



DIALECTICS IN KNOWLEDGE ORGANIZATION: AN APPROACH

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SUMMARY

This is a study of dialectics in its own right. Originally, it was a pedagogical means of teaching people to think, reason and engage in dialogue. Later on it became a part of logic and at present it is applied to any human activity, whether intellectual or social, to put forward and contrast arguments which clarify the situations in question.

Mention is made to the processes of thesis, antithesis and synthesis by means of which something which can be, or has already been demonstrated, is then argued, analysed, seeing the different possible points of concordance or discordance in order to reach a conclusion.

This method is applicable, in particular, to the organisation of knowledge in information sciences, such as drafting summaries, indexing, content analysis, classification processes, among other information science techniques, where a text is analysed, minutely examined, pointing out the pros and cons, with an end result in view, whether this be a summary, a few key words which determine the content for database construction, or, for classification purposes, etc.. Finally, it is deduced that there is a case for an approach to "dialectics in information science". Key words: dialectics, dialectics in information science, dialectics in knowledge organization, information systems, information science summaries, content analysis, classification processes, data base construction.

The study of dialectics, by means of its features and applications, can prove to be very interesting, almost exciting. Although over the last decades of the twentieth century it has come back into vogue and applications can be found in all branches of knowledge and even in everyday life, dialectics is as old as Humanity itself. We could say that men thought in a dialectic way before they were aware of doing so and before its etymology, definitions and applications were studied. The same way that they used information without knowing what it was, nor which connotations or practices could formally be attributed to it. Nevertheless, in our Western civilisation, we know that around the time of the Greeks dialectics and its applications began to be studied and this continued, on and off, throughout History. It worth noting that the periods of greater interest have coincided with



those periods in history of accelerated evolution, of transmutations in the manifestations of thought or of socio-political crises. Nowadays, humankind is going through all these processes at the same time and precisely that is why dialectics has once again come to form a part of the theories and practices of our historical evolution.

That is also why this paper deals with and applies dialectics to the organisation of knowledge in information science version. In previous papers, dialectics has been applied to several subjects, such as, the interaction of sciences (Currás, 1990-1996), the relationship between information - information science (Currás, 1990-1995), as well as the study of systems science (Currás 1996, 1993) amongst other works.

ETYMOLOGY

The term "dialectics" comes from the Greek word "dialogue" which is a compound of (Fig. 1)

dia = between

and

legein = to converse

The term "dialectic" (Ferrater, 1981) is made up of

- dialectique (hispanicism of the Greek word)

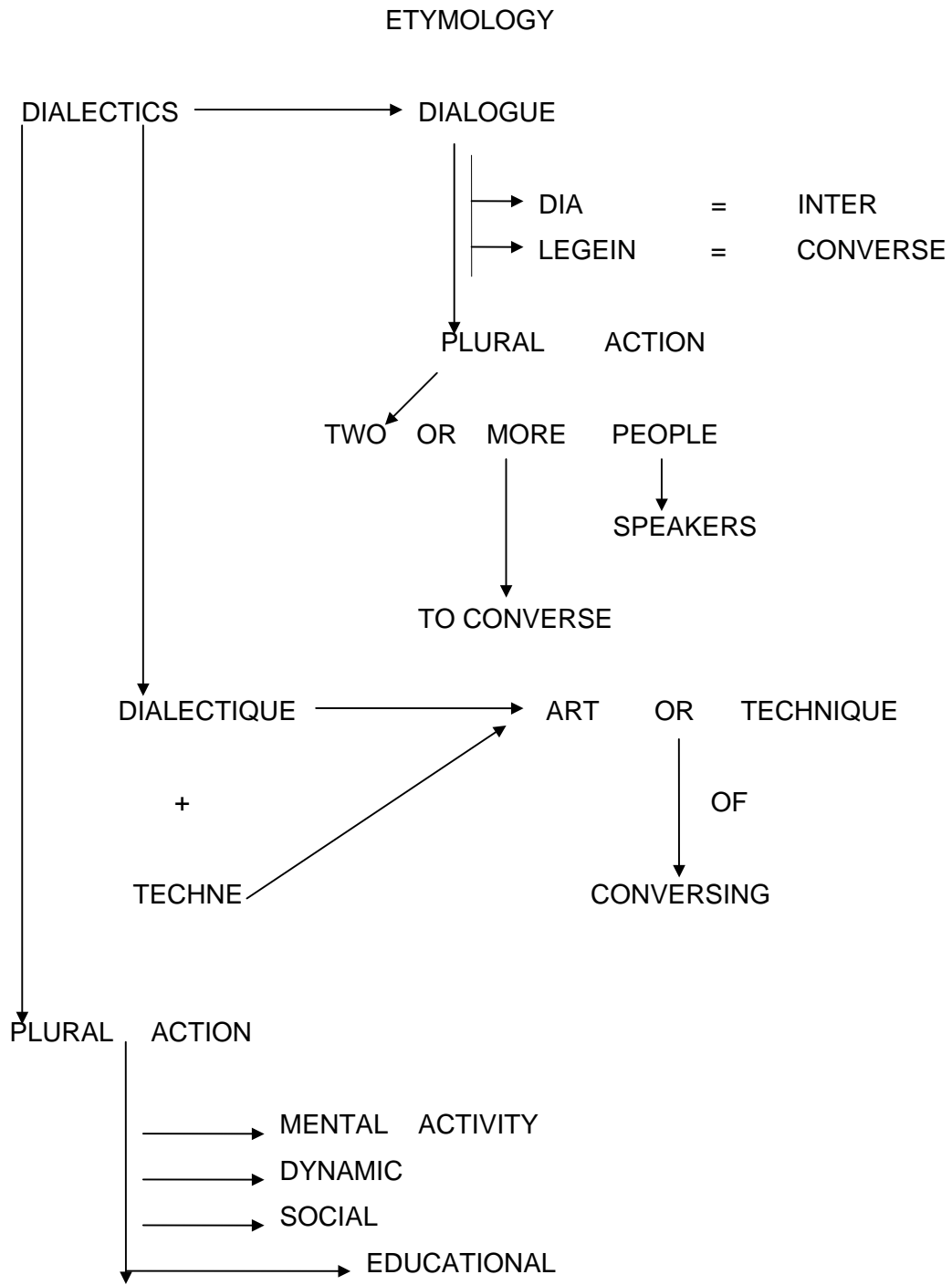
which means, to be precise , \longrightarrow dialogue

and

- techne (again a hispanicism)

which means \longrightarrow technique or art

DIALECTICS IN KNOWLEDGE ORGANIZATION



DIALECTICS IN THE ORGANIZATION OF KNOWLEDGE

FIG. 1

In other words, we deal with the technique or art of conversing, which throughout History has undergone a series of changes in its theoretical concept.

DEFINITIONS

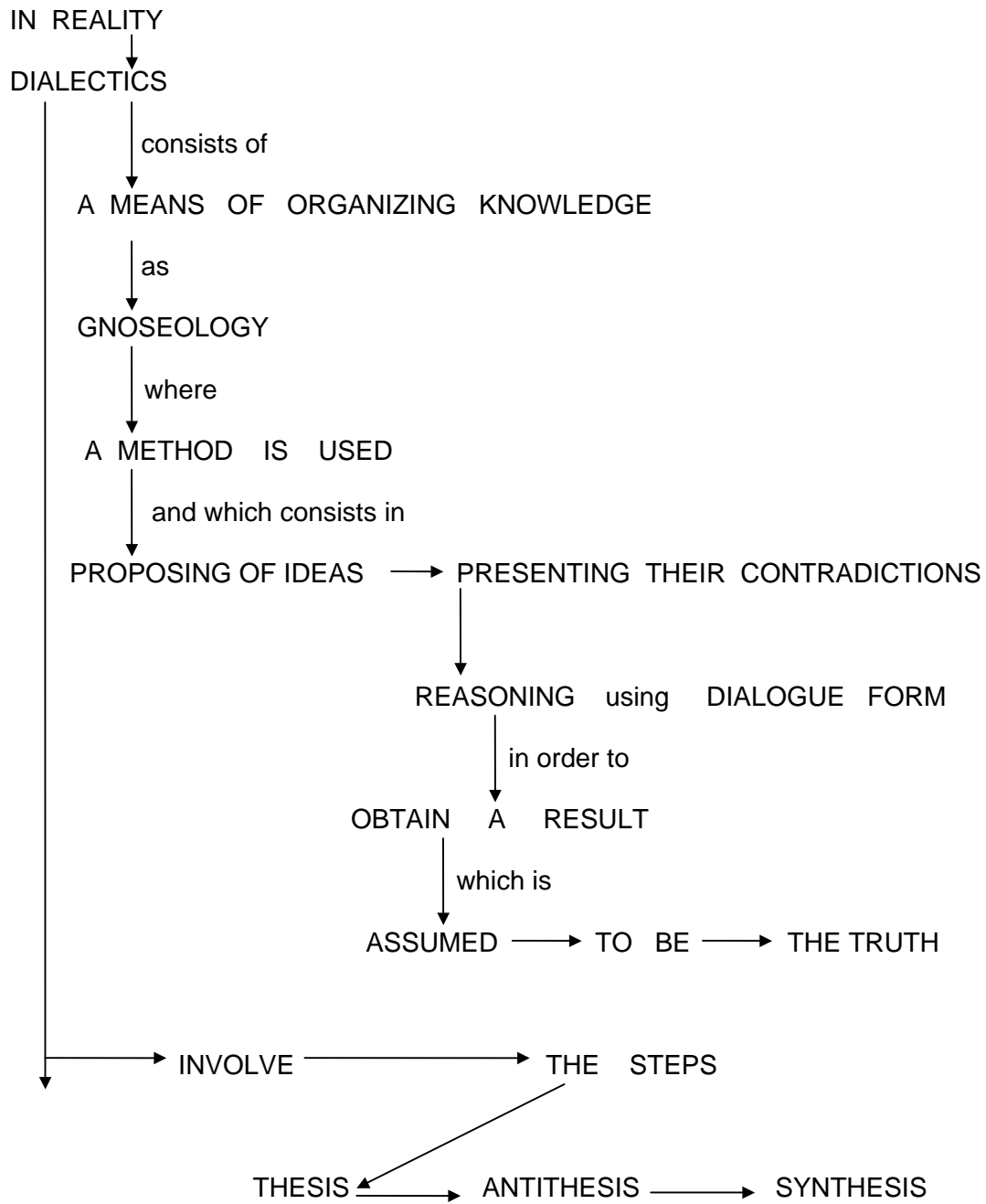
The vast amount of definitions on the subject given in the bibliography can be reduced to a few since certain principles have prevailed through time. We will point out the more classic ones and others which are more closely related to information science in the organization of knowledge.

Dialectics (definitions, given in chronological order).

- what is dialectics if not skill and expertise in arguing (St. Augustine, 354-430, Núñez Ruiz, 1975).
- it is the study of the theory of knowledge, which deals with the cognoscitive relationship between object and subject (Livio Sichirollo, 1976).
- the art of demonstrating a proposed thesis by means of the classification of concepts and the rigorous distinction between them (Diego Núñez Ruiz, *1975).

* It is very difficult to find biographical information on contemporary and recently deceased authors.

DEFINITIONS



DIALECTICS IN THE ORGANIZATION OF KNOWLEDGE

FIG. 2

- the art of speaking, reasoning, discussing, conversing, putting forward controversial ideas. It is a purely mental activity of the human brain in its discursive, not intuitive, mode (Capone Braga, 1957).

As can be seen, by extrapolating, we can find a relationship between dialectics and information science in its organisation of knowledge, e.g. content analysis, summaries, classification, etc.

In reality, dialectics is, in general, a means of organizing knowledge like a "gnoseology" which consists of proposing ideas by putting forward their opposite, reasoning - using them in dialogue -, to obtain a result which is assumed to be the truth one. We can understand, from this, the steps set out by Plato (427-347 B.C., Ferrater, 1981) and Hegel (1770-1831, Sandor, 1964) amongst others, and which are:

thesis antithesis synthesis

These processes are easily applied to organization of knowledge. (Fig. 2)

DIALECTICS RECENT TRENDS

In the last decades of the 20th century Mankind has passed through an historical period of great change, moving from the particular to the general and viceversa. Thinking has been globalised and raised to a higher degree of abstraction, which allows us to see the whole in which each particular element evolves. We can classify this present moment in which we live as highly dialectic. As a result, the sphere of dialectics, in its conception and applications has widened. One way or another, new branches of knowledge have sprung up, using dialectics as part of their evolution and discourse. For the purposes of this paper, we are interested in the empirical or scientific dialectics and the systems science point of view.

- Scientific dialectics was developed by Ferdinand Gonseth (1890-, Rodríguez Delgado, 1997), the Swiss mathematician and philosopher, editor of the magazine "Dialectics" and founder of a School of thought. His originality consisted in setting down the bases for dialectics on the principles of complementariness and not contradiction. To a certain extent, he followed the ideas of Pythagoras (582 B.C., *Enciclopedia filosófica*, 1996) and Hegel (1770-1831, Sandor, 1964). He tried to overcome the contradictions derived from dialectic idealism and materialism by means of a synthesis which encompassed and reduced opposites, considering them as extreme aspects of one continuous and as complementary aspects of a reality seen from various angles. It is applied to intuitive-rational knowledge, object-subject, individual-society...

The Gonseth School tries to embrace all branches of knowledge and dissolve the dichotomies to obtain a global view (perception) which integrates (dialectic integration) all the opposites and contradictions found in science and in society.

- Systems dialectics : In this day of globalisation, the world is seen as a system in which the constituent elements are interrelated, and evolve according to interactions in time and place, both within and outside the system.. Rafael Rodríguez Delgado who introduced the present Theory of Systems (systems science) and its detailed study into Spain (1980), (Rodríguez Delgado, 1997),

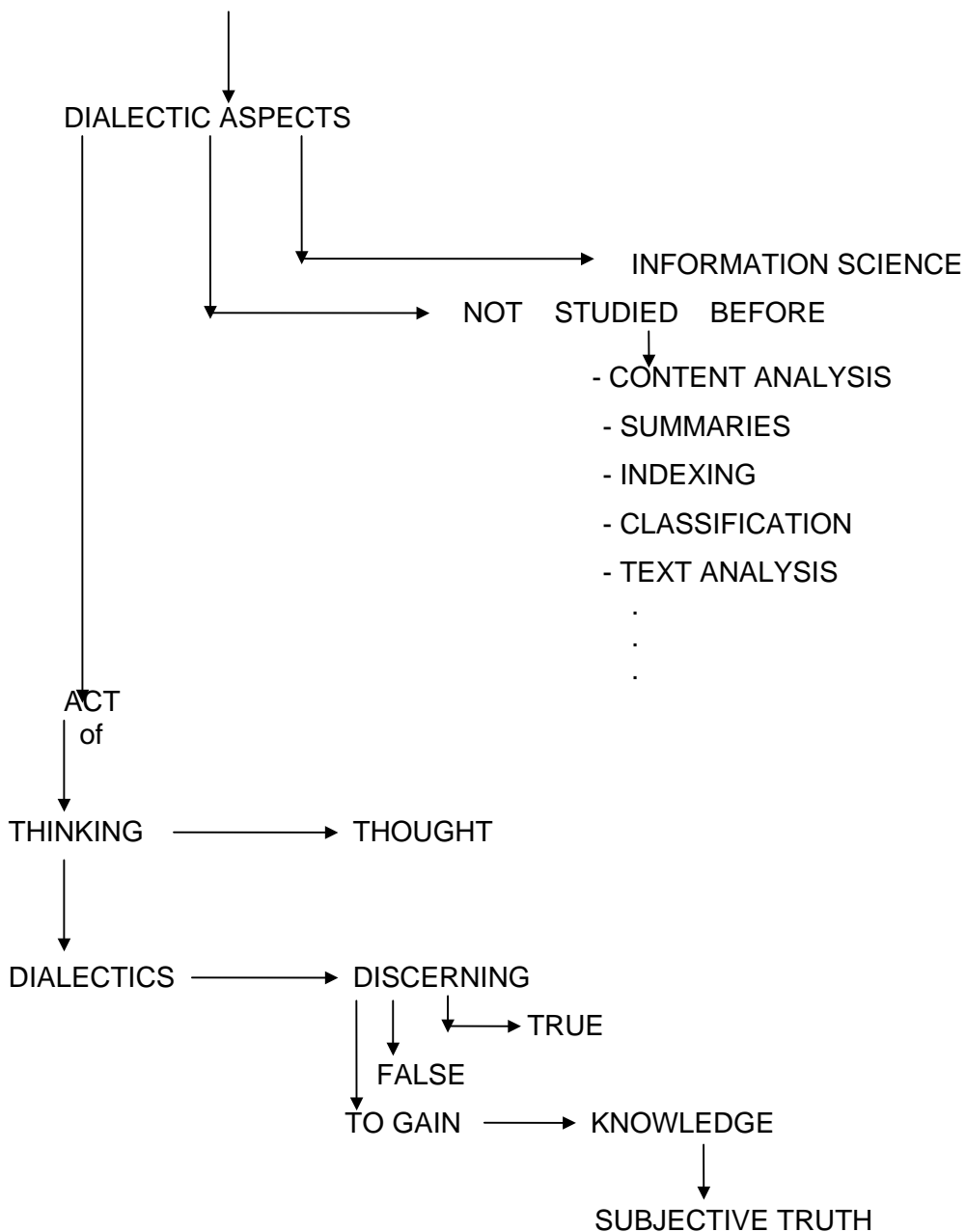
observed that not all evolutionary systems followed a continuous pattern of development. They could not be studied by applying the laws of systems dynamics. These are systems which undergo transformations, which change their development by producing contradictory evolutions, which are also at times concordant and discordant. They, therefore, fulfill the conditions for being considered as dialectic.

Rodríguez Delgado introduces a new variable "the transformable" and postulates systems dialectics which can be applied to all branches of science. In previous papers (Currás, 1990-1996) I have spoken about systems dialectics applied to information science and various other questions.

DIALECTIC ASPECTS IN THE ORGANIZATION OF KNOWLEDGE

Bear in mind that, in general, we are faced with a question which had not been applied until now to knowledge organisation in information science ; that is, knowledge organisation per se, as applied to document analysis, to summary and classification techniques, under other information science techniques, it would, therefore, be advisable to lay down the principles, definitions and historical changes on which the assertions which follow are based. (Fig. 3)

ORGANIZATION OF KNOWLEDGE



DIALECTICS IN THE ORGANIZATION OF KNOWLEDGE

FIG. 3

The act of thinking and thought is linked to dialectics insofar that the latter is a means of discerning between true and false - true thought, false thought, the wrong hypothesis - to understand things, the subjective, human truth. The first pages of this paper include some definitions of dialectics, linking it directly to ways of thinking. Let me quote as a good example, the second of the definitions listed: "it is the study of the theory of knowledge, which deals with the cognoscitive relationship between object and subject" (Livio Sichirollo, 1976).

As for the theory of knowledge, Kant (1724-1804, Sánchez Ortiz, 1977) tells us that knowledge begins with the senses and ends with reason. This can bear relation to the creation of knowledge by the mind, by the influence of information (quanta of information) reaching it, beginning with the thought process, to produce a form of subjective knowledge. This relationship between information, reasoning, thought, knowledge can be extrapolated from some of Aristotles (384-322 B.C., Sánchez Ortiz, 1977) ideas. For example, when he deals with the origin of knowledge, based on sensitive perception by means of abstracting understanding to reach universal ideas.

The theory and organisation of knowledge are derived from thought as a means of studying the cognoscitive relationship between subject and object. In the particular case of knowledge organisation in relation to information science it must be understood that the subject is the starting point and the object the end or result. The former could quite easily be the information expert, the analyst, the indexer, classifier, etc. or a concrete text. The object will be the proposed end product, such as: a summary, a catalogue, a database, as examples between other techniques.

DIALECTIC METHODOLOGY

The methodology of dialectics derives from certain processes, which starts with something concrete, the *essence*, which is or exists, then passes through experience, concordant and discordant lines of argument, while leading, at the same time, to *conscience*, getting the point of a *final postulate*. (Fig. 4)

These steps are parallel to the classic steps put forward by Plato (*Enciclopedia filosófica*, 1996, Sandor, 1964) and Hegel (Engels, 1968, Sandor, 1964), among others, and which establish a *thesis*, *antithesis*, *synthesis*. Hegel (*Enciclopedia filosófica*, 1996, Sandor, 1964) explains these concepts more clearly when he refers to the *theory of being* (original object), the *theory of essence* (that which is or is not - analysis) and *theory of concept* (what it becomes - point of resolution). (Fig. 4)

DIALECTICS IN INFORMATION SCIENCE: DIALECTIC CORRELATIONS IN THE ORGANISATION OF KNOWLEDGE TECHNIQUES

After reading the above one will deduce that both dialectics, and its methodology can be applied perfectly well to the processes of content analysis, summary confection, classification, and indexation techniques, cataloguing..., among other information science techniques.

All of them can be, and in fact are, carried out, following the steps given

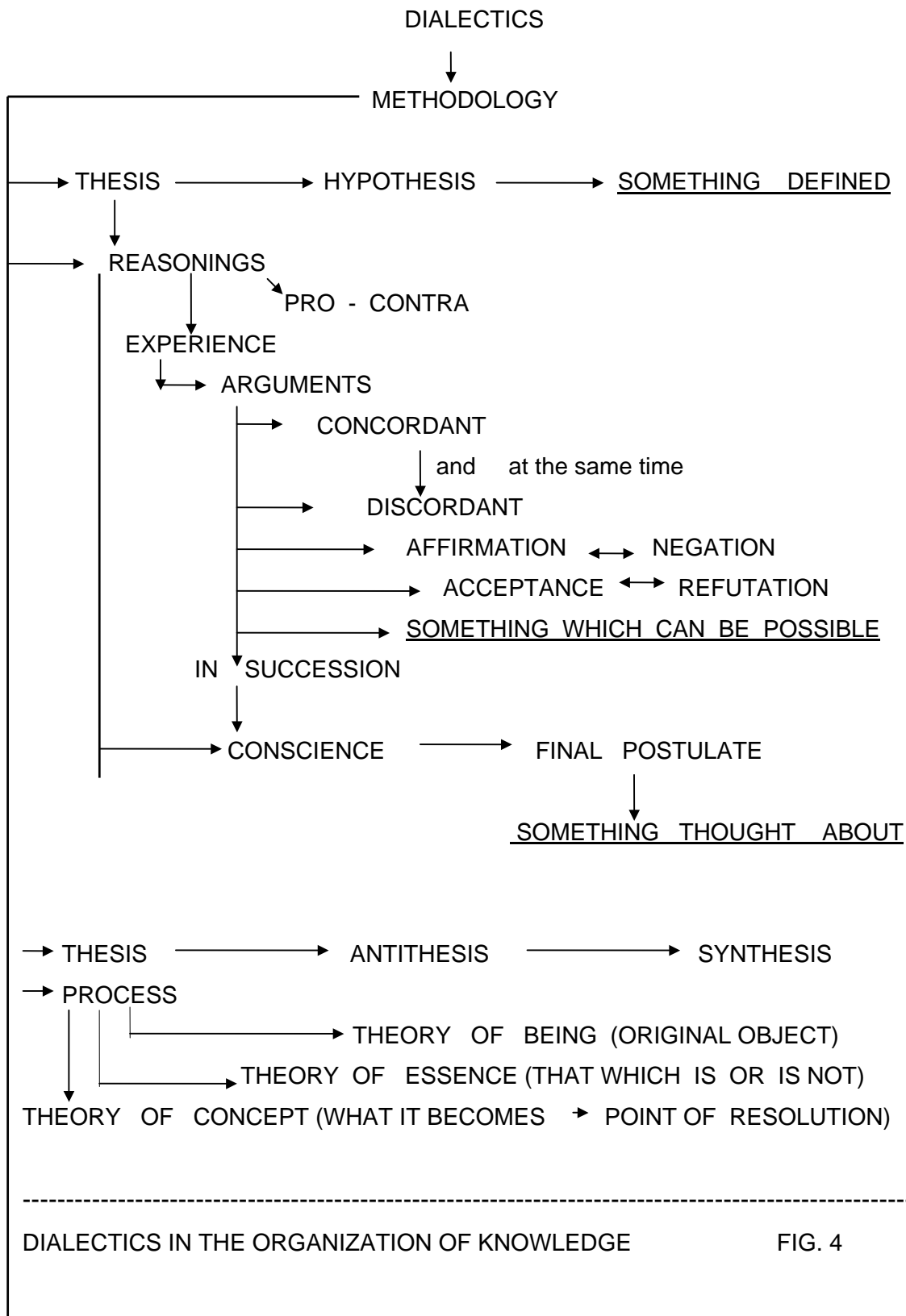
above. For example, an information science analyst who wants to draw up a summary to build up a database, starts with a given texts - *thesis*, subject, *what it is* -.

He analyse the texts, he breaks them down into parts - *antithesis* - negation, discordance, experimentation, *what could be* -.

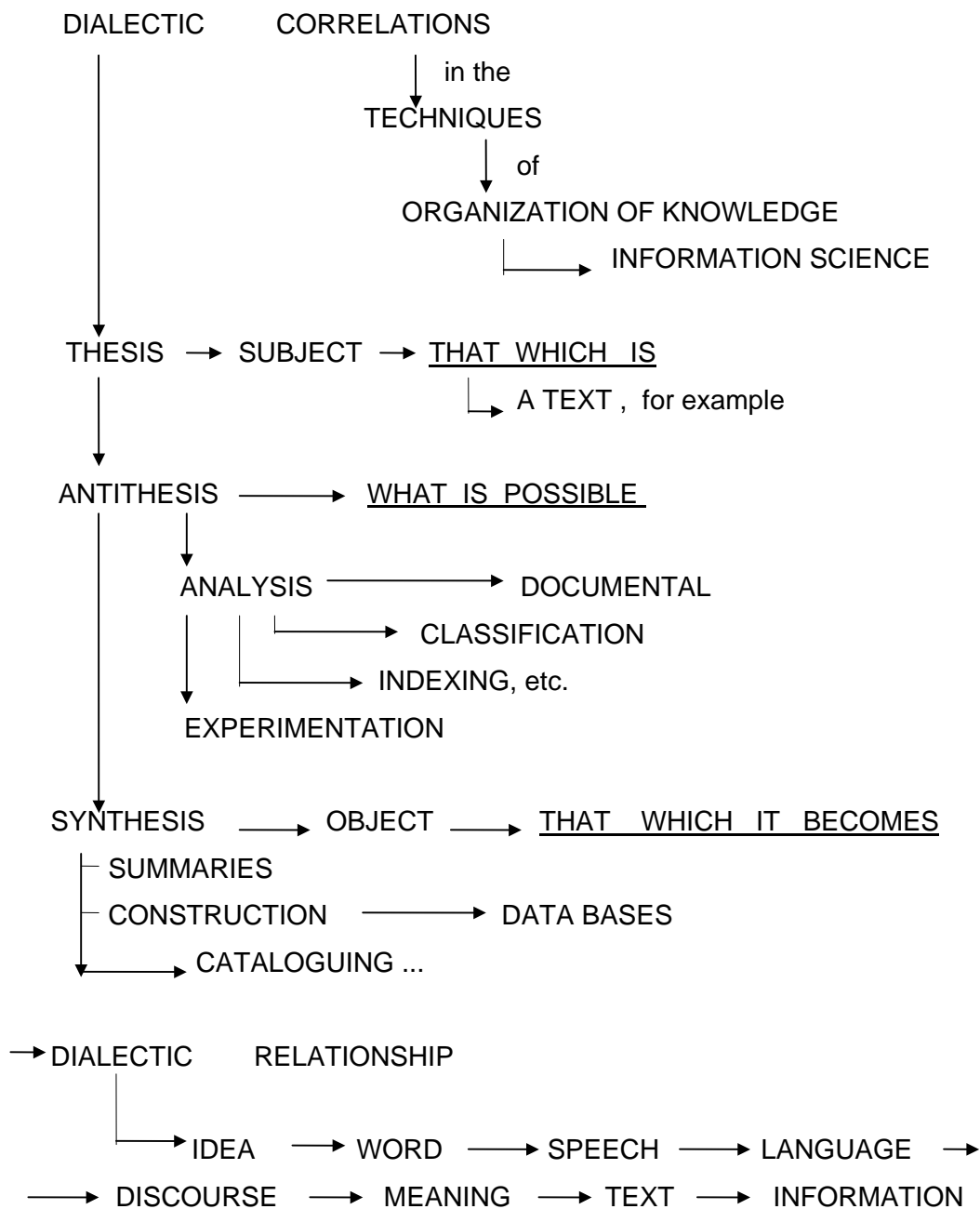
And then, in a process of *synthesis* put the parts back together again - concordance, resolution, *what it becomes* - and draws up his summary - *the object*. All of this is a dialectic process. In other words, dialectics enables us - in a process of division - analysis of a set text - to compose - synthesis - another text of different characteristics (Pinto, 1992, 1991).

The same processes are followed when we want to classify a text, let's say, a book. We take a book, we analyse it in different stages, considering the prologue, chapters thema, etc. and afterwards the pieces are recomposed to decide how to classify it.

In the case of classification techniques, the dialectic process is a very complex one, since it is not easy to see in which category to put a book or any other document. Doubts, interpretation criteria, different points of view, etc. come into play and... other matters we all know about.



DIALECTICS IN INFORMATION SCIENCE



DIALECTICS IN THE ORGANIZATION OF KNOWLEDGE

FIG. 5

Parmenides (n.f.s. 6 C B.C., Ferrater, 1981), to quote a classic scholar, also understands these matters and knows that after the ideas have been discriminated, one has to succeed in combining them again, without losing the meaning of the original ideas. Similarly, we can obtain other extrapolations from Hegel (1770-1831, Ferrater, 1981) who confirms the dialectic nature of information science techniques in the organisation of knowledge, when he defines concepts as: *subjective concept*, *objective concept* and *idea*. (Fig. 5)

A text provokes a new idea, with which the process starts all over again, not in spiral form, but in levels getting progressively higher. The new idea understands the previous one, and embraces it, giving it a greater degree of content. The successive leaps in time gradually mould knowledge and science into a single unit (Currás, 1993).

It is worth adding here the dialectic relationship between the idea, the word, speech, language, discourse, meaning, text, and information since all form an essential part of the actual content of the organisation of knowledge in information science. There is a continuous line running from the conception of the idea in the mind, originated by the information received, until we reach the text, and a new information. This line is never straight but shows a succession of ups and downs, following the same direction, which can be interrupted at any place and which ends there or carries on further. Each of these irregularities relates to dialectic moments, of successive and reciprocal concordances and discordances.

CONCLUSION

It would appear, from the writing in this paper, that we cannot refute the dialectic nature of knowledge organisation. A more detailed study will allow us to find a greater number of correlations and applications. In fact, the basic, fundamental principles have not changed from the times of the Greeks. What has changed is its concept as something extremely practical which can be applied, for example, to teaching and education, economic and political practices, socio-economic principles or something formal, forming part of logic or linking it to grammar and rhetoric, taking part in the forms of expression.

As we have been reasoning and endeavouring to show, dialectics is part of the empirical and practical development of knowledge organisation in its information science version and, therefore, we can draw up an approach to *information science dialectics*, or at least the nearest thing to it, which requires further in-depth study.

This may or may not be true. In these times of upheaval and transmutation, of uncontrollable discoveries and inventions, of profound changes in society, dialectics is applied to all branches of knowledge..... including everyday tasks. And if that were not enough, here it is applied to the organisation of knowledge, in the context of information science, in an approximation to *information science dialectics*.

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