: incompleteness means in need of supplementation, while unsaturatedness (chemical suggestion[21]) is a segment without an endpoint.

Another author, a great logician and semiotician well-endowed with chemical competences[22], Charles Sanders Peirce, more or less in the same period (1892-1906), was developing a model which would be accepted and spread from the 20th century onwards.

"A Predicate", Peirce wrote in 1906, "is either non-relative, or a *monad*, that is, is explicitly indefinite in one extensive respect, as is 'black'; or it is a dyadic relative, or dyad, such as 'kills', or it is a polyadic relative, such as 'gives'. These things must be diagrammatized in our system." (Peirce 4.543)

In 1892, the same year in which Frege published his *On Sense and Reference*, Peirce stated: "A rhema is somewhat closely analogous to a chemical atom or radical with unsaturated bonds. A non-relative rhema is like a univalent radicle; it has but one unsaturated bond. A relative rhema is like a multivalent radical. The blanks of a rhema can only be filled by terms, or, what is the same thing, by 'something which' (or the like) followed by a rhema; or, two can be filled together by means of 'itself' or the like. So, in chemistry, unsaturated bonds can only be saturated by joining two of them, which will usually, though not necessarily, belong to different radicles. If two univalent radicles are united, the result is a saturated compound. So, two non-relative rhemas being joined give a complete proposition. […] And we may say that all rhemata are either singular, dual, or plural," (Peirce, 3.421).

But even more important than this multiplication of terms around the predicate is Peirce's thesis of the difference between verbs and proper nouns (or pronouns).

"The proposition, or sentence, signifies that an eternal fitness, or truth, attaches certain hecceities to certain parts of an idea" (Peirce 3.461). "It is - in fact - the connection of an indicative word [of an index] to a symbolic word which makes an assertion (Peirce 4.56)[23].

Such a 'dissimilarity' (Frege), or 'asymmetry' (Mathesius), is the condition of that 'fitness' Peirce writes about. Without it, instead of an 'attachment' (Peirce) or of the unity of a line where segments meet (Frege), of an intertwining (Plato), or of a 'synthesis' or a '*syntheke*'[24] (Aristotle), a couple (Abelard), we would have just a co-presence[25], a juxtaposition, a mere addition.

---

[21] See Picardi, 1994.

[22] Peirce completed an M.A in chemistry in 1862, and a Bachelor of Science in 1863 at Harvard University.

[23] Cf. (Fumagalli, 1995). The last two quoted passages are dated 1896 and 1893 respectively.

[24] See Lo Piparo, 2003.

[25] Against the "two-term theory,"see (Geach, 1972). About a medieval semantics of verb not "reabsorbed" by the semantics of noun see (Marmo, 2004).

In order to arrive at conclusions which oppose mere cumulativity, Bühler writes some memorable pages, at the opening of the fourth part of his *Theory of Language*, on "The Make-up of Human Speech: Elements and Compositions", contrasting the *incipit* of Leibniz's *Monadology* about composites as accumulation or *aggregatum* of simples with the Aristotelian concept of *synthesis*, later encountered in Kant, Hegel, Cassirer, Wundt. He then states: "the old disjunctive question has found a new home in our contemporaries' minds, but with various new names; psychologists who profess the 'idea of *Gestalt'* or some 'holistic view' normally draw boundaries and erect barriers in its name against the *'amas ou aggregatum'* because hardly anyone wants to be counted among the 'atomists' or elementarians. […] On the one hand anyone can mention the so-called summative wholes as an example of an aggregate in the strict sense; and on the other hand the sentence is a handy illustration as a last resort to make even the blind see that Leibniz's analysis cannot be generally applied: it is said that the sentence is obviously more than and different from an aggregate of words. […] We rather will remain on the ground of sematology and try to find out whether *both* claims can be understood and maintained in one breath with respect to significative structures, namely the claim that they are aggregates in one respect and synthemata in another. That is precisely what they are; we shall only be able to gain a correct view of the relationship of the words to the sentence unit by changing the aspect under which we regard the issue, by shifting the approach; we must make this shift of attitude […]. The nature of this shift can be stated without a trace of mystery or of mysticism or paradox. If there are two different sort of thing in the sentence, namely symbols and a field, then two separate counts can without contradiction reach the result **n** in the former case and the result **1** in the latter case. Leibniz, the productive mathematician, will be quite right if he determines the result n as a sum of units; but the one field unit will not be a merely symbolic sum." (Bühler, 2011).

We could continue quoting *ad infinitum*, but the purpose here is merely to underline the fact that two different directions need be followed in a complementary way while respectively producing (encoding) and understanding (decoding) a message (a text), at least a sentence to begin with: top-down in the first case – from the whole communicative intention to its segmentation in predication -, bottom-up in the second – from lexemes and morphemes to phrases and their structure. Compositionality (the value of totality is a function of the value of its parts) is then plausible; this, though, is secondary to the primacy of the thesis that the totality is more than the sum of its parts, a thesis according to which we are able to explain sentences as units at their sources.

Ultimately we would like to reflect a convergent approach shared by the fathers of the two main contemporary grammatical models: dependency grammar and constituency grammar.

Lucien Tesnière, to whom the so-called dependency grammars are ascribed, opens his *Esquisse d'une syntaxe structural* (1953) as follows:

"*CONNECTION.* In the sentence *Alfred sings*, how many elements are there?

Two, we would normally answer: *Alfred* and *sings*.
Only one, would be the guess of those who feel the unity of the sentence.
Three, we say, taking into account the two previous answers:
1. = Alfred
2. = sings

3.   = finally and **above all**, the link which unites unit *Alfred* and *sings*, and without which we would only have two independent **ideas**, with no relationship between them, and no organised thought.

We will give to this link, without which there is no possible sentence, the name **connection.**

The connection is the soul of the sentence, its vital and organising principle. It ensures **structural function**. […]

STEMMA. The structure of the sentence depends upon the architecture of its connections. **Structural syntax** is the science which studies this architecture.

The **stemma** is the graphical representation of the architecture of the connections. […] The stemma may be **linear** or **forked**. The forked stemma may have a **bifurcation**, a **trifurcation** or an even more complex ramification:

LINEAR STEMMA	FORKED STEMMA	
	Bifurcation	Trifurcation
Alfred sings	*Alfred hits Bernard*	*Alfred gives the book to Charles*
sings | Alfred	hits /\\ Alfred Bernard	gives / | \\ Alfred the book to Charles

[…]

STEMMATIC ANALYSIS. The structural syntax method consists essentially of reconstituting the stemma of a given utterance, that is to recognise the internal architecture. The establishment of the stemma constitutes **stemmatic analysis**, which includes both grammatical analysis and logical analysis and which it replaces in a positive and advantageous manner. […]

VERB. The verb is the **node of nodes.** It is the verb which, directly or indirectly, controls the whole sentence. As such, it appears at the top of the stemma. This is why, when we establish a stemma, a good way is to start with the verb. […]

The immediate subordinates of the verb are the **agents** and the **circonstants.**

AGENTS. We give the name agents to the subordinates of the verb which participate in any way in the action. […]

CIRCONSTANTS. We give the name circonstants to the subordinates of the verb which indicate the circumstances of the action: time, place, manner, etc. The number of the circonstants is unlimited. ″ (Tesnière, 1953).

In order to remind ourselves that predication is the basic structure of both queries and answers, we refer to Tesnière's proposal about '*interrogation*':

″In the sentence : *Alfred sings*, three questions may arise (which confirms that there are three elements) :

-    *Who sings?*

- *What does Alfred do?*
- *Does Alfred sing?*

NUCLEAR INTERROGATION. In the sentence: *Who sings?* the question concerns the subordinate **nucleus**, which is emptied of the meaning *Alfred*, and where only the interrogative word *Who? exists.* We would say that there is a **nuclear interrogation**.

$$\begin{array}{cc} sings & sings \\ | & | \\ who? & Alfred \end{array}$$

When the nuclear interrogation is made with an empty nucleus, the corresponding response is made with a full nucleus: *Who sings? Alfred sings.* It is even enough to fill the nucleus without repeating the rest of the sentence: *Who sings? Alfred.*

The sentence: *What does Alfred do?* is also a nuclear interrogation. *What does Alfred do? Alfred sings* or simply: *He sings.* The only difference is that this time the question is on the controlling nucleus.

To summarise, the sentence: *Alfred sings*, having two nuclei, can give rise to two nuclear interrogations. We can see from this that a phrase can give rise to **as many nuclear interrogations as it has nuclei**.

Nuclear interrogations are made via **question words**, of which the main ones are:

For agents: *who? – what?*
For circonstants: *where? – when? – how?- why?*
For epithet: *which?*
For example: *Which book is Alfred looking at? Alfred is looking at the red book* or simply: *The red one.*

CONNECTIONAL INTERROGATION. In the sentence: *Does Alfred sing?* the two nuclei *Alfred* and *sings* are full. The question is therefore not nuclear. Effectively, *Alfred* and the action of *singing* are given. What we don't know is whether the two notions should be joined together, that is, if there is a **connection** between them. The questions is thus about the connection. We would say there is a **connectional interrogation.** […]

If the connectional interrogation is made with a full nucleus, the corresponding response is made with an empty one. This is why a single word is enough: *yes* or *no*:

Does Alfred sing? – Yes.

Yes means : *There is a connection.*

No means *: There is not a connection.*

To summarise, the phrase *Alfred sings* can give rise to three questions, two nuclear and one connectional." (Tesnière, 1953).

As far as Chomsky is concerned, here we shall only recall that in generative, or more precisely in phrase-structure grammar, the start variable (or start symbol) S represents the whole sentence.

So far we have reached the 1950s.

For the 1960s I wish to mention two independent semantic turns within two different traditions: František Daneš' *Three-level Approach to Syntax* (1964) and following articles and Charles Fillmore's *The Case for Case* (1968) with its further developments.

Without being able to dwell upon each of these contributions, I think both of them deserve to be appreciated for their awareness of the importance of a sharp distinction and at the same time a strict correlation between the formal and the functional level (as typical of the Prague School) or, in other words, between the syntactic and the semantic levels of linguistic analysis (as was gradually being evidenced within the generative trend).

Distinction does not mean separation. On the contrary, distinction allows better outlined relations, those which let the new generation of Czech linguists identify semantic patterns (something like the predicational categories already investigated by Sundén) such as: *process; agent–action–the object of action; the bearer of state–state; individual–predication of a feature to it; individual–placing it into a class; etc.* (Daneš, 1964).

"The framework of Functional Generative Description [FGD]", states Petr Sgall, "has been designed so as to handle sentence structure in its anthropocentric aspects, i.e. based on syntactic dependency (the core of which, at least in most European languages, is the pattern of actor and action) and comprising the topic-focus articulation, i.e. specifying sentences not just as abstract objects, but as anchored in interactive context; this opens a way to understand them as operations on the hearer's states of mind.

FGD offers a basis for a relatively economic description, since the sentence representation having the shape of a dependency tree (with the verb at its root) contains only nodes corresponding to lexical items proper, rather than to nonterminals and function morphemes." (Sgall, 2006); paper originally published in 1997).

In the report of Charles Fillmore's *The Case for Case*, his work is introduced in these terms: "The grammatical notion 'case' deserves a place in the base component of the grammar of every language. It is argued that past research has not led to valid insights on case relationships and that what is needed is a conception of base structure in which case relationships are primitive terms of the theory and in which such concepts as 'subject' and 'direct object' are missing."   (Fillmore, 1967).

More than forty years later, we can conclude that the cognitive turn in linguistics has become stronger. The notion of case has evolved into that of frame. The latter, together with the notion of script, had, in the meantime, gained ground[26].

It would be fruitful to compare the finite set, the list of cases with the results of other similar enterprises: tectogrammatical roles in Prague Dependency Treebank[27], Chomsky's thematic roles/Theta Roles[28].

---

[26] (Minsky, 1974); (Schank, Abelson,1977).

[27] http://ufal.mff.cuni.cz/pdt2.0/doc/manuals/en/t-layer/html/ch11s05s01.html

[28] In generative grammar, a theta role or θ-role is the formal device for representing syntactic argument structure (number and type of noun phrases) required by a particular verb. Thematic roles or relations are their semantic correspondents. Theta comes from thematic.

What we eventually want to do is to make explicit some conclusions which can be arrived at from the wide perspective so far explored:

1. Factual oversimplifications are not admitted: verbs usually cannot be alone, but sometimes they can (I'm not speaking about ellipses), given that zerovalent verbs exist (as atmospheric verbs in many languages) (Malchukov, Sievierska, 2011).
2. Metalinguistic oversimplifications are not admitted either: neither the correlation subject-property (suggested by Aristotle) nor that of agent-action (suggested by Tesnière's terminology) always stand, and not everywhere: they are merely *pars pro toto* representations[29].
3. However, what can be seen as an interesting, though covert, convergence between two main models of predication is something underlying the conviction about sentence unit: that is to say that both the Aristotelian paraphrase 'man is walking' for 'man walks' and the Fregean symbolic transcription $W (m) = 1$, or $W (m) = 0$[30] attest to the feeling of a relationship, of a reference from the foreground to the background, from the present being to the whole one, from the determined knowledge to the totality of what can be judged, as Frege calls it (*das Beurteilbare*, the judgeable), from the objects the sentence is about, to the world (actual or possible) it has been assigned to.

To better understand this fundamental belonging of the "case in question" to what it is included within, without being reducible to it, is a worthwhile goal: the result will be to understand that difficult but stimulating balance which is provided by relating something determined to something abstract, a dream – as Peirce would say – to an index[31], thoughts to worlds and worlds to thoughts.

3.4 Predication without or before judgement. Propositions vs. propositional functions

Just a couple of further statements before leaving the subject of predication.

As widely considered, we need predication before judging[32]. We need it to ask questions, to make requests, to give orders, to plea, to pray, to express wonder and so on. Predication deserves attention as an act of thinking, as a logical and psychological matter, as a semiotic, linguistic ability, as a communicative deed. Before judgements we utter questions, doubts, hypotheses, shaping our thoughts while still suspending our evaluations.

Formalising this distinction means distinguishing between propositional functions and propositions, between unsaturated connections and saturated ones. Saturated through what device? Completed by what?, if ever …

3.5 Affirming or denying

In a sentence deprived of its context no linguistic evidence (in the etymological sense of the word, i.e. seeable verbal constituents) can be displayed as the marker of an accomplished

---

[29] Regarding the importance of an ontology of events, for predicates referring to events, see (Davidson, 1980).

[30] The formula means that the predicate 'walk' being saturated by its argument identifies the truth value: either 1 (true) or 0 (false).

[31] "A verb by itself signifies a mere dream, an imagination unattached to any particular occasion. It calls up in the mind an *icon*" (Peirce 3.459).

[32] See (Davidson, 2005).

saturation (or, rather, as the mark of an ended task). No morpheme, no lexeme proper; intonation, rather, an unsuspended one; word order, possibly. But most of all, the plain intonation of an assertion contrasted with, for example, the rising intonation of a question.

What does this mean? Different authors in different contexts have underlined the presence of a covert constituent in judging: the personal assent or dissent which determines the affirmative or negative structure of predication itself in assertions, and constitutes its illocutionary force.

After having quoted Frege's expressions on this point (3.3), let us recall Brentano's statements about the role of assenting (or dissenting) while judging: once an object is given in presentation, with our judgements we express its acceptance or rejection (Brentano, 1995).

This way of considering the further commitment involved through an act of judgement helps us gain a unified perspective on the two different kinds of questions mentioned in § 2.3. Any assertion – this is the suggestion – qualifies itself as a yes or no answer, even if apparently no question at all has generated it; completive questions just pave the way for oriented questions. Answers will then confirm or deny the orientation proposed, thus underlining the strict relationship between predicate as sentence-centre and predication as basic syntagmatic act, whatever illocutionary act may follow, be it an assertion or not.

4. Tools and resources: from WordNet to FrameNet *et alia*

After having reconstructed some basic steps of the more than bi-millennial thread of philosophic-linguistic thought, the next move must be that one of a recognition of data, in order to check the validity of theoretical contributions. From this point of view we are now in a privileged position, that of scholars favoured by the creation of a specific area of studies, computational linguistics and related resources, which support and provide inspiration to the theorists.

From the works of ancient grammarians to those of present-day linguists, the interplay between data and theory has always been of vital importance in developing sound, deep competences.

The work is hard, but well worth the effort and avoids restricting ourselves to armchair philosophy (Austin 1956/57) or armchair linguistics (Fillmore 1992).

"Armchair linguistics – writes Fillmore - does not have a good name in some linguistics circles. A caricature of the armchair linguist is something like this. He sits in a deep soft comfortable armchair, with his eyes closed and his hands clasped behind his head. Once in a while he opens his eyes, sits up abruptly shouting, "Wow, what a neat fact!", grabs his pencil, and writes something down. Then he paces around for a few hours in the excitement of having come still closer to knowing what language is really like.

(There isn't anybody exactly like this, but there are some approximations).

Corpus linguistics does not have a good name in some linguistics circles. A caricature of the corpus linguist is something like this. He has all of the primary facts that he needs, in the form of a corpus of approximately one zillion running words, and he sees his job as that of deriving secondary facts from his primary facts. At the moment he is busy determining the

relative frequencies of the eleven parts of speech as the first word of a sentence versus as the second word of a sentence.

(There isn't anybody exactly like this, but there are some approximations).

These two don't speak to each other very often, but when they do, the corpus linguist says to the armchair linguist, 'Why should I think that what you tell me is true?', and the armchair linguist says to the corpus linguist, 'Why should I think that what you tell me is interesting?'" (Fillmore, 1992).

By 'linguistic resources' we mean "Collections of data which primarily document communicative acts of humans by some form of recording and/or descriptions, both directly as in corpora, or at higher levels of abstraction in lexicons and ontologies. The primary data can be text, video recording and/or audio tracks."[33]

In 2010 a new initiative was launched by LREC (Language Resources and Evaluation Conference) in its 7th edition, the

Compilation of a *Map of Language Resources, Technologies and Evaluation*, "a collective enterprise of the LREC community, as a first step towards the creation of a very broad, community-built, Open Resource Infrastructure; […] The map was intended to monitor the use and creation of language resources (datasets, tools, etc.)"[34].

We will now mention some of the main resources available, which can enable data collection *and* annotation at different levels about them, in a bottom-up direction.

4.1 WordNet and MultiWordNet

Firstly we shall start with lexical units, just words: WordNet "is a large lexical database of English. Nouns, verbs, adjectives and adverbs are grouped into sets of cognitive synonyms (synsets), each expressing a distinct concept. Synsets are interlinked by means of conceptual-semantic and lexical relations"[35]. From the point of view of our subject, predication and predicate-argument relationship, of particular note is that "The majority of the WordNet's relations connect words from the same part of speech (POS). Thus, WordNet really consists of four sub-nets, one each for nouns, verbs, adjectives and adverbs, with few cross-POS pointers. Cross-POS relations include the "morphosemantic" links that hold among semantically similar words sharing a stem with the same meaning: observe (verb), observant (adjective) observation, observatory (nouns). In many of the noun-verb pairs the semantic role of the noun with respect to the verb has been specified: {sleeper, sleeping_car} is the LOCATION for {sleep} and {painter}is the AGENT of {paint}, while {painting, picture} is its RESULT."

MultiWordNet is a multilingual lexical database, aligned with Princeton WordNet[36].

http://multiwordnet.fbk.eu/english/home.php

---

[33] From the Glossary of INTERA project:: http://www.mpi.nl/INTERA/

[34] http://www.informatik.uni-trier.de/~ley/db/conf/lrec/lrec2010.html: see especially section 0.33, Question Answering.

[35] http://wordnet.princeton.edu/

[36] http://multiwordnet.fbk.eu/english/home.php

4.2 Treebanks and annotated corpora

The creation of annotated corpora at different levels (layers) constitutes a further development and a sound premise for a good selection of metadata. Here, we refer only to the creation of annotated corpora in a great deal of different languages at the syntactic level, treebanks, and to the systematically planned discussion about the relationship between annotation as such, and the adoption of apparatus according to which annotation needs to be done (not only manually, but also automatically, of course): the Treebanks and Linguistic Theories (TLT) conference series[37].

4.3 PropBank *et relata*

From lexicon (and lexicography) through syntax: the step towards propositions has been taken and the results can be viewed in the realised and on-going project of PropBank, which adds predicate-argument relations to the syntactic trees of Penn-Treebank (concerning English language), thus achieving a corpus of text annotated with information about basic semantic propositions. In connection with this project, a continuation aims at creating Parallel PropBanks (the English-Chinese Treebank/PropBank)[38].

Based upon PropBank, once again top-down observation and analysis has been carried out, generating a verb index[39] (a system which merges links and web pages from four different natural language processing projects) and an index of nouns[40], the goal of which is to mark the sets of arguments that cooccur with nouns in PropBank. They are the Unified Verb Index and Nombank.

4.4 FrameNet and Semlink. Towards increasing semantic annotation and resource combination

In order to expand the annotation from the syntactic to the semantic level and to achieve frames passing through verbs and valences, other resources have been produced and are still under construction, their development being possible in relation to different corpora and languages: VerbNet[41] (the largest on-line verb lexicon currently available for English) and valence lexica[42] according to the PDT-ValencyLexicon[43] model.

The most refined annotation on the semantic level of predicate-argument relationship is still provided by FrameNet[44], Fillmore's Project, is consistent with his life-long research into

---

[37] The list of the first seven conferences is published at http://tlt8.unicatt.it/Links.htm ; the addresses of the last three edition are the following: http://tlt8.unicatt.it/ ; http://math.ut.ee/tlt9/index.html ; http://tlt10.cl.uni-heidelberg.de/ See also, for a case study regarding a particular predicative structure, (Bamman, Passarotti, Crane, 2008).

[38] http://verbs.colorado.edu/~mpalmer/projects/ace.html

[39] http://verbs.colorado.edu/verb-index/

[40] http://nlp.cs.nyu.edu/meyers/NomBank.html

[41] http://verbs.colorado.edu/~mpalmer/projects/verbnet.html

[42] Cf. http://jochenleidner.posterous.com/english-valency-lexicon-online

[43] See (Hajič, J., Panevová, J., Urešová, Z., Bémová, A., Kolářová, V., Pajas, P., 2003) and http://ufal.mff.cuni.cz/PDT-Vallex/ PDT-Vallex contains at the time of writing (January 2012) over 11000 valency frames for more than 7000 verbs. It has been built in close connection with the Prague Czech-English Dependency Treebank project.

[44] https://framenet.icsi.berkeley.edu/fndrupal/

cases, first, and then frames. "The FrameNet project is building a lexical database of English that is both human- and machine-readable, based on annotating examples of how words are used in actual texts. From the student's point of view, it is a dictionary of more than 10,000 word senses, most of them with annotated examples that show the meaning and usage. For the researcher in Natural Language Processing, the more than 170,000 manually annotated sentences provide a unique training dataset for semantic role labeling, used in applications such as information extraction, machine translation, event recognition, sentiment analysis, etc. For students and teacher of linguistics it serves as a valence dictionary, with uniquely detailed evidence for the combinatorial properties of a core set of the English vocabulary."

As it is already evident both from a strategic, epistemological point of view and from a practical one, resource compatibility and unification are highly appreciable and not only as a goal to be pursued in the future. SemLink, for instance, is "the effort to map between complementary lexical resources: WordNet, FrameNet , VerbNet and PropBank. The goal is to develop a broad-coverage, unified English resource that has a fine granularity and rich semantics of Word-Net and Frame-Net, that is a platform for syntactically based generalizations based on VerbNet, and that provides PropBank style effective training data for supervised Machine Learning techniques." (Palmer, 2009)

We would like to conclude our quick survey by quoting Martha Palmer's words at the conclusion of the same paper: "Efforts to link the PropBank/VerbNet and FrameNet resources to one another and to WordNet, and to define semantics for the roles used by each resource, are a likely avenue for future improvements in semantic role labeling systems, and will benefit Question-Answering, Information Extraction and other NLP applications." Let's pursue such avenues.

5. Conclusion

We have considered the differences between questions and requests, and their co-presence in the structure of queries.

Because of the so-called "descriptive fallacy" in philosophy of language, it took rather a long time to give them the attention they were due. Thanks to pragmatics, this oversight has been rectified.

Asking questions testifies to the strong relationship between lack of determinacy (poverty, both in knowledge and in action) and the need to overcome it (in order to attain plentifulness). Interrogative structures are devices where triggers such as *wh*-words or suspended assent are at work to retrieve missing information, extract knowledge, or receive the cooperation requested.

Answers are therefore not only assertions, but also permissions, prohibitions, orders, suggestions, etc. The logico-linguistic structure which is always required across this variety of speech acts and which makes possible the wording of questions and requests is predication.

Even in elliptical or simply verbless sentences, predication is at work albeit implicit or implied. To be at work means that it is a necessary condition for the complete efficiency and comprehensibility of the sentence itself. To be at work, then, means that the addressee/hearer/reader has to bear in mind, or retrieve, the predication, where the absence of recognition would prevent him/her from understanding the meaning, i.e. the

semantics of the sentence. In crosstalk such as "Ready?" "Not yet.", no verb appears, but predication is easily recognisable, as implicit (in the question) or implied (in the answer): Implicit, specifically as *a part of* the first turn "[Are you] ready?", and implied as *the whole* turn upon which negation operates. The role of negation is in fact that of an operator, the scope of which is the whole preceding sentence structure: [It is] not yet [true that I am ready]", i.e. the preceding sentence deprived of its interrogative mood, that is to say without the suspension of assent typical of oriented questions, and shifted to the second person (addressee) to the first one (sender).

During our reconstruction of the basic views on such an evergreen topic in logic and linguistic inquiries as predication, we have argued that some routes need to be modified:

i.   Before predicates, theory must put predication as the basic syntagmatic act. This means the adoption of a pragmatic framework.

ii.   Before articulating predicative relations, the sentence unit must be asserted and the reasons investigated, thus avoiding both factual and metalinguistic oversimplification. Bottom-up approaches need to be balanced by top-down approaches, which deserve a certain priority due to the causative role of the speaker and of his/her communicative intention, which gives rise to the actualisation of the speech act and to the processing of its constituents by the addressee. Compositionality is a function of (con)textuality and not vice versa.

iii. 'Dissimilarity', or 'asymmetry' of components (typically nouns and verbs) is the condition of 'fitness' which joins sentence constituents. Without it, we would merely have a co-presence, a juxtaposition, a simple addition. Beyond this, both Aristotelian and Fregean models attest to the feeling of a further (second step) relationship, a reference from the foreground to the background, from the present being (through the copula) to being as such; from single, determined objects of the spoken domain to the universe of discourse (the co-domain instituted as the truth or falsehood which the predicate-argument relationship refers to); from the objects the sentence is about, to the world (actual or possible) it has been assigned to. Moreover, this asymmetry is also active on another layer, that of communicative dynamism (topic-focus articulation, functional sentence perspective). Within the speech, participants in the conversation / communication exchange need to move from what is known to something new; they need to increase their already shared world of reference to new information / action upon it.

iv.   Higher units, such as texts, may be further requested, but at least questions/requests and answers cannot be mutually isolated. Moreover, a useful insight into a textual (macro)structure can be derived from the identification of the question(s) and request(s) which may be considered, albeit implicitly, to be the source of the text itself.

v.   The newest solutions proposed to capture the structure of the predicative link - which keeps queries and answers together- support the idea of a semantic unity displayed through a plurality of roles and their gradual identification or confirmation: this is what concepts such as functions, cases, stemmas, frames and scripts suggest - barring gaps at the beginning – who does what?, when does this happen? etc. – which have to be filled as an on-going task.

vi.   Unproven or simply intuited theoretical endeavours deserve access to data, as rich and varied as possible, in order to test their validity. In the privileged position made possible by computational linguistic tools and resources, philosophers of language,

logicians, linguists and other scholars, aware of the multi-secular history of human thought on these topics, can now also carry out field-work. Mutual advantage is expected.

6. References

Ambridge, B., Lieven, E.V.M. (2011). *Child Language Acquisition. Contrasting Theoretical Approaches*, Cambridge University Press, Cambridge

Aristotle, (1955). *The Organon. The Categories, On Interpretation*, by H.B. Cook; *Prior Analytics*, by H. Tredennick, Harvard University Press - William Heinemann Ltd, Cambridge Mass. – London

(1956). *The Metaphysics. Books I-IX*, by H. Tredennick, Harvard University Press - William Heinemann Ltd,Cambridge Mass. – London

(1959). *Posterior Analytics*, by H. Tredennick; *Topica*, by E.S. Forster, Harvard University Press – William Heinemann Ltd, Cambridge Mass. – London

Arnauld, A., Lancelot, C. (1966 ; 1660[1] -1676[2]). *Grammaire générale et raisonnée ou La Grammaire de Port-Royal*, Edition Critique présentée par H. E. Brekle, Tome I. Nouvelle impression en facsimilé de la troisième édition de 1676, Friedrich Frommann Verlag (Günther Holzboog), Stuttgart – Bad Cannstatt

Austin, J. L. (1956/57). *A Plea for Excuses*. In *Proceedings of the Aristotelian Society*, 57, pp. 1-30; repr. in Id. (1961). *Philosophical papers*, ed. by Urmson J. O., Warnock G. J., Oxford University Press, Oxford, pp. 175-204

(1962). *How to Do Things with Words*, Clarendon Press, Oxford

Bamman D., Passarotti M., Crane G. (2008). *A Case Study in Treebank Collaboration and Comparison: Accusativus cum Infinitivo and Subordination in Latin*, «Prague Bulletin of Mathematical Linguistics», 90, pp. 109-122

Belnap Jr., N.D. (1966). *Questions, Answers, and Presuppositions*, «The Journal of Philosophy» 63 (20), pp. 609-611

Brentano, F. (1995). *Psychology from an Empirical Standpoint*, 2nd revised edition, Routledge, London

Brozek, A., (2011). *Theory of Questions. Erotetics through the Prism of its Philosophical Background and Practical Applications*, Rodopi, Amsterdam

Bühler, K. (2011). *Theory of Language. The Representational Function of Language*, John Benjamins Publishing Co., Amsterdam / Philadelphia

Chomsky, N. (1957). *Syntactic Structures*, Mouton, The Hague – Paris

(1995). *The Minimalist Program*, the MIT Press, Cambridge Mass. London

Daneš, Fr. (1964): A three-level approach to syntax. In: J. Vachek (ed.), *Travaux linguistiques de Prague 1: L'École de Prague d'aujourd'hui*, pp. 225–240, Éditions de l'Académie Tchécoslovaque des Sciences, Prague

Davidson, D. (1980). *Essays on Actions and Events*. Oxford University Press, Oxford

(2005). *Truth & Predication*, Harvard University Press, Cambridge Mass. - London

Dummett, M. (1973). *Frege: Philosophy of Language*, Duckworth, London

Fillmore Ch. J. (1968) *The Case for Case.* In Bach and Harms (Ed.): Universals in Linguistic Theory, pp. 1-88, Holt, Rinehart, and Winston, New York

(1992). *"Corpus linguistics" or "Computer-aided armchair linguistics"* in Svartvik J. (ed), *Directions in Corpus Linguistics*, Proceeding of Nobel Symposium 82, Stockholm, 4-8 August 1991, pp. 35-60, Mouton De Gruyter, Berlin,

Frege, G. (1952). *Function and Concept.* In Geach, P., Black, M. (eds), *Translations from the Philosophical Writings of Gottlob Frege*, pp. 21-41, Basil Blackwell, Oxford

Frigerio, A. (2010 a). *L'unità dell'enunciato. Indeterminismo semantico e determinazioni pragmatiche*, Mimesis, Milano-Udine

(2010 b). *L'enunciato come sistema. Il principio di composizionalità e i suoi limiti.* In L. Urbani Ulivi (a cura di), *Strutture di mondo. Il pensiero sistemico come specchio di una realtà complessa*, pp. 155-173, Il Mulino, Bologna

Fumagalli, A. (1995). *Il reale nel linguaggio. Indicalità e realismo nella semiotica di Peirce*, Vita e Pensiero, Milano

Geach, P. (1972). *Logic Matters*, Basil Blackwell, Oxford

Gobber, G. (1999). *Pragmatica delle frasi interrogative. Con applicazioni al Tedesco, al Polacco e al Russo*, Pubblicazioni dell'I.S.U. – Università Cattolica, Milano

(2011). *Sulla semantica della domanda tra Otto e Novecento: Bolzano, Frege, Meinong*, In: *Januam linguarum reserare. Saggi in onore di Bona Cambiaghi*, a cura di C. Bosisio, pp. 26-34, Le Monnier Università, Firenze

Grice, P. (1975). *Logic and Conversation*, In: *Syntax and Semantics, 3: Speech Acts*, ed. P. Cole & J. Morgan, Academic Press, New York. Repr. in *Studies in the Way of Words*, ed. H. P. Grice, pp. 22–40, Harvard University Press (1989), Cambridge, MA

Hajič, J., Panevová, J. Zdeňka Urešová, Z., Bémová, A., Kolářová, V., Pajas, P. (2003). PDT-VALLEX: Creating a Large-coverage Valency Lexicon for Treebank Annotation, In: *Proceedings of The Second Workshop on Treebanks and Linguistic Theories*, pp. 57-68, Copyright © Vaxjo University Press, Vaxjo, Sweden, ISBN 91-7636-394-5, ISSN 1651-0267

Humboldt, W. von (1999). *On Language. On the Diversity of Human Language Construction and Its Influence on the Mental Development of the Human Species*, ed. by M. Losonsky, transl. by P. Heath, Cambridge University Press, Cambridge

Jordania, J. (2006). *Who Asked the First Question? The Origins of Human Choral Singing, Intelligence, Language and Speech*, Logos, Tbilisi; full text online (pdf version): http://www.polyphony.ge/uploads/whoaskthefirst.pdf

Laspia, P. (1997). *L'articolazione linguistica. Origini biologiche di una metafora*, La Nuova Italia, Roma

(2005). *Definizione e predicazione: Aristotele e Frege a confronto*, Edizioni della Fondazione Nazionale «Vito Fazio-Allmayer»

Lo Piparo, F. (2005). *Aristotele e il linguaggio. Cosa fa di una lingua una lingua*, Laterza, Roma-Bari

Malchukov, A., Sievierska, A. (2011). *Impersonal Constructions. A Cross-Linguistic Perspective*, John Benjamins Publishing Co., Amsterdam / Philadelphia

Marmo, C. (2004). *Una semantica del verbo nella grammatica e nella teologia tra XII e XIII secolo.* In A. Maierù, L. Valente (eds), *Medieval Theories on Assertive and Non-assertive Language. Acts of the 14th European Symposium on Medieval Logic and Semantics*, Rome, June 11-15, 2002, Lessico Intellettuale Europeo, Leo S. Olschki Editore, Firenze

Mathesius, V. (1926). *New Currents and Tendencies in Linguistic Research*. In: *MNHMA: Festschrift for Josef Zubatý*, pp. 188–203 Praha; Repr. in J. Vachek (ed.) (1983). *Praguiana: Some Basic and Less Known Aspects of the Prague Linguistic School. An Anthology of Prague School Papers* , pp. 45–63, Academia, Prague

(1936). *Deset let Pražského linguistického kroužku*, «Slovo a slovesnost» 2, pp. 137–145. Engl. transl. In J. Vachek (ed.), (1966) *The Linguistic School of Prague: An Introduction to its Theory and Practice*, pp. 137–151, Indiana University Press, Bloomington

Minsky, M.A. (1974). *A framework for representing knowledge*. MIT-AI Laboratory Memo 306, June; Repr. In Wiston, P. H. (ed.), (1975)*The psychology of computer Vision*, McGraw Hill, New York

Orilia, F. (2000). *Argument Deletion, Thematic Roles, and Leibniz's Logico-grammatical Analysis of Relations*, «History and Philosophy of Logic», pp. 147-162

Palmer, M. (2009). "*Semlink: Linking PropBank, VerbNet and FrameNet."In Proceedings of the Generative Lexicon Conference.* Sept. 2009, Pisa, Italy GenLex-09

Peirce, Ch. S. (1931-35). *Collected Papers of Charles Sanders Peirce*, ed by Ch. Hartshorne, P. Weiss, voll. 1-6, Harvard University Press – The Belknap Press, Cambridge Mass.

Picardi, E. (1994). *La chimica dei concetti. Linguaggio, logica, psicologia 1879-1927*, Il Mulino, Bologna

Plato (1952). *Sophist*, with an English Translation by H. N. Fowler, William Heinemann Ltd – Harvard University Press, London -Cambridge Mass.

Prior, M., Prior, A. (1955). *Erotetic Logic* «The Philosophical Review» 64 (1), gennaio, pp. 43-59

Raynaud, S. (2002). *Equazione e giudizio. Sulla teoria della denotazione degli enunciati dichiarativi in Frege*. In S. Poggi (a cura di), *Le leggi del pensiero tra logica, ontologia e psicologia. Il dibattito austro-tedesco (1830-1930)*, pp. 117-172, Unicopli, Milano

(2008). *The Basic Syntagmatic Act is Predication. «Slovo a Slovesnost»*, vol. LXVIII (4), pp. 49-66

Schank, R.C., Abelson, R. (1977). *Scripts, plans, goals and understanding*, N.J. Erlbaum, Hillsdale

Searle, J. (1969). *Speech Acts. An Essay in the Philosophy of Language*, Cambridge University Press, Cambridge

(1975). *Indirect Speech Acts*, In: *Syntax and Semantics, 3: Speech Acts*, ed. P. Cole & J. Morgan, Academic Press, New York. Repr. in Searle, J. (1979). *Expression and Meaning*, pp. 30-57, Cambridge University Press, Cambridge

Searle, J., Vanderveken, D. (1985). *Foundations of Illocutionary Logic*, Cambridge University Press, Cambridge

Sériot, P., Samain, D. (éd.) (2008). *La structure de la proposition: histoire d'un métalangage*, Cahiers de l'ILSL, n° 25, Centre de Linguistique et des Sciences du Langage de l'Université de Lausanne (Suisse), Lausanne

Sgall, P. (2006). *Language in its Multifarious Aspects*. The Carolinum Press, Prague

Sundén, K. F. (1916). *Essays I-II: I. The Predicational Categories in English. II. A Category of Predicational Change in English*, University Press Edv. Berling, Uppsala

Tesnière, L. (1953). *Esquisse d'une syntaxe structurale*, Klincksieck, Paris

Vachek, J. (1983). *Praguiana: Some Basic and Less Known Aspects of the Prague Linguistic School: An Anthology of Prague School Papers*, Academia, Prague

Weber, E.G. (1993). *Varieties of Questions in English Conversation*, Benjamins, Amsterdam Philadelphia

Whately, R. (1826). *Elements of Logic*, J. Mawman, London; repr. Facs. ed. by P. Dessì, (1988), Clueb, Bologna
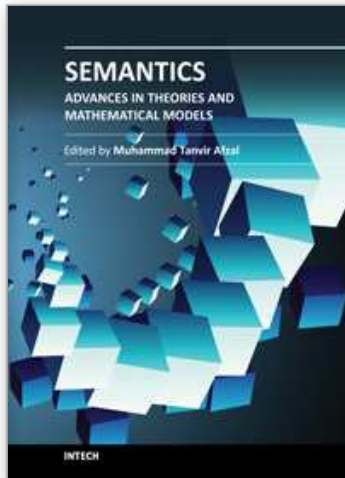
The current book is a nice blend of number of great ideas, theories, mathematical models, and practical systems in the domain of Semantics. The book has been divided into two volumes. The current one is the first volume which highlights the advances in theories and mathematical models in the domain of Semantics. This volume has been divided into four sections and ten chapters. The sections include: 1) Background, 2) Queries, Predicates, and Semantic Cache, 3) Algorithms and Logic Programming, and 4) Semantic Web and Interfaces. Authors across the World have contributed to debate on state-of-the-art systems, theories, mathematical models in the domain of Semantics. Subsequently, new theories, mathematical models, and systems have been proposed, developed, and evaluated.

INTECH
open science | open minds