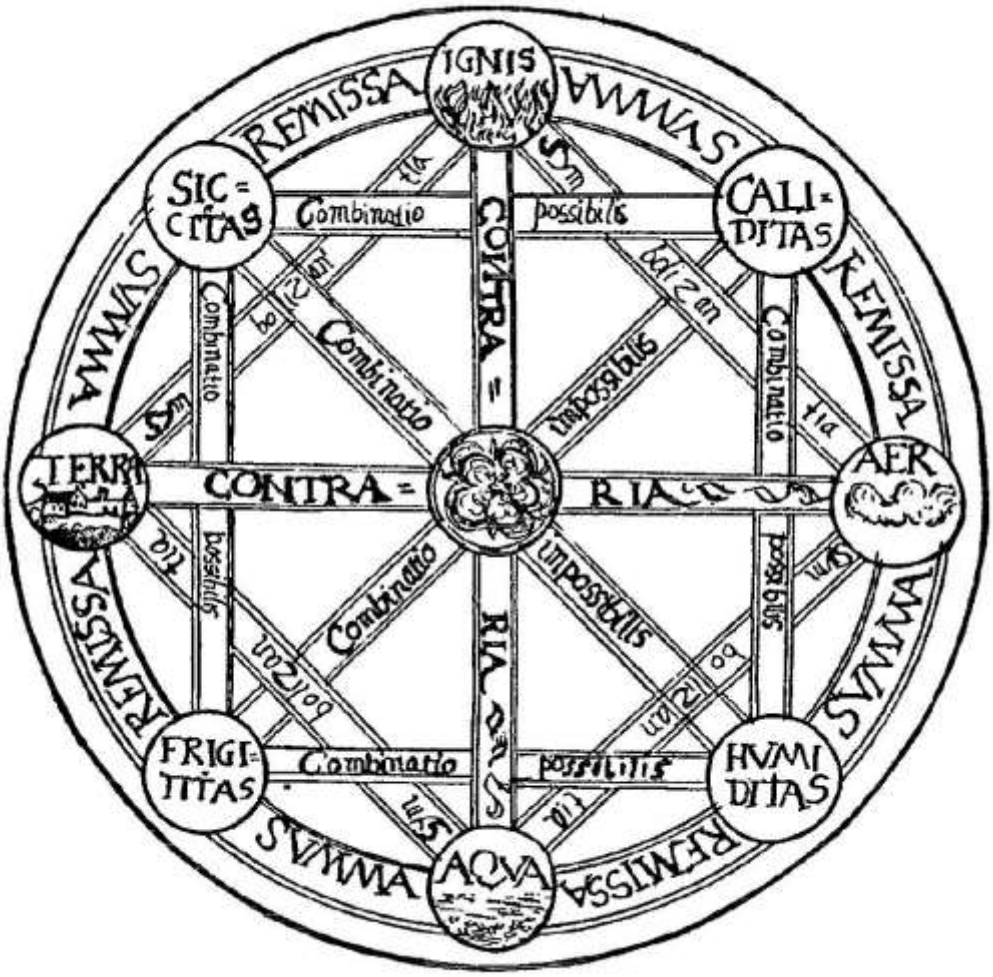
NIJAZ IBRULJ

ESSAYS ON THE LOGICAL



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PREFACE

The book is based on ideas presented in essays published and unpublished, or just intended for publication, in The Logical Foresight, which is organized as the Journal for Logic and Science, published by Academia Analitica.[1]

In Essay 1, " *Implicitness of Λόγοσ and Explicitness of Logics in Ancient Philosophy* ", we consider semantic and syntactic transformations of the concept of "the logical" in the ancient philosophy in the form of crypto-logos, para-logismos, dia-logos, and syl-logismos. We interpret Heraclitus' concept of *Logos* (λόγοσ) as a cryptologos through which intuitive insight (ἐπίστασθαι γνώμην) reveals hidden or implicit harmony (αρμονίη ἀφανήσ) in nature (φύσισ) as a conceptual unity of ontic opposites (τὰ ἐναντία). In Pramenides' paraconsistent concept of the identity of Being and thought, we point to para-logical hypotheses about the One that are carried out through antithetical deductions of thought and which maintain the dynamics of the ontic determinations of being (ὄν) in the statics of the conceptual determinations of Being (τὸ ειναι). As the beginning of the explicative granulation of "the logical" we consider Plato's concept of the dialectical skill (διαλεκτικὴ τέχνη) of dividing concepts of genus into species and sub-species that logically represent ontic opposites in problem-formulated questions. Finally Aristotle's concept of λόγοσ as a statement-making sentence / proposition (λόγοσ ἀποφαντικόσ) made explicit the Being (τὸ ειναι), or the Being as Being (τὸ ὄν η ὄν), in semantic and syntactic figures and modes of syllogistic inferences in which ontological (ειναι), ontic (ὄν), conceptual (λογικῶσ) and linguistic (λέγομενον) correspondence is shown. We conclude that with these changes in the concept of λόγοσ, the path has been taken from the hidden or implicit Truth of the phenomena of nature and the world (πᾶν) to explicit truthfulness of propositions as the unhiddeness (ἀλήθεια) of Being *trough* the semantical and syntactical visibility of the logical structures of being, thought and language in scientific knowledge based on demonstration (ἀπόδειξισ).

Essay 2, " *New Remarks on the Concept in Logical Use* ", has a thesis that is directed against the traditional (cognitive theoretical) definition of the concept which claims that the concept is the " thought

[1] Academia Analitica – Society for Development of Logic and Analytica Philosophy in Bosnia and Herzegovina is founded in july 2007. https://academia-analitica.ba/

about the essence of the object being thought", i.e. that it is “a set of essential features or essential characteristics of an object". But the " set of essential features or essential characteristics of an object of thought" is a " content” of the thought. The thought about the essence of an object is definition and the concept is not definition but the part of definition! Besides as the part of formal structure of thought, the concept possesses calculative logical properties that in formal logic (be it syllogistics, or the logic of propositions, or the logic of predicates) come to the front place of formal logical computation. Without the calculative properties of the concept, there would be no calculative properties of propositions which express the thought (thought structures). The calculative properties of a concept include the (1) degree of its logical generality (degree of variability), the (2) logical relations it can establish within the whole of the conceptual content, the (3) operability of the concept in structure of affirmation and negation, the (4) deducibility of either axiomatic or probabilistic systems. Therefore, I believe that, from the logical point of view, the definition of a concept should be applied in favor of its calculative properties that it possesses.

In Essay 3, " *Some Characteristics of the Referential and Inferential Predication in Classical Logic* ", we consider the relationship of traditional provisions of basic logical concepts and confront them with new and modern approaches to the same concepts. Logic is characterized in different ways when it is associated with syllogistics (referential – semantical model of logic) or with symbolic logic (inferential – syntactical model of logic). This is not only a difference in the logical calculation of (1) concepts, (2) statements, and (3) predicates, but this difference also appears in the treatment of the calculative abilities of logical forms, the ontological-referential status of conceptual content and the inferential-categorical status of logical forms. The basic markers or basic ideas that separate ontologically oriented logic from categorically oriented logic are the (1) concept of truth, the (2) concept of meaning, the (3) concept of identity, and the (4) concept of predication. Here, these differences are explicitly demonstrated by the introduction of differential terminology. From this differential methodology follows a new set of characterizations of logic.

Essay 4, " *Logical Identity: A Holistic Approach* ", presents some consequences of Quine’s thesis on the dependence of ontology on ideology (Quine, 1980), seeking an argument for my own thesis on the dependence (theoretical) existence of entities on identity type or ontology dependence on logic and language. If Quine's thesis is correct, then we can expand the resolution of this conclusion and say that ontology depends on the identity or on identification of the "identity criteria for conceptual schemes" (Davidson, 2001) which is constructed in the theory. Consequently I will speak about types of identity which adapts choice of

ontology and of which depends ontology of a theory. Here I want to connect the different types of use of the term identity in Aristotle's writings and the different types of predications that are based on them with the concept of identity as the equivalence of symbols in modern logic. I want to reinterpret Quine's statement: "There is no entity without identity “in the form of implication "What (kind of) identity such (kind of) entity."

Nijaz Ibrulj
Ljubljana, 2022.

INTRODUCTION

Logicality is an internal structural characteristic of cognitivity that reveals the function of every form of action of *rational* living beings: mental, physical, linguistic and social. And logicality, as an internal characteristic of intelligent behavior, was applied to the production of intelligent machines based on artificial intelligence, logical algorithms, and logical programming.

Discovering, describing, researching and following the logic of living beings, knowing and using the logic of natural phenomena, discovering the logic of society through politics, culture and production, researching the logical nature of supernatural beings and phenomena, the production of intelligent machines based on this knowledge, has become a paradigm of information and communication technologies, nanoscience and nanotechnology, which determine the social world in which we live today. Today we live in an environment of intelligent space or in a society based on logical and mathematical knowledge. The discovery of the logic of intelligent living beings (that use language) and their socio-cultural systems, the logic in theories about natural phenomena, the logic of smart materials (smart substances), turned logic by its application into creationist technology of intelligent systems using logical programming in every domain in which the logic of a given domain is its internal construction.

Already in ancient philosophy, there was a transition from the implicit and hidden action of *the Logical* (λόγοσ) in nature (φύσισ) to the scientific and explicit expression of the logical structures of thought, action, the world and language. Heraclitus' **heno-logic** with *Logos* (λόγοσ) as hidden implicite principle of homologization of oposites (τὰ ἐναντία) in nature (φύσισ) differs from Parmenides' paraconsistent logic developed in an hypothetical hemidyalectics given in the formula "All is One" (ἕν πάντα ειναι).

Plato's concept of **dia-logic** (διαλεκτική τέχνε) with a new concept of *Logos* as the one genus of beings (ἕν τι γένον τῶν ὀντῶν) in which the word not-Being (negation) got its place enabled production of *diadic* logical structure by the granulation of genera into opposite species and sub-species that it contains.

Aristotle's concept of **triadic-logic** as syl-logistics (συλλογισμόσ) and demonstrative science (ἐπιστήμη ἀποδεικτικῆ) give a new approach

by new granulation of the concept of *Logos* into *triadic* logical structure: (1) the structure of being (substratum-attributes relation), (2) the structure of thought (substance-second substances relation), and (3) the structure of propositions (subject-predicate relation).

Plato's dialectic and Aristotle's syllogistic both deconstructed the *implicite* ontological unity of *the world* (πᾶν, κόσμοσ) given through te koncep of *Logos* in Pre-Socratic philosophy in order to make that unity in *explicit form* given by the logical and semantical structures of the propositions *about* the world, *about* the thought and *about* the language. The hidden implicit λόγοσ of the nature, which had to be known intuitively, was transformed into unhidden explicit inferential logical structures given in the semantics and pragmatics of scientific demonstration.

From the time when logic was formulated as a *lingua characteristica* and *calculus ratiocinator* by G.W.F.Leibnitz (*Dissertatio de Arte Combinatoria*, 1666) to the application of these two components of same structural characteristics to every field of human knowledge, logic, because of its connection with calculus and language, threw out of play and application the metaphysical foundation of every action and every knowledge.

What is *Mystical* (Wittgenstein, *Tractatus*) cannot be said and cannot be thought if it is not thought and said within the limits (tautology and contradiction) of logical functions that determine meaning, significance, reference and truth value: logic no longer speaks of phenomena or para-phenomena that have some invisible substantiality (*Being In Itself*, *Substance*, *A Thing In Itself*, *Transcendence*) than speaks of *objects* and their *properties*, and the *relations* of objects and their properties in the calculable language of symbols subject to the exclusive rules of *logical syntax* and *logical semantics*. Logic thus operates not in the Universe but in a the *universe of discourse* in which variables can be transformed into constants by logical operations quite compatible with mathematical operations based on general algebra, set theory and function theory.

Models of logically possible worlds and logically possible discourses with logically possible objects are subjected to logically possible syntactic operations in logically possible models of meaning and reference. And that, what is logically possible is what is empirically possible, what is possible as a fact and the state of things, what is positively possible, what is possible as a construction from a logical atom to a logical molecule!

These constructions are rational descriptions of the rational (finite) reality to which the scientific world and scientific consciousness are narrowed, and which are possible as reconstructions and recognitions in the process of analytical deduction and analytical

formalization. This is the basis of the logical construction of the world, which only bases scientific knowledge. Thus, logic appears as the equivalent of knowledge, that is, as a rational competence of of what can be causally explained since it contains such kind of cause-and-effect implications as logical structural characteristics!

In this way, using formal patterns of mathematics and linguistics, transforming them into logical syntax and logical semantics, constructing logical functions of logical operation, logic closes the complete circle of producing models of everything that can be meaningfully stated and that can be constructed inferentially. Logic, therefore, did not kill God (or declare him dead, as announced by Nietzsche's Zarathustra), but made him more rational (rationally acceptable), smarter, more positive, epistemically more experiential, and therefore more responsible for reality and not for the World as such! Logic has thrown metaphysics out of religious argument, entered theology, and made it an expert system (*summa theologica*) that rationalizes statements of belief much more successfully than the metaphysics of revelation and the metaphysics of miracles could provide!

Logic has entered every exact science and computer science of AI, but it has also entered the religion and metaphysics as an instrument of methodical explication of the truth of claims about their research object...whatever it may be, and in whatever way it exists, in this or in any possible world!

1.

IMPLICITNESS OF *Λόγοσ* AND EXPLICITNESS OF *LOGICS* IN ANCIENT PHILOSOPHY

Introduction

The meaning and use of the term λόγοσ in ancient philosophy changes drastically starting from the intuitive construction of *an unique concept of the world* (Physis, Cosmos, παν) and ending to its re-construction in *the world of concepts* (Discourse, Argument, Demonstration, Conclusion). The ontologically based Gnostic construction of Heraclitus' heno-logic as an intuitive discovery of hidden harmony (ἁρμονίη ἀφανήσ), hidden Logos and hidden Truth of Nature (φύσισ), was transformed by conceptual and linguistic granulation into a logical and methodical construction of evidence-based knowledge or science (ἐπιστήμη).

Analytical and demonstrative science (ἐπιστήμη ἀποδεικτικῆ)[2] based on Plato's dialectic and Aristotle's syllogistics gave a new form of conceptual granulation (*premises*) and conceptual unification (*conclusion*) in the network of demonstrative propositions / assertions (λόγοσ ἀποφαντικόσ)[3] and the truth as unhiddenness of the Being (ἀ-λήθεια). In the form of demonstration (ἀπόδειξισ)[4], in the form of demonstrative science, and in the form of syllogism (συλλογισμόσ)[5], the *Logos* (λόγοσ), from the form of a hidden Mind that pervades the world and governs it, transformed in a network of propositions (λόγοι, πρότασισ)[6] taking form of affirmation and negation (λόγοσ καταφατικὸσ ἢ ἀποφατικόσ)[7] in saying something about something (τί κατὰ τινόσ).[8]

[2] See in Aristotle, ΑΝΑΛΥΤΙΚΩΝ ΠΡΟΤΕΡΩΝ A. 24a11.In: Cooke,H. P., Tredennick, H. (1938). Aristotle. *Categories. On Interpretation. Prior Analytics*. Loeb Classical Library.Harvard University Press, p.198.
[3] See in Aristotle, ΠΕΡΙ ΕΡΜΗΝΕΙΑΣ, (De Interpretatione), 17a1-17a7. In:Ibid., p.120
[4] See in Aristotle, ΑΝΑΛΥΤΙΚΩΝ ΠΡΟΤΕΡΩΝ A. 24a11.In: Ibid., p.198.
[5] See in Aristotle, ΑΝΑΛΥΤΙΚΩΝ ΠΡΟΤΕΡΩΝ A. 24b20.In: Ibid., p.198.
[6] See in Aristotle, ΑΝΑΛΥΤΙΚΩΝ ΠΡΟΤΕΡΩΝ A. 24a17.In: Ibid., p.200.
[7] See in Aristotle, ΑΝΑΛΥΤΙΚΩΝ ΠΡΟΤΕΡΩΝ A. 24-a15, in W.D. Ross (Editor) (1957) . *Aristotle's Prior and Posterior Analytics*. A Revised Text with Introduction and Commentary (Oxford University Press academic monograph reprints) . Oxford at the Clarend Press,

This realized Aristotle's idea about the logical and linguistic visibility (unhiddenness) of the Being as Being (τὸ ὂν η ὄν)[9], that is, the essence (οὐσία) of beings.

This granulation and unification, or distribution and integration of the logical structure of the propositions / assertions through its layers (lettuces) of different levels of generality became the basis of the construction of knowledge and science that *can speak truthfully* about the world. With this, the idea of the Truth of the World as the hidden / Crypto *Logos* of nature (φύσισ κρύπτεσθαι φυλει)[10] was transformed, and the analytical and calculative (computational) direction of thought turned towards the language (terms, propositions, quantifiers, logical operators) in which the logical and the onological appears as something unconcealed / uncovered / unhidden and accessible (ἀ-λήθεια)[11]. Because language reveals thought and itself in the logicality (λογικωσ) or illogicality of its constructions about the world.

In his work *On Nature* (Περί φύσεωσ)[12], Parmenides asserted that thought and the Being are identical (...τὸ γὰρ αὐτὸ νοεῖν ἐστίν τε καὶ ειναι)[13], but he was unable to find a place for not-Being (μη ὀν) in the system of thought and language as negation. Only Plato did this by asserting that *Logos* (language) is one of the genera of beings (ἕν τί γένον τῶν ὀντῶν)[14] in which negation ("not-being") has its role. However, Aristotle also changed the understanding about it: the term not-being is

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[8] See in Ernst Tugendhat, (2003): ΤΙ ΚΑΤΑ ΤΙΝΟΣ. Eine Untersuchung zu Struktur und Ursprung aristotelischer Grundbegriffe.Munchen, Freiburg: Verlag Karl Alber

[9] For Aristotle, the *First Philosophy* (later known as metaphysics) was a science (ἐπιστήμη) that deals with Being as Being (τὸ ὄν η ὄν), and with the properties that belong to it as Being (καὶ τὰ τούτω ὑπάρχοντα κατθ' αύτό), and not as an individual being. M.*Γ*.2.1003a21. (See in: Seidl, H. *Aristoteles' Metaphysik*. Erster Halbband: Bücher I (A) – VI (E). In der Übersetzung von Hermann Bonitz. Neu bearbeitet, mit Einleitung und Kommentar herausgegeben von Horst Seidl. Hamburg: Felix Meiner Verlag,1978,p.122.).The properties (παθή) of the Being are analogous only to the properties of the One.

[10] Herakleitos, B. Fragmente, 123 in Diels, Erster band, 1951, p.178: Die Natur (das Wesen) liebt es sich zu verbergen / The natur (essence)love to hidde self.

[11] On meaning of the term ἀλήθεια in Aristotle's philosophy see *Index Aristotelicus*. Edidit Hermannus Bonitz. Berolini, A.1870, p.31. For interpretation of this term in in Greek philosophy see in Heidegger, M. (2003). Plato's Sophist.Indiana University Press, p.11: " ἀλήθεια means: to be hidden no longer, to be uncovered."

[12] Cf. Diels-Kranz, Parmenides: B. Fragmente, p.227

[13] Cf. Diels-Kranz, Parmenides: B. Fragmente, 3, p.231

[14] Cf. Plato, ΣΟΦΙΣΤΗΣ [ἠ περὶ τοῦ ὄντοσ, λογικόσ], 260 a 5-6. In: *Piatonis Dialogi. Secundum Thrasylli Tetralogias*. Recognovit Martinus Wohlrab. Vol. I. Lipsiae in aedibus B. G. Teubneri. MCMII, p.451. See translation in: *Plato Complete Works*, 1997, p.283

only the denial / negation of the presence of a property in an actual being or it is just the deprivation (στέρησισ)[15] of the inherent form of being from the actuality or from the substance in which it already exists as a potential / possible being (δύναμιν ὀν)[16] which only acquires "form" or "shape" or "idea" comes to its purposefulness (ἐντελεχεια)[17] or to an embodied being (ἐνεργεῖαν ὀν)[18].

Pre-Socratic physio-logics (as Aristotle named Pre-Socratic phylosophers of the nature) contributed to the understanding of relationship between the All and the One in a context of the constant change of opposites (τα ἐναντία) in nature (φύσισ) . *Logos* was Heraclitus's answer (his Principle of Unity) that enables one to know how it is possible to become "from All the One and from the One All": ἐκ πάντων ἕν καὶ ἐξ ἑνὸσ πάντα.[19] Plato's and Aristotle's conception of the knowledge (διάνοια) and science (ἐπιστήεμη) transformed Eleatic formula (ἕν πάντα ειναι)[20] and moved on to understanding *the movement of thought* through the method of deconstruction / division (διαίρεσισ)[21] of different levels of logical generality and the construction of the formal positions of concepts in propositions (πρότασισ) that make up inference (συλλογισμόσ) and scientific proof (ἀπόδειξισ, ἐπιστήεμη ἀποδεικτικῆ, ἀποδεικτικόσ συλλογισμόσ)[22].

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[15] In Aristotle, στέρησισ means in the ontological sense the absence of a form or property from being, and in the logical sense the deprivation or negation of the predicate belonging to a subject. Cf. Aristotle, Index Aristotelicus. Edited by Hermannus Bonitz. Berolini, A. 1870, pp. 699-700.

[16] See more about term δύναμιν ὀν in Aristotle, Index Aristotelicus. Edited by Hermannus Bonitz. Berolini, A. 1870, pp.206-208

[17] See more about term ἐντελεχεια in Aristotle, Index Aristotelicus. Edited by Hermannus Bonitz. Berolini, A. 1870, pp.253-254. Aristotle thinks that Being is said in many ways, but the main sense that the term Being has is enteleheia: το ειναι ἐπεὶ πλεοναχῶσ λέγεται, τὸ κυρίωσ ἡ εντελεχεῖα ἐστιν. (ψ. 1.412 b9)

[18] See more about term ἐνεργεῖαν ὀν in Aristotle, Index Aristotelicus. Edited by Hermannus Bonitz. Berolini, A. 1870, pp.251

[19] Herakleitos, B. Fragmenta, 10 in Diels-Kranz, 1951, p.153: aus Allem Eine und aus Einem Alles.

[20] Plato, *Parmenides*. The "Eleatic formula" is technical term for Parmenides' thesis "Everything is One" (ἕν πάντα) also appears in Zeno, his student, in his thesis "There is no many bings" (οὐκ πολλα τὰ ὀντα). In: ΠΛΑΤΩΝΟΣ ΠΑΡΜΕΝΙΔΗΣ . *The Parmenides of Plato*. Edith Introtuction, Analysisi, and Notes by Thomas Maguire. Dublin: Hodgges, and London: Longmans.

[21] See in Plato, *Sophyst*, διαίρεσισ (division), 253 c 5. In: *Plato Complete Works*, 1997, p.275

[22] See in Aristotle, ΑΝΑΛΥΤΙΚΩΝ ΠΡΟΤΕΡΩΝ A. 24a1. In: Aristotle, W.D. Ross (Editor) (1957) . *Aristotle's Prior and Posterior Analytics*. A Revised Text with Introduction and Commentary (Oxford University Press academic monograph reprints) . Oxford at the Clarend Press, p.87

While Heraclitus and Parmenides dealt with question "How All is the One and how the One is All", Plato developed the concept of knowledge about "How Idea can be thought of over many things and how many things can be determined or conceptually subordinate / participate in the Idea?" through the skill of of dialectic or dia-logic recollection and recognition. Plato used the concept of participation or inclusion (μετέξισ, μετέχειν) of things (ὀν, πράγμα) in ideas as paradigms (παραδείγμα) by which things in space and time acquire their form and function (purpose, τέλοσ). Ideas are separate from things, they exist in the universe of ideas. Things participate (μετέχειν) in ideas[23] when they need to be actualized, or realized in space and time by the action of the creator or demiurge (δεμιούργοσ).

Aristotle already introduced language (λόγοσ, λόγοσ ἀποφαντικόσ)[24] into Plato's scheme of knowledge by investigation in *how many ways can the being be thought and expressed* , and concluding that the being *is said* on multiple ways (τό δε ὀν λέγεται πολλαχῶσ)[25], i.e. tenfold (in dozens of categories or predicates) when they are used in three types of predication (homonymous, synonymous, paronymous). The analogy Aristotle applies to the One: the One *is said* on multiple ways (τό ἑν λέγεται πολλαχῶσ)[26] in the same way as being. To say the One means to say something what is individual thing or "some this" (τοδε τί)[27]. In the form of apophantic logos, Aristotle transformed the "implicit logos" of the pre-Socratics into an explicit semantic and syntactic platform of ontological, logical and linguistic structures. Thus, the concept of truth as the unhiddeness (ἀλήθεια) of these structures led to the unhiddeness of the Being as such (το ειναι, τὸ τὶ ην ειναι), that is, the essence (οὐσία) of being.

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[23] The concept of participation (μετέχειν) of beings in ideas was presented by Plato in the dialogue Parmenides. See Plato, Thomas Maguire (1882). ΠΛΑΤΩΝΟΣ ΠΑΡΜΕΝΙΔΗΣ . *The Parmenides of Plato*. Edith Introtuction, Analysisi, and Notes by Thomas Maguire. Dublin: Hodgges, and London: Longmans.

[24] Aristotle, ΠΕΡΙ ΕΡΜΗΝΕΙΑΣ / *On Interpretation*, 17a1-17a7. On the different uses of the term λόγοσ by Aristotle, see *Index Aristotelicus*. Edidit Hermannus Bonitz. Berolini, A.1870, pp.433-437.

[25] Aristotle, M 1003 b 5. In: *Aristotle Metaphysics* (1997). A Revised Text with Introduction and Commentary by W.D.Ross. Volume I. Oxford: Clarendon Press.

[26] See M*i*.1052 a15-b1. Already in the book (V) M*D*.6.1015 b10 Aristotle states that the One is said in one case κατα συμβεβεκόσ (one by accident) and in the second case καθ' αὑτό (one by its own nature)

[27] Expression τοδὲ τί in Aristotle's works it means ὃ ἄν τοδὲ τι ὄν καὶ χωρίστον a certain being (or as translated by Hermann Bonitz : "ein bestimmtes Seiendes" (*Aristoteles' Metaphysik*, 1978. p.207)

With this analogy, Aristotle closed the question How the One is many (now "in which way the one thing is said in many meanings") and how the many are the One. The essence (οὐσία) or the Being (τὸ ειναι) and the essence of an individual being (τοδέ τί) is identical: the essence of beings is in the beings and not outside of them in some special universe of essences. The Being (το ειναι, τὸ ὄν η ὄν) showed himself always in two ways, as a presence (παρουσία) or as a absence (ἀπουσία) in every beings as a potential or as an actual being (ώσ ἐνεργεῖαν ὄν -ώσ δύναμιν ὄν), in every thought as truth or as falsehood of being (ώσ ἀληθε΄σ ὄν - ώσ ψεῦδεσ ὄν) and in every proposition as a necessary or as an accidental predicate of being (ώσ ἴδιον ὄν - ώσ συμβεβεκὸσ ὄν). Each of these ways of appearing of the Being must have the same structures that must correspond to each other. This correspondence inside the world-thought-language triangulation ensures the truth as the unhiddency (ἡ ἀλήθεια) of the essence.

Heraclitus' Heno-Logic as Conceptual Homologization

Some authors believe that it is necessary "the earlier, non-Aristotelian configuration of mind…designate as 'archaic' ". (Raymond, 1976, p.1) At the same time, this configuration of the mind is not considered undeveloped, embryonic or primitive, but its symbolic and graphic side is distinguished, which expresses opposites within a one-dimensional world, that is, which gives some unity to all changing states of nature. It is Raymond who believes that "…yet, beyond mere opposition there exists a third term that works between or behind given sets of oppositions. " (Ibid., p.1)

The world-thought-language triangulation in Heraclitus' writing *On Nature* (Περί φύσεωσ) is constructed in such a way that by understanding the constant changes that take place through the action of opposites (τὰ ἐναντία) in the physical or material world, a step would be taken towards an intuitive but objective knowledeg based on insight through listening (ἀκούειν) of the *Logos* by which this changeability is fixed in the unity which exists in the movement of variables. What is constant, what is hidden in the material processes that operate in nature is no longer anything material or physical, but cognitive and has an objective validity that needs to be heard / understood (ἀκούειν) as such and submitted to. The product of that unity and the product of that hidden principle is the realization that the One is the All (ἕν πάντα), that is, that the One should be identified (ὁμολογεῖν) with the All and vice versa.

Heraclitus' Fragment No. 50 (in: Diels-Kranz) directly introduces cognitive homologization as a principle of overcoming physical or material granulation: οὐκ εμοῦ, ἀλλὰ τοῦ λόγυ ἀκούσανταϲ, ὁμολογεῖν σοφόν ἐϲτιν ἕν πάντα εἶναι. "If you listen not to me but to this Logos, it is wise to identify the One and the All." [28] This wisdom or knowledge consists in listening (ἀκούειν) or intuitive understanding of the *Logos*, which is the interpersonal intellectual principle, the reason, which makes it possible to understand the One in the All, that this one moreover governs all changes and all processes, to hold the Chaos within the limits of the Cosmos, which is the world ordered by the action of that principle. According to Heraclitus, "Wisdom is only one, the knowledge that should be known, that everything governs everything. " : ειναι γὰρ ἕν τό σοφόν, ἐπίϲταϲθαι γνώμεν, ὁτέη ἐκύβερνηϲε πάντα διὰ πάντων.[29]

Heraclitus' doctrine consists in the understanding that processes in the world take place through the struggle of opposites and that they should be understood from the synapses of opposites (διὰ τῶν ἐναντίων συνῆψεν). The processes of transitioning opposites into one another show that the world itself is in constant change and constant flux. Everything flows (πάντα ρει), everything changes... However, what makes it possible to understand the world as an ordered whole, as Cosmos and not as Chaos, what gives the world unity as a unity of opposites, is the *Logos*, which is actually the measure of all happenings, movements and opposite actions. Therefore, for Heraclitus, the world is an eternally living fire that is kindled and extinguished according to the measure which is given and determined by the *Logos*.

According to Heraclitus, there is only "one and common world" (Fr.89): ἕνα καί κοινὸν κόϲμον ειναι, and this one and common world is governed (Fr.72) by only one and common logos (Fr.2). Listening (ἀκούειν) to some logos that would be personal (ἴδιον) is not enough to achieve objective understanding or collective agreement about anything.

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[28] See in Diels-Kranz. *Herakleitos*, B. Fragmente No.50: Haben sie nicht mich, sondern den Sinn vernommen, so ist es weise, alles sei eins. (Diels, 1951, p.161).

[29] See in Diels-Kranz. *Herakleitos*, B. Fragmente No.41: " Eins nur ist das Weise, sich auf den Gedanken zu verstehen, als welcher alles auf alle Weise zu steuern weiß." (Diels-Kranz, 1951, p.160). See another translation in *Heraclitus*. Charles H. Kahn (1981): The Art and Thought of Heraclitus. Cambridge University Press, p. 55 : "The wise is one thing, namely, to know [lit. master the insight] how all things are steered through all." Our translation is different: " "Wisdom is only one, the knowledge that should be known, that everything governs everything." Heidegger connected the understanding of this Heraclitus fragment (no.41) with the understanding of fragment no. 64 with which he and Fink started a philosophical seminar on the philosophy of Heraclitus. See in: Martin Heidegger (1980). Heraclitus Seminar, 1966-67. The University of Alabama Press, p.6.

Sophistics, however, brought that transition from the common to the inter-personal foundation of knowledge, from *Logos* to dia-logos. Sophistics practically begins the breakdown of the concept of such a *Logos* by turning to its own internal logos, which is in a constant struggle of thoughts in the form of dia-logos. How something looks to me or how something looks to you was a new principle which Protagoras introduce in his work using the statement "man is the measure of all things" (πάντων χρήματων μέτρον ἐστιν ἄνθροποσ)[30]. If Heraclitus spoke about the Common Logos (ὁ κοινόσ) as a measure of truthfulness in the world (τὸ πᾶν), and if Protagoras, as a sophist, spoke about each individual man as a measure of how things appear to us, then we already have two opposed understandings of the concept of the criterion of truth.

Jonathan Barnes sees this as Heraclitus' Logos- doctrine and Heraclitus' heno-logic as the doctrine of Monism: in all the changes and dynamics of opposites in nature, there ultimately remains something static, the One that is conceptual in origin.

" These four fragments have suggested three abstract theses. First, there is the notorious Theory of Flux: all the furniture of the world is in constant, if imperceptible, change; the cosmos is a battleground, and its pacific façade hides the endless victories and defeats of an interminable internecine strife. Second, there is the Unity of Opposites: behind the coherent surface of things there is a tension of incompatibles; every object, however firm and enduring, is subject to contrary strains, and is constituted by opposing features. Third, there is a doctrine of Monism: in some fashion the diversity of appearances is underpinned or colligated by some single thing or stuff; at bottom, all is one." (Barnes, 1983, p.45)

[30] Protagoras, B. Fragnmente 1: πάντων χρήματων μέτρον ἐστίν ἄνθροποσ, τῶν μὲν ὄντων ὡσ ἐστιν, τῶν δὲ οὐκ ὄντων ὡσ οὐκ ἐστιν (Aller Dinge Maß ist der Mensch, der seienden daß (wie) sie sind, der nicht seienden, daß (wie) sie nich sind) in Diels-Kranz, 1951, p.263, and in Plato's dialogue *Cratylus* (386 a1): "… as Protagoras tells us? He says that man is "the measure of all things," and that things are to me as they appear to me, and are to you as they appear to you." in: *Platonis Dialogi. Secundum Thrasylli Tetralogias*. Recognovit Martinus Wohlrab. Vol. I. Lipsiae in aedibus B. G. Teubneri. MCMII. See translation in *Plato Complete Works*, 1997, p.103. In Plato dialogue *Theaetetus* (152 a1) "…For he says, you know, that 'Man is the measure of all things: of the things which are, that they are, and of the things which are not, that they are not.' in *Platonis Dialogi. Secundum Thrasylli Tetralogias*. Recognovit Martinus Wohlrab. Vol. I. Lipsiae in aedibus B. G. Teubneri. MCMII. See translation in *Plato Complete Works*, 1997, p. 169.

Parmenides' Paraconsistent Logic

About Parmenides' writing *On nature* (Περι φύσεωσ) there are numerous testimonies and preserved fragments in the writings of numerous ancient philosophers, but mostly in Plato and Aristotle. His work is written in the form of a poem and contains numerous metaphors, but his ontological and epistemological position is clearly stated. According to this teaching, the All (πᾶν) is given to us in the metaphor of a perfect spherical whole of One and All (Σφαῖροσ) in which movements (dinamics) and rest (statics) are harmonized in such a way that there is no void, no not-Being, but paradoxically there is at the same time of movement and rest! There is only Being and only Being can be thought and expressed, not-Being neither exists nor can be thought of nor can be spoken about because Being occupies the entire space and time. Being and thinking are identical, one and the same.

The implementation of this thesis in Parmenides is given in a paradoxical logic which is the first form of paraconsistent logic. His logical and methodical position is more clearly visible in Plato's dialogue called Parmenides or on ideas ΠΑΡΜΕΝΙΔΗΣ [ἡ περὶ τῶν ἰδεῶν]. Hypothesis 1 (If the One is : εἰ ἕν ἐστίν)[31] is given through the antecedents of implications whose consequences directly lead to the proof of the opposite hypothesis from the one that was set. Parmenides' paraconsistent sophistry makes deliberate use of confusion in giving the determinations of the Being as such (Being in itself) and the One as such (the One in itself) through the determinations of space, time, motion and rest that refer to an individual being (many, τὰ πολλά) and not to the Being as such. These are determinations that belong to individual beings and not to a concept of Being!

The term ἐόν in Parmenides' vocabulary refers to Being and not to particular beings that also exist, but the Being is the primordial and only true Being as Being, that which is the only the One, that which can be thought and spoken, while the term not-Being is not an expression for something false, but a term that does not mean anything, does not exist, cannot be thought and cannot be spoken. Already Heraclitus, and then Parmenides, identified the concept of Being as the essence of beings and the concept of truths. Because the concept ἐόν means Being and not an individual being. Considering the different use and different inflections of the verb εἰμί in all inflections as the present indicative ἐστι (is), the

[31] Cf. Plato, Thomas Maguire (1882). ΠΛΑΤΩΝΟΣ ΠΑΡΜΕΝΙΔΗΣ . *The Parmenides of Plato*. Edith Introtuction, Analysisi, and Notes by Thomas Maguire . Dublin: Hodgges, and London: Longmans.p.19.

infinitive ειναι (to be), the present participle ἐόν (Being), Martin J. Henn (2003, p.31) concluded that "What we find in the poem is more of a primordial monistic theory of Being, than a sophisticated ontological system of classification between various modes of Being ". It is even more important to know that with Parmenides, as well as with Heraclitus, the concept of Being is synonymous with the concept of Truth. The Being of beings is their hidden Truth. Henn cites the standard interpretation of Parmenides' vocabulary given by Charles Kahn:

" Charles Kahn points out in his valuable essay "The Greek Verb 'To Be' and the Concept of Being" that "the most fundamental value of *einai* when used alone (without predicates) is not 'to exist' but 'to be so,' 'to be the case,' or 'to be true.' "Kahn calls this sense of the verb "to be" its "veridical usage." Kahn's innovation challenges those standard interpretations of Parmenides based on a much later distinction between essence (i.e., *what* a things is) and existence (i.e., the *fact* that a thing is, abstracted from any of its worldly determinations). " (Henn, Ibid.,)

Thus, in the first deduction the consequences of Hypothesis 1 (the One is, but no participates in being) is lead to the proof of the opposite hypothesis that the One (as such) in no way is (οὐδαμῶσ ἄρα Τὸ ῾Εν οὐσίασ μετέχει)[32]! And in the second deduction of Hypothesis 1 (the One is, and participates in being) the consequences by citing antecedents that belong to the One in itself and not to individual beings, leads to the proof of the opposite hypothesis: the One is all things and is not even one (Τὸ Εν οὔτε ἕν ἐστιν οὔτε ἔστιν)[33]!! In this way, Parmenides, using dialectic against dialectic, that is, dialectic in which there is no negation and no place for not-being, based his proof and his logic on the dynamic static that holds together one and all, in one circle called perfect Sfairos which is both dynamic and static.

Parmenides apparently emerged from Heraclitus' scheme of opposites and their unity in heno-logic. But without taking into account negation, in the linguistic-logical sense, and not-being, in the ontological sense, his opposites with which he operated in understanding the World-Thought-Language Triangulation are in fact only paraconsistent claims that the One exists and that it does not exist at the same time, that the Many exists and that does not exist at the same time, because as soon as one tries to define it (the One or the Many) from its opposite, it becomes that opposite!!! In Plato's dialogue, Parmenides tells Socrates the essence of

[32] Cf. Ibid., p.25
[33] Cf. Ibid., p.35

his dialectical method, which for each hypothesis has two deductions that lead to contradictory conclusions through opposite consequences:

"And you are quite right," he (Parmenides) said. "But you must do the following in addition to that: if you want to be trained more thoroughly, you must not only hypothesize, if each thing is, and examine the consequences of that hypothesis; you must also hypothesize, if that same thing is not."

"What do you mean?" he (Socrates) asked.

"If you like," said Parmenides, "take as an example this hypothesis that Zeno entertained: if many are, what must the consequences be both for the many themselves in relation to themselves and in relation to the one, and for the one in relation to itself and in relation to the many? And, in turn, on the hypothesis, if many are not, you must again examine what the consequences will be both for the one and for the many in relation to themselves and in relation to each other. And again, in turn, if you hypothesize, if likeness is or if it is not, you must examine what the consequences will be on each hypothesis, both for the things hypothesized themselves and for the others, both in relation to themselves and in relation to each other. And the same method applies to unlike, to motion, to rest, to generation and destruction, and to being itself and not-being. And, in a word, concerning whatever you might ever hypothesize as being or as not being or as having any other property, you must examine the consequences for the thing you hypothesize in relation to itself and in relation to each one of the others, whichever you select, and in relation to several of them and to all of them in the same way; and, in turn, you must examine the others, both in relation to themselves and in relation to whatever other thing you select on each occasion, whether what you hypothesize you hypothesize as being or as not being. All this you must do if, after completing your training, you are to achieve a full view of the truth." (Plato, Parmenides, 136 a1-136 c8. In: Plato, 1997, pp. 370-371)

Plato, as a great opponent of sophistry and sophists, showed in his dialogue *Parmenides* that two dialectical deductions are possible for each hypothesis, from thesis and antithesis, and how it is possible to simultaneously observe a being as a being in itself, a being as such, a being that has different types of conceptual determinations than a being that is individual and which is determined by material atributes. Giving equal value to the opposites that are found in the differences as the qualities of being (part - whole, limited - unlimited, in itself - in another, movement - rest, same - different, similar - unlike, equal - unequal, older - younger) Parmenides turned into conceptual characteristics that lead to the paradox of deduction in which the individual is transformed into the general and the general into the individual. Then, when the proposition and its negation are true at the same time, paraconsistent

logic is created. We will show the procedure on the example of the first hypothesis of Parmenides in Plato's dialogue Parmenides.

HYPOTHESIS # 1. (Plato, Parmenides, X-XX)
Antecedent of the Hypothesis #1
(IF) the One (as such) is, and does not partakes of being.

Definition of the term "exist": To exist means to participate in being (partakes of being). It means: to participate or be in space (in form, in parts of form) and time (parts of time).

First Deduction of the Hypothesis # 1:
(IF) One (as such) is, and does not partakes of being.

Consequences of Hypothesis # 1 in first deduction
(THEN)

CON 1: the One (as such) cannot be distributed or integrated (it is not a part, it is not a whole)
CON 2: the One (as such) does not participate in form
CON 3: the One (as such) does not participate in space
CON 4: the One (as such) does not participate in time
CON 5: the One (as such) does not participate in identity (does not participate in gender)
CON 6: the One (as such) does not participate in similarity (does not participate in type, quality)
CON 7: the One (as such) does not participate in equality (does not participate in quantity)
CON 8: the One (as such) does not participate in being
CON 9: the One (as such) does not participate in perception, opinion or in any way in knowledge
CON 10 for the One (as such) no determination of being applies

Conclusion of Hypothesis # 1 (first deduction)
(If)the One (as such) is and does not participate in being

Cc 1. Therefore, the One (as such) in no way partakes of being (οὐδαμῶσ ἄρα Τὸ ῎Εν οὐσίασ μετέχει)

Cc.1.1 Therefore, the One (as such) in no way is
(Τὸ ῎Εν οὔτε ἕν ἐστιν οὔτε ἔστιν)

Second deduction of Hypothesis # 1.
(IF) the One (as such) exists and partakes of being

Definition of the term "exist": To exist means to participate (partakes of being) in being. It means: to participate or be in space (in form, in parts of form) and time (parts of time).

Antecedens of Hypothesis # 1 in the Second Deduction
(IF) the One (as such) is (exists) and partakes of being

Consequens of Hypothesis #1 in the Second Deduction
(THEN)

Con1: the One (as such) can be distributed and integrated
Con 2: the One (as such) participates in form
Con 3: the One (as such) participates in space
Con 4: the One (as such) participates in time
Con 5: the One (as such) participates in identity (participates in gender)
Con 6: the One (as such) participates in similarity (participates in type, quality)
Con 7: the One (as such) participates in equality (participates in quantity)
Con 8: the One (as such) participates in being
Con 9: the One (as such) participates in perception, thinking and knowledge
Con 10: the One (as such) has properties of particual being

Conclusion Hypothesis #1 in the Second Deduction:
(If) the One (as such, by itself) is (exists) and participates in being
(THEN)

Cc 1. Thus if the One is, the One is all things and is not even one (ἕν εἰ ἔστι, πάντα τε ἐστι Τὸ ῞Εν)

What we call paraconsistent logic in Parmenides, which is given through hemi-dialectic due to not taking into account the possibility of thinking and expressing not-Being, Constance C. Mainwald marks as a gymnastic dialectic that ends with paradoxical conclusions.

" The situation regarding Parmenides' gymnastic dialectic is completely different. For although the incidence of grammatical contradictions is much higher and more systematic than in the Socratic dialogues, and many of the individual conclusions are as superficially paradoxical as they could be, there are no expressions of dissatisfaction at these results.21 The absence of such mention is at its most notable at the end of the dialogue, where Parmenides summarizes the results of the

dialogue in a way (quoted previously) that clearly highlights their paradoxical character. Yet the interlocutor not only expresses no dissatisfaction at this formulation but goes to an extreme in accepting it by means of the superlative form *Alethestata* ("Most true").” (Meinwald, 1991. p.22-23)

But it is necessary to see that Parmenides' dialectic begins with paradoxical hypothesis: "if there is one, and it does not participate in being"!!!

Plato's Dia-logic as Conceptual Granulation

In the dialogue *Sophist*, Plato showed how, when defining terms, one descends or moves in thought down the columns of opposites formulated (τά ἐναντία) withou the use of negation. In his logical directory, Plato started from the highest genus (γενικοτάτων γένοσ), going down through the division of each form (concept) into two parts (δυο ειδη: opposite forms) until he cuts to the last provision of the concept being defined. Time je omogucena ortonimija, ispravno imenovanje bica, ali nije omogucena ortologija i ortografija kao dio jezicke i misaona ortopraksa koja priznaje postojanje termina nebice i upotrebu negacije u iskayzu.

For Plato, opinion and dialogue about the World-Thought-Language Triangulation is determined by the dialectic skill (διαλεκτικὴ τέχνη) as a maieutic method of dividing a concept into two forms (δυὸ εἰδέ): always when searching for the provisions of being or when defining one logical form is needed (one term, one logical provision of a certain degree of logical generality) to be divided into two forms (two subordinate terms), that is, into two opposites that the superordinate term contains. This division (διάρεσισ) of terms is a technique or skill of dialogue or action in discourse, which is a way of acquiring knowledge about the essence of a subject and a way of understanding any subject of thought.

Plato's method of "dividing one form into two" (Plato, Sophistes) within the art of discussion (διλεκτικὴ τέχνη) is to descend from the highest type of logical generality in one genus to the lowest species and further down to the individual concept. It was in the dialogue *Sophistes* that Plato showed by example how this skill is used. By asking the question "What is a sophist?" (τὶ ἐστιν σοφίστησ) and what is his activity (πράξισ), Plato showed on an easier and simpler example (παραδείγμα) how to arrive at the term "fisherman" (ἀσφαλεύτησ) and his activity starting from the activity of fishing as a kind of art / skill (τέχνη). Descending down the tree of attributes or dividing each logical form (logical granulation) takes place as follows:

" So now we're in agreement about the angler's expertise, not be just as to its name; in addition we've also sufficiently grasped a verbal explanation concerning the thing itself. Within expertise as a whole one half was acquisitive; half of the acquisitive was taking possession; half of possession-taking was hunting; half of hunting was animal-hunting; half of animal-hunting was aquatic hunting; all of the lower portion of aquatic hunting was fishing; half of fishing was hunting by striking; and half of striking was hooking. And the part of hooking that involves a blow drawing a thing upward from underneath is called by a name that's derived by its c similarity to the action itself, that is, it's called draw-fishing or angling— which is what we're searching for. " (Plato, *Sophyst*, 221 b 1. In: Plato*,* 1997, p.241)

Everything that can be said about the sophist and the sophistic skill can be said in an easier, more comprehensible and simpler way about the fisherman and the fishing skill. But from this example it is evident that Plato transferred the understanding of opposites to the understanding of conceptual opposites within a concept that contains them as their own species, as logical differences between species of the same genus.

Plato himself built the dialectical skill of division of concepts and knowledge based on dichotomy in the form of a problematic syllogism, i.e. a syllogism that does not set premises but asks the opponent in the debate to choose one of the opposing claims. So, the premises of his syllogism were a condition for the construction of proofs through the inclusion of antithetical propositions and not deduction from necessary and universal premises. Therefore, Aristotle labeled Plato's syllogism ("All men are necessarily mortal or immortal") in a dialectical proof with a weak or asthenic syllogism. Aristotle's apodictic syllogism was based on universally taken axiomatic premises ("All men are mortal") from which the conclusion necessarily followed because the truth of the premises is based on prior knowledge (ἐκ προυπαρχουσησ γίγνεται γνώσεωσ)[34] through experience: the knowledge that there is something about which a judgment is made (ὅτι ἔστι)[35] and knowledge of the meaning of the name of what exists as a fact (τί τό λέγομενόν ἐστι)[36].

[34] See in Aristotle, ΑΝΑΛΥΡΙΚΩΝ ΥΣΤΕΡΩΝ-Α, 17a1-71a15, In: Tredennick, H., Forster, E. S. (1960). Aristotle. *Posterior Analytics. Topica*. Loeb Classical Library. Harvard University Press,p.24.
[35] Ibid., p.25
[36] Ibid., p.25

It seems Hugh Tredennick was right[37] when he claimed that Plato achieved an advanced form of inferentialism associated with a new understanding of logos, but that he did not formalize this approach into a science of dialectical syllogism, while syllogism with figures and modes was authentically Aristotle's finding.

Aristotle's Syl-logistics as Conceptual Re-construction and Re-cogniton

The World-Thought-Language Triangulation was founded by Aristotle as an ontological, conceptual and linguistic network of matching structures that are mapped and thus bring factual existence, logical thinking and linguistic expression into the relationship of truth or falsity as their correspondence. The formal-logical structures of thought must match or be compatible with the semantic structures of the language, while the truth or falsity of the constructions that arise in these parent structures is ensured or conditioned by the factual construction of the substance and its properties. From the correspondence of structures within this triangulation, the cognitive content in ordinary life as well as in scientific proofs emerges. Cognition is the result of establishing the conformity of these structures through analytical constructions and reconstructions that use syllogistic forms of reasoning and proof.

Syllogism (συλλογισμόσ) and especially scientific syllogism (ἀποδεικτικόσ συλλογισμόσ) is constructed by Aristotle from propositions (premises, προτάσεωσ) that function as logical and linguistic linear aggregates within which terms or concepts of different levels of logical generality are arranged: a larger term / terminus maius (genus), a middle term / terminus medium (species) and a small term / terminus minor (singular term) , which can be converted by logical operations (quantification, negation, conversion) in different systems of synonymous and homonymous predication by changing the term or changing the quantification or even introducing modality (modal operators: possible, necessary, accidental).[38] But, as Jan Łukasiewicz showed in the work that Aristotle's syllogism is actually a form of implication, or that " no syllogism is formulated by Aristotle primarily as an inference, but they are all implications having the conjunction of the premises as the antecedent and the conclusion as the consequent "(Łukasiewicz 1951, p.2). A conclusion in a conclusion is always a consequence of an implication.

[37] See in Aristotle, ΑΝΑΛΥΡΙΚΩΝ ΠΡΟΤΕΡΩΝ-Α,In: Cooke,H. P., Tredennick, H. (1938). Aristotle. *Categories. On Interpretation. Prior Analytics*. Loeb Classical Library.Harvard University Press, p.26.

[38] See teory of modal propositions in Aristotle *Peri hermeneias* / *On interpretation* (22a25)

Aristotle introduced the distinction of three types of identity: (1) to be identical because to be in the same genus (τὸ ἀυτόν), (2) to be identical because to be in the same species (τὸ ὁμοῖον), (3) to be identical because to be in the same number of beings (τὸ ἴσον) and based on this difference he constructed different types of predication: synonymous predication (substantial identity), homonymous predication (qualitative identity) and paronymous predication (analogical identity). The structure of the world and the structure of knowledge are shown in an apophantic way in the structure of this network of implications or propositions which are semantic forms of logical relations and a network of categories which are structural or referential forms. Inferential work goes through the use of laws of thought and rules of deduction, with the help of affirmation and negation, universal and particular quantifiers, modal operators, etc.

It was Aristotle's theory of truth as correspondence that meant that knowledge and science are based on a formally satisfactory and materially adequate expression of the relationship that exists in the state of affairs, that is, that the truthfulness of opinions and propositions depends on factual truthfulness. Knowledge (τὸ εἰδέναι, τὸ ἐπιστάσθαι) refers to the first principles and first causes of the existence of beings and to the way in which their universal and singular properties belong to them, and understanding (διάνοια) to the logical-linguistic formulation of this relationship in a proving statement-making sentences / propositions (λόγοσ ἀποφαντικόσ), in definition (ὁρίσμοσ) and in the formation of scientific evidence (ἀποδεικτικὸσ συλλογισμόσ).

" The Aristotelian concept of true knowledge and science (τὸ εἰδέναι καὶ τὸ ἐπιστάσθχαι) is based on the insight that there is a composed (συνκεῖμενα) physical structure of an object (matter + form + properties of matter + properties of form) for which true knowledge should be found first causes and first principles (πρῶται ἄρχαι καὶ πρῶται αἰτίαι) which differ from physical causes and principles. Only then is it possible to know this physical structure and in one science realize this knowledge as a formal structure of objects about which a meaningful thought and linguistic construction-theory can be established (ἐπιστήμη, ζετοῦμενη ἐπιστήμη, ϑχεωρία). (Ibrulj, 2005, p. 158.)

Plato's skill of dialectical dialogue is based on creating logical dyads - species ( ) within one generic term, while Aristotle's syllogistic was an analytical reconstruction based on the positioning or arrangement of three terms, that is, on designing a composition of logical triads in a network made up of premises with terms and conclusions, in the network of positioning and distribution of terms that get their quantitative and qualitative determination in affirmation or negation.

" This logical-linguistic construction is actually an imitation of the ontology of objects in an apophantic and not only in a semantic statement. Every statement is semantic because it means something, expresses some meaning, but not every statement is apophantic, not everyone is constructed so that it shows, signifies with its form, discovers and asserts how properties and objects are related in the physical world (Aristotle, *Peri hermeneias*, 17a1). Thus, in a logical and linguistic-grammatical sense, the relationship between subject (ὑποκειμένον, οὐσία) and predicate (κατηγορουμένον, δεύτερα οὐσία) is constructed through the apophantic statement, while at its foundation is the structure of the physical object composed from the substrate (οὐσία, ὑποκειμένον) and properties (τὰ ὑπάρχοντα, τὰ ἴδια) which belong to him and which he suffers (ἴδια παθὴ, τὰ συμβεβηκότα). (Ibrulj, 2005, 170.)

In the scientific syllogism (ἀποδεικτικὸσ συλλογισμόσ), in which the propositions are placed in the relation of the terms that the premises possess, knowledge arises from the understanding of the logical relation between the terms participating in the premises, and this relation shows how the properties are integrated with the subject according to the principle of logical affiliation or the inclusion of smaller levels of logical generality by larger and superior ones. The syllogism generates knowledge about the belonging of all properties of an object to the same genus or species. A property that generically or substantially belongs to one object belongs to it regardless of the category in which it appears / is expressed. This establishes the substantial identity, which is precisely the generic unification of species properties, as a secure basis synonymous predication which necessarily shows that some properties belong to some object. It is a powerful means of predicate homologation, which ensures the necessary coexistence of generic predicates.

The introduction of the λογοσ ἀποφαντικόσ structure into the syllogism structure and the syllogism structure into the inferential structures of figures and modes was probably the greatest innovative work that Aristotle did. At the very center of these structures is the logical structure of the subject (ὑποκείμενον) and the predicate (κατηγορούμενον) and it is precisely that of logical and not grammatical origin. About this Jonathan Barnes says:

" The first and original home of subjects and predicates was logic. More particularly, it was Aristotelian logic; and the distinction between subject and predicate had nothing to do with grammar. " (Barnes, 2007, p.100)

Aristotle understood logos as a statement or as a proposition, distinguishing between logos semantikos / significant expression (λόγοσ σημαντικόσ) and statement-making sentence / proposition (λόγοσ ἀποφαντικόσ) (Peri hermeneias, 17a7). The statement-making sentence / proposition[39] is a predicative statement structure in which two terms of different levels of logical generality are connected so that the broader term encompasses the narrower term and thus form an apophantic implication in which the antecedent is always universally quantified while the consequent is specifically quantified in the structure of the second premise. Thus Aristotle created the syllogism as a quantitatively divided amplication that is already given in the universal premise.

Aristotle actually created with the syllogism the first logical directory that eliminated the asthenic syllogism used by Plato from the construction of evidence...Plato's weak syllogism stated the opposite in the universal premise as a negation that is not necessary for the conclusion ("All men are mortal or immortal ."). Aristotle's strong syllogism was going down the directory only on one side, on the side of synonymy that represented orthonymy, orthology and orthography of the conclusion ("All men are mortal").

Aristotle realized that in the logical division of forms in a syllogism, one should start from the division of the implication into antecedent and consequent, and not from listing opposite concepts. Categories only enable the formation of logos or statement-making sentences / propositions, while logical relations of subordination or subsumption arise only through the construction of statement-making sentences / propositions. With the establishment of these logical relationships in the proposition, the first closest genus is immediately determined from which the division of concepts starts, and not the highest genus in the possible construction.

Conclusion

In pre-Socratic philosophy, an implicite concept of the *Logos* arose, which was affirmed through a metaphorical vocabulary that uses symbols to express the existence of opposites in nature and the possibility of understanding these opposites in their unity, which exists as an ordered

[39] The term "λόγοσ ἀποφαντικόσ" is translated by W.D.Ross as "proposition" (See in: Aristotle Metaphysics. A Revised Text with Introduction and Commentary by W.D.Ross. Volume I. Oxford: Clarendon Press, 1997, p.50), while J.L. Ackrill translates as "statement-making sentence" (See in: Complete Works of Aristotle. The Revised Oxford Translation. Edited by Jonathan Barnes. Volume One. Princeton / Bollingen Series LXXI.2. Princeton University Press. 1995)

world or as the cosmos. This implicite and hidden *Logos* in Heraclitus is the static principle of the unity of the Being in all changes which is permanent and is itself unchanging and as such governs everything. Its dynamization began in Parmenides' hypothetical dialectic, which reveals antithetical forms in attempts to conceptualize opposites as pradoxal realtion between the One and Many : every attempt to ontologize them leads thinking and Being into a paradoxical or paraconsistent logic. In this way, Parmenides used a hypothetical and antithetical dialectic of the isolation of Being and the One in order to achieve their primordial static position in the concept of nature as the conceptually guaranteed eternity and immutability of the existence of the One with a dynamic semantics.

Thus, the concept of *Logos* (λόγοσ), its meaning and use in ontological, logical and epistemological discourse (the world-thoougt-language triangulation), experienced significant transformations in ancient philosophy. From an early thought obsessed with movement and changes within nature (φύσισ), which takes place through opposites (τά ἐναντία), it entered the structure of dialectical thinking and the movement of concepts and became its architecture of conceptual opposites, to flow with Aristotle from the nature and thought into language as a place of *apophantic evidence of truthfulness* as a formal laws and rules that works in correct thinking and that stands in correspondence with reality.

Plato freed Parmenides' semantic conception of logos, which was actually hemisemantic due to the elimination of the concepts of not-being and negation in thought and expression, by introducing the logical syntax of concepts into the dialectic of ideas: not-being has its place and use in thinking if the *Logos* is understood and determined as one of the genera of beings in which the genus concepts are divided into opposite species and subspecies. In this way, dialectic has become a logical syntax of being and thinking, which is shown in language as dia-logos. With this, Plato opened the way for Aristotle to base the ontological and logical aspects of "what is" (ἔστιν, ειναι) in the logical pragmatics of language, which unites both the semantic and syntactic aspects of being, but no longer in the form of dialectical conclusions (διαλεκτικόσ συλλογισμόσ) but in the form of demonstration (ἀπόδειξισ) and demonstrative science (ἐπιστήμη ἀποδεικτικῆ) which is explained in the epistemology of his *First Philosophy* (πρώτη φιλοσοφία).

Thus, in this movement of understanding the *Logos* (λόγοσ), its dialectical (Plato) and syllogistic (Aristotle) *transformation* was carried out from its ontological form in Heraclitus and Parmenides' heno-logics

due to its logical and linguistic *reconstruction* in the form of inference and proof as fundamental forms of knowledge and science. This also changed the concept of knowledge: from direct intuitive and philosophical listening / insight (ἀκουεῖν) of the One-and the Common *Logos* as the unity principle of the ordered world / cosmos (κόσμοσ) of nature (φύσισ) to the rational construction of *the world of concepts* in thought and language that refer to the world. Everything that Heraclitus and Parmenides found in nature as opposites (τὰ ἐναντία) and their unity had to be deconstructed with the intervention of the dialectical and syllogistic mind in order to be conceptually constructed again in knowledge and science. In this way, the world–thought–language triangulation became cognitively and rationally known, and not just intuitively understood!

In doing so, not only the concept of *Logos* changed, but also the deeper ontological and logical structure of the understanding of the nature and what is *true nature* or what are the *para-aesthetic causes* of all other causes (first causes and first principles of being): Pre-Socratic philosophy (physiology) was drastically changed by Aristotle became the *First philosophy* known later as *Metaphysics* that carried out a redescription of almost all the concepts of early philosophical thought that Aristotle labeled as physiology. In the λόγοσ ἀποφαντικόσ, as a statement-making sentence / proposition, all structures of "what is" (των ὀντῶν) and "what is said" (τῶν λεγόμενων)[40] are explicite. In Aristotle's *First Philosophy*, the world-thought-language triangulation was revealed in science as an axiomatic deduction that corresponds to the factual structure of being.

In the world-thought-language triangulation established by ancient philosophy, the concept of *Logos* (λόγοσ) plays the role of a "hidden common harmonizer" that connects all three structures and enables truth as a unity of the opposites, whether it is Heraclitean heno-logics, Platonic dia-logics or Aristotelian syl-logistics. *Logos* does not lose its role after Heraclitus, but expands through the granulation of logical structures that leave the domain of the physical substratum (φύσισ, ὕλη) and take place in the domain of the conceptual substance (πρώτη οὐσία), in dialectic and syllogistic granulation. In any case, *Logos* is what holds together the formal structure of thought and language and connects it to the structure of material substance / substratum and its properties. This

[40] The complexity of what is included in "what is" (τῶν ὀντῶν) and the complexity of what is included in what is said (τῶν λεγόμενων) was presented by Aristotle in the work *Categories*, 1a16-1b9. See in: Cooke,H. P., Tredennick, H. Aristotle. *Categories. On Interpretation. Prior Analytics*. Loeb Classical Library.Harvard University Press, 1938, p.

connection is expressed as a *correspondence* by which Aristotle defined the concept of truth:

τὸ μὲν γαρ λέγειν τὸ ὂν μὴ ειναι ἢ τὸ μὴ ὂν ειναι ψεῦδοσ, τὸ δὲ τὸ ὂν ειναι καὶ μὴ ὂν μὴ ειναι ἀληθέσ. (Aristotle, M. IV.7. 1011b26)

" *To say of what is that it is not, or of what is not that it is, is false, while to say of what is that it is and of what is not that it is not is true.* "—(Ross, 1963, p.2288 / Translated by W. D. Ross)

τῶ γὰρ τὸ πρᾶγμα ειναι ἢ μὴ ειναι, τούτω καὶ ὁ λόγοσ ἀληθὴσ ἢ ψευδὴσ ειναι λέγεται... (Aristotle, K. 4b8)

" *For it is because the actual thing exists or does not exist that the statement is said to be true or false,…*" – (Barnes, 1991, p.8 / translated by J.L.Ackrill)

In this way, the ontological structures of the "logos in physis" became a factual evidence of the truth of logical and linguistic structures from which knowledge and science were built. That was the first step from the Truth to truthfulness. Elimination of the factual evidence and ontological structures in the form of "one-logos in physis" will happen in symbolic and mathematical logic.

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2

NEW REMARKS ON THE *CONCEPT* IN LOGICAL USE

Introduction

Formal logic in its historical (traditional, theoretical) forms and modern applications (developmental, practical) is the most important part of *Logical Science* that makes logic an autonomous philosophical and scientific discipline that has its principles, its vocabulary and its field of research and is independent of philosophical disciplines (cognitive theory, epistemology, analytical philosophy), i.e. from philosophical (ontological) and scientific (epistemological) systems such as transcendental logic, speculative logic, hermeneutic logic or phenomenological logic.

Ancient formal logic (Aristotle's syllogistics) and modern formal logic (symbolic and mathematical logic) differ in the (1) type of language in which they express their forms and operations, in the (2) type of logical operations or logical calculus, in the (3) type of axiomatization and degree of formalization of logical deduction, and in the (4) type of derivation rules from axiomatic statement. Ancient formal logic is a partially formalized system of inference, while modern formal logic is a fully formalized system of inference and proof.

Logical ability or capacity for logical thinking, reasoning and proving, has always been valued and considered important both in practical work in decision making and problem solving and in the most complex philosophical constructions of systems and scientific theories, especially today marked by logical programming, artificial languages in application and artificial intelligence. But this enormous power (ability, skill) attributed to logical skill is in great disproportion to the very simple and few instruments behind that force: there are very few fundamental logical laws and rules that need to be mastered in order to arrive at a valid logical conclusion and valid logical proof.

The curiosity is that there are many times more logical errors (Bennett, 2012) in the formulation and explication of concepts, i.e. in the formulation of evidence of argumentation, than the number of laws and rules that need to be adopted according to the convention for formally correct inference and proof. The reason for this is that not all logical errors depend on errors in the logical construction, but also in the construction of the linguistic expression of argumentation, as well as in the intentional formulation of deceptive constructions of argumentation.

This logical minimalism in terms of conventional "logical tools" is justified by the simplicity of logical operations treated as *intellectual operations of our mind* (Boole, 1854:6), *inclusion* and *exclusion* of elements from the class of elements, *subordination* of concepts under the concepts and *subsumption* of objects under the concepts (Frege in Patzüg, 2008: 49) respect for logical laws and the application of several logical rules, as well as respect for the properties that logical relations have.

Logical ability is most often associated with and compared with mathematical ability, both in geometry and in algebra, i.e. arithmetic. Numerous logical operations are based on operations of general algebra or operations with sets and classes, i.e. with functions. Mathematical language is considered to be the clearest and most precise language of the hidden processes of the physical world and the forces acting in its forms. With mathematical language it is possible to create models of worlds that are not sensory observable and for whose possibility of existence there is a mathematical description as evidence. Mathematical language, however, is a consequence of the simplicity and clarity of the logical matrix on which every mathematical construction rests, although in fact the "logical matrix is the matrix that does not contain constants" but only variables! The clarity of the logical matrix actually lies in its generalization. (Whitehead and Russell, 1997: xxxi). On the other hand, all mathematics can be derived from a small number of logical laws and rules (Russell, 1996). And here we are again at the beginning: logic should be transparent, uncomplicated, clear and precise, a very simple basis from which primitive concepts (axioms) can construct incredibly complex thought constructions.

In that sense, logic acts as a simple grammar of a simple language that has a limited and finite vocabulary and a fund of terms with which an infinite number of linguistic constructions can be made! Logic here would be a deep grammar of the mind which works or should work in all vocabularies (logical, descriptive, deontic) giving them a normativity that can be “algorithmically decomposed” (Brandom, 2008: xvii). The real

turn in logic came about by the complete formalization of logic made possible by "logical grammar", which threw "linguistic grammar" out of the game, and in which the key categories are: the "sentence", the "term", and the "functor" (Anderson and Belnap, 1990 : 474). As such, logic is an axiomatized and formalized deduction of conclusions and proofs from previously set premises or theses, and it does not allow for naive metaphysical constructions and logically impossible constructions either in thought or in language.

The logic of natural language and semantic constructions, and the logical syntax of expressions in natural language, are completely different from the logic of pure language, i.e. a sign language (L.Wittgenstein, in Tractatus: *Zeichensprache*) or a language of concepts (Frege, *Begriffsschrift*), which is made according to the paradigm of arithmetic language.

The difference is that the predication of species / genus properties to objects in syllogistics is based on the categorical schematism of concepts (terms) of different logical generality, while the determination of objects by properties by belonging to sets of objects in symbolic / mathematical logic is a type of combinatorial deduction (analysis), a relation of arguments (variables) and predicative parts (functions) via quantifiers and logical operators. However, logic that includes both natural language logic and sign language logic originated on the basis of the capacity of representation and identification of statements in natural language and representation and identification of statements in symbolic language, so that formal logic includes both options and translation of logical structures from formulation in natural language into the logical canonical notation of symbolic language, and vice versa.

In this article I want to introduce a new approach in understanding the basic logical form called "the concept" and which must be defined quite differently within the logical models of syntactic, semantic and pragmatic characterizations of its use. But the notion of truth and meaning in these two concepts of formal logic are completely different!

The Concept in Traditional Logic: Cognitive-Theoretical Approach

The traditional definition of the concept claims that the concept is "the thought about the essence of the object being thought", i.e. that it is "a

set of essential features or essential characteristics of an object". But this definition of the concept needs to be checked!

For example, the concept of "Tiger" would be "a thought about the essence of a tiger." However, the word "Tiger" which expresses the concept "Tiger" does not indicate whether it is an animal species or a type of car tire or some glue or the name of a military or paramilitary unit or a German model of a heavy tank!

Likewise, the "concept of WATER" or the "concept of KWATER" (I will use here a thought experiment called Twin Earth by H. Putnam from his texts *Meaning and Reference*, 1973 and *The Meaning of Meaning*, 1975) expressed by the terms "WATER" and "KWATER" would immediately express the idea of the essence of a WATER object and a KWATER object! The word "Triangle" could also mean "the thought of the essential properties of a geometric figure with three angles", but also the thought of the relationship of three persons standing in the relationship of the "marriage triangle"!

In doing so, this definition of the concept does not take into account that the concept is a compress of logical generality and that the "essential characteristics of the object of thought" are in fact a network of concepts that stands in the predicative part of the definition of the object. As Gottlob Frege said (*Über Begriff und Gegenstand*) the concept (*Begriff*) is always a predicate (Frege, G. In Patzüg, G., 2008:48) and it is always necessary to either granulate (particulate) or homologize or unify (generalize) using quantifiers.

On the other hand, the object or object of thought is a compress of ontological generalities that is discriminated against in its understanding and expression from its universality by the use of space-time and terminological indexers.

The fact that a concept itself can be an object of thought, just as a word or expression of an object of language can be the subject of description in a meta-language, suggests that a concept, object and word form a compress of logical, ontological and linguistic generalities. It is not possible to define each separately, but only in the stated triangulation and interaction.

Traditional theories of the concept (psychological, vulgar-materialistic, .. and the above realistic) start from the divided existence of objects, concepts and terms.

It is a trivial fact that the object, concept and linguistic expression (term) differ as elements of space-time, intellectual and linguistic area.

But neither in knowledge as a theoretical description of an object nor in the language in which that description is given nor in a thought content that fills both knowledge and language is there anything singular from the moment the cognitive process begins.

Theoretical knowledge is a relationship of logical, ontological and linguistic generalities that establish a hierarchy of mutual relations and the laws under which these relations can be made non-contradictory.

Every thought is a cognitive and logical creation of some definite or definable level of logical generality which is expressed by a simple or complex term or symbol.

Every concept is a part of a thought, simple or complex, but not every concept is a thought about the essence or essential properties of what is thought.

In order for a term to be a thought about the essence of what is meant, it must possess the highest degree of logical generality (generic provision) attributed to the object defined by that term.

A thought can express an observation (so-called statements of observation or observation) or a belief or idea, but this does not mean that this thought is an expression of the essence or essential properties of an object, property or relation that is perceived, about which the idea is created or to which a belief has been formed.

Only when it forms part of the definition of the object of thought is the concept part of the thought of the essence of what is thought. Otherwise it seems a mistake to understand the concept as a definition and the concept as a sentence!

Some concepts are the parts of thought about essence or a thought about the essential characteristics of what is thought, but some concepts are not. The word taken for itself without connection with other words and without connection with the verb to be is not a concept. According to Aristotle, words that are expressed without any connection like "run", "win", "sit" are not a thought about the essence or essential properties of running, winning or sitting.

These words denote or express some state or action or the existence of some fact or some process. Only when “running” is defined as "a kind of movement of a living organism in space" can it be said that the concept

or predicative part "a kind of movement of a living organism in space" at this stage determines the thought of the essence of running.

Further granulation of motion in space shows that behind one concept stands a network of concepts at different levels of logical generality.

Therefore, it can be said that the concept is a network or compress of the logical generality that at its universal level reaches the highest genus and at its singular level reaches the concept of perception and expression of the perception of an individual object.

The Concept in Modern Logic: a Calculable Logical Entity

According to the traditional understanding, the concept is the "thought of the essence of what we think"; or the "thought about the essence of the object of thought "; or the "thought of the essential characteristics of the object we think of." So: the thought we think by thought. For example: the concept "Logic" is a thought about the essential characteristics of logic.

However, already with Aristotle *(Posterior Analytics,* II 89 b 23) there is a clear distinction between objects of scientifical knowledge based on the kinds of question that we ask (τὰ ζητοῦμενα).

(1) *a something* (a fact: τὸ ὅτι) or the question of fact
(2) *why it is something like that* : τὸ διότι) or the question of reason or cause
(3) *that something is or is not* : εἰ ἔστιν) or the question of existence
(4) *what something is* (τί ἐστιν) or the question of essence

And here we should add what Porphyrious noticed in terms: *how we use a term* in ordinary context and *how we use the concept* (πώσ λέγεται, τὸ σημαινόμενον) or the question of meaning (Porphyrious, *Isagoge* 2.5 -2.6, 2008,)

A word or a term that refers to something and names it as something that exists does not give a definition of it at the same time, i.e. it does not immediately denote its concept or thought about the essence of what they name.

That is why the word "Logic" does not give a definition or concept or thought about the essence of what logic is!

But can we have a concept of what we do not know if it exists and what it is if it exists at all? For example, the term KWATER is a thought about the essence of the object KWATER (which we think by thought). In order to have the concept KWATER, we must define the object / substance / object / entity KWATER, i.e. say (1) whether or not there is an object / substance / object / entity marked with the name KWATER and (2) give a definition (object / substance / object / entity) KWATER, i.e. state what KWATER is.

We must give the essential characteristics of the subject KWATER and omit the irrelevant ones. Without the definition of the object / substance / subject / entity KWATER we cannot have the concept KWATER. This again means that the concept is a definition: nomen est omen. But, the definition is a judgment that determines the content of a concept and the judgment is certainly different from the concept.

Without knowing whether the object of thought exists or does not exist, without knowing the meaning of the word by which we name that object, we cannot know what that object is or have a thought about it. We can have neither vulgar-materialist nor psychological nor nominalist nor any theory of the concept.

For now, suffice it to say: the thought of the essence of an object is the definition of that object and the definition is a judgment and is not a concept, i.e. a concept is neither an object nor its definition.

A concept is a simple (undefined) or complex (defined) part of the thought content that has a certain level of logical generality that corresponds on the one hand to the ontological generality of the object and on the other to the linguistic generality of the expression by which the object is denoted.

Thus, as singular or as abstract, as individual or as a general representative of logical generality, the concept is adapted to the special or essential characteristics of the object and the term that the object represents in the expression.

The Concept as a Variable Part of Thought.

A concept is the cognitive content of a logically ordered structure of a thought in which it has its specific syntactic position (role), degree of

logical generality (calculable property), and semantic form (semantic disposition) by which it refers to the object it represents in the thought structure.

Whether a concept is adequately formed and whether the logical structure of thought is adequately constructed depends on whether it adequately represents the ontological structure of the object to which it refers and whether it possesses a semantically adequate referential expression (designation).

A concept is part of a thought, but not every thought has a formal structure of definition! One thought expressed in sentence, for example, "Logic is a philosophical discipline" is not the thought of the essence of logic, but only one part of the thought of the essence of logic, although it already contains three concepts. Also the statement "Aesthetics is a philosophical discipline" or "Ethics is a philosophical discipline". It is a thought expressed on one level of logical generality and with one segment or part of the thought (one segment of the thought content).

Each of these thoughts consists of two concepts, and we want to define the primitive (undefined) part of thought that represents the subject. Only when we list the subject that deals with each of these philosophical disciplines will we get a definition for each of them.

Only when we introduce into the initial definition (differentia specifica) do we get the predicative part of the definition or the function that determines the concept-variable ... For example, logic deals with the true, aesthetics with the beautiful and ethics with the good. Therefore, we cannot have the notion of logic, aesthetics or ethics until we have their definition: the *closest genus* to which they belong and a specific difference (*diferentia specifica*).

A concept is a structured logical content of an object of thought, i.e. a concept is a part of thought that has a certain level of logical generality marked by a form (one logical structure). It is an integral part of the definition of the essence of things, objects, properties, facts, states of things, or objects of thought and has a different level of logical generality (variability).

We can think about one object of thought in several ways, in one category (logical matrix) differently than in another category, that is, we can determine its essence or quality or quantity or relation or ....But about what we know exists and what it is we have a concept in a different way than about what we don't know exists at all and what it is. We know, for example, what the word WATER means and we have the

concept of things / objects / substances WATER. We know from experience that *there is* a substance marked by that name and we know what the word we denote it means.

The term is a historically (epistemologically) and contextually (pragmatically) variable linguistic and logical representative of the object of thought in statements that can be meaningfully made / formed / expressed about it.

A concept is a part of a whole of thought (part of the whole conceptual content) given in a linguistic expression together with a logical operator for a certain (quantified) degree of logical generality and which stands in relation to a physical object or object of thought possessing one degree of ontological generality.

Calculative Properties of the Concept

Each concept has its own content that essentially determines it. A concept is a constitutive part of thought, but thought is the distributed content in the concepts from which it is constructed. Conceptual content is part of the whole of thought content, and the whole of thought content is constructed from content that is encompassed and limited by the concepts of which thought is composed.

The fact that the conceptual content of one thought is separated qualitatively and quantitatively from other conceptual contents of the same thought only means that the concept is a very specific sequence of one whole of the conceptual content.

This further means that each conceptual content has its own quantitative and qualitative definiteness or that it can be determined even when it is represented by a variable, i.e. when it is not known what its "essential characteristic" is and when it remains to be seen what is the meaning or what is the content of the concept.

This quantitative definiteness of a conceptual sequence in the construction of a whole of thought is the scope of a concept that also does not have to be defined and known semantically, but by quantifying that sequence (with a universal or existential quantifier) the area of linguistic content is limited.

The fact that each concept is a part of thought content that has its degree of logical generality and its field of application, its position in the order of parts of thought content, the type of relations it can establish

with other parts of thought content, suggests that the concept with its content, scope and range of calculable sequence that has its role in judgment, inference, proof. It should therefore be distinguished

a) *the content of the concept* (a part of the structure of conceptual content of the thought)

b) *the scope of the concept* (intra-conceptual inferential structure, subordinate parts of the concept, subordinate lower concepts under one higher concept, intension of the concept, syntactical property of the concept). *Structural properties of the term (intension or the scope of the term).* A term has a degree of logical generality that belongs to it from the relationship it acquires ... A term in the logical form in which it appears has its own intensity that determines how far the relation of one term extends and on which subordinate terms that relation depends. The structural properties of a concept show whether it is in a position subordination.

c) *the range of the concept* (extra-conceptual referential structure, individual thing which are subsumed under concept, reference to the range of individual things fallen under concept, extension of the concept, semantical property of the concept). *Semantic properties of the concept.* A concept is a part of intra-conceptual content of the thought and at the same time a part of extra-conceptual referential structure of the thought. A concept in its logical content has its extension which determines its relation to things, or facts, or the states of affairs to refer.

d) *the form of categorical use of concept* (pragmatic operability of the concept in categorical assertion which is either affirmation or negation. *Pragmatic properties of the term.* The concept has its way it is applied and its way of using. The pragmatic properties of a concept show its role in affirmation or negation in statements that have a categorical or ascertaining form.

The concept possesses not only the capacity of calculability in formal symbolic logic that applies quantification logic by applying a universal, existential and singular quantifier, but its calculable structure is also open to the application of generalizing quantifiers in the discourse of natural languages and natural deduction. According to Jakkou Väänänenu (2011:283) in every natural language there are a large number of generalizing quantifiers, which differ from the universal quantifier and the particular quantifier in the logical function, e.g.

Two-thirds of citizens voted in favor.
Exactly half of the funds remain for distribution.
Most of the Sarajevo fans wanted to leave the stadium.
Some but not all liked the performance of the composition.
Between 10% and 20% of those present were students.
Hardly any of the guests touched the cake.
The number of white balls is **even**.
There are infinitely many prim numbers.
There are countless many things that are different.

In logic, in the logical calculus, this type of quantifier is closer to temporal, epistemic, situational, ... forms of modal non-classical theories than to the dichotomous two-valued formal logic. Methodologically correctly formulated concept, judgment, conclusion in formal logic must be a clear quantification (granulation or unification) of a variable in logical matrix in order for their content and scope to have calculative properties.

Conclusion

We made a difference between syllogistic logic and symbolic logic in the approach to valid logical forms to which the concept belongs. Syllogistics is a partially formalized logic that does not formalize whole statements but only the constitutive elements of premises and conclusions that represent the concepts of which they are composed as symbols. Therefore syllogistics can be defined as calculus of concepts or calculus of terms. The degree of factual truth of the premise in syllogistic logic determines the type of syllogism (apodictic syllogism follows from the axiomatic nature of premises; dialectic syllogism follows from probabilistic nature of premises). Therefore, the definition of a concept in syllogistic logic is connected with the cognitive-theoretical principles of determining the nature of thought, which is expressed by premises and its correspondence to the facts on which their truth depends. Syllogistic logic is therefore a *referential model of logical predication* and this is reflected in the understanding of the nature of the concept.

Symbolic logic is fully formalized and axiomatized logic. Its premises expressed by symbols and symbolic formulas have no meaning other than the truth-values assumed to them. The calculation is done with whole statements and not just concepts and what is calculated are the truth-values of the symbols (true or false). Symbolic logic is an *inferential model of logical predication*, which has a significant impact on the understanding of the nature of the concept. The concept here should be determined from its *calculative logical properties* because it is

part of the calculative structures of whole statements to which calculus or computation is applied.

The meaning of the concept for its logical use should be determined from its logical *or calculative properties* that this form of conceptual content possesses. A concept has an internal logical structure made up of its degree of logical generality, its interactive logical relations as a whole of the conceptual content of a thought, and the logical operations that can be performed on it.

The degree of logical generality determines the position and role of a concept in the sequences of the conceptual content of which the thought is composed (of which the structure of thought is composed) *The calculative properties* of the concept include the logical relations of subordination and subsumption, into which the term can enter according to its degree of logical generality.

A concept is a *part of a definition* and a *part of a thought* by which the predicative part of a thought determines the content of the part. A concept is not a definition, so *a concept cannot be a thought* about the essence of the object to be thought.

That the concept has calculative properties by its logical nature is also shown by the possibility of quantifying the very structure of thought, i.e. the possibility of applying quantifiers by which the term as a variable is more closely defined. A concept is a *cognitive variable* or *part of a logical matrix* in which there are no constants until its meaning is understood (semantically consciousness), that is, until something is defined or *what is an object* that the term represents in the logical structure of thought.

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3

SOME CHARACTERISTICS OF REFERENTIAL AND INFERENTIAL PREDICATION IN CLASSICAL LOGIC

Introduction

The German philosopher Immanuel Kant thought that *every logic is inferential* and *discursive* (analytical a priori), but that *not every logic is referential* and *semantical* (synthetical a priory). Only logic that deals with the objects (*Gegenstands*) of thought which exists in the sensory world of experience, and not only with pure logical forms of thinking, is referential. Such kind of logic is *transcendental logic* whose basic motto is: "Gedanken ohne Inhalt sind leer, Anschauungen ohne Begriffe sind blind. " (Kant, 1976: 94-105)

The semantic synthesis of the a priori concepts of reason (*Verstand*) and the objects given in the experience is the main question of transcendental logic that was to be solved by *transcendental deduction*. But the main problem remains: how to perform semantic deduction of transcendental ideas of mind (*Vernunft*) and their synthesis with objects if ideas do not have sensory objects in experience… than in some other domain, in the domain of possible experience, in the domain of possible discourse and variable referentialism, i.e. in the domain of synthetic inferentialism based on transcendental apperception! Synthetic judgments a priori are not possible as a referential discourse of concepts but only as an inferential syntactic schematism based on formal equivalence or in the unconditional unity of concept and object provided by the imagination of the transcendental Self.

In his critical approach to ordinary (*allgemeine*) logic Kant has characterized Aristotle's syllogistic logic as non-referential logic, and his own transcendental logic as both inferential and referential logic. (Kant, 1976: 15) But is that so? Kant did not experience the development of symbolic and mathematical logic and could not define from this new point of view which logic is referential and which is inferential. Thus his transcendental logic as a "critique of pure reason" was considerably impoverished! From the standpoint of symbolic and mathematical logic,

Aristotle's syllogistic logic was more referential, that is, inferential and referential at the same time!

There is a definition that reduces the whole of logical science (*Wissenschaft der Logik*, *The Science of Logic*) to the term "logic" which claims that “logic is the science of constructing a correct conclusion in the process of reasoning and valid proof in the process of proving". In addition, the “concepts", the "judgments", and the "conclusions" are defined as "forms of valid thought" that participate in construction of the "definitions" and the "proofs". On the other hand, logic, although a completely autonomous philosophical and scientific discipline, in its implementation, however, depends on two very important scientific fields: the science of language or "semiotics (syntax, semantics, pragmatics) " (Carnap, 1948: 8-9) as a way of expressing its forms and materialized in natural or artificial language, as well as from mathematical science (algebra, arithmetic, set theory and function theory) as a type of logical / mathematical operations performed on logical forms (Boole, 1854; Peano, 1889; Frege, 1879; Russell, 1900; Hilbert, 1930).

The above reduced definition of concept "logic" might be adequate if the overall mathematic science could be reduced to general algebra in the claim that "algebra is the science of the exact solution of mathematical problems" and if the overall linguistics could be reduced to grammar as "the science of correct sentence writing." Nevertheless, logic, mathematics, and linguistics entered into an alliance that gave rise to formal or logical semantics, formal or logical syntax, and formal or logical pragmatics that marked the arrival of an experimental philosophy and a scientific epistemology that then met in epistemological strategies of analytical philosophy and philosophy of science.

However, as mathematical and linguistic sciences, so the logical science is a complex, constructed and developed scientific discipline so that there is no short and unique definition of logic that would cover in one sentence all aspects of logical research, all the ways in which logic deals with its objects, and the possibility of logic itself being the subject of its research in metalogic! In addition, any systematic knowledge that is organized around a research subject and whose knowledge is obtained by applying some research tools must meet basic logical principles, must appear on the horizon of logic and be compatible with logic.

Every *rationalized* human action and *automated* action of artificial intelligence systems (automata, machines, expert systems, and robotics) takes place under the action of the *principle of the logical* (Ibrulj, 1999,

187-214) which directs and orients it from within to achieve a certain goal which is a logical (algorithmic) consequence of previously undertaken actions and deeds or previously postulated claims. Furthermore, any description of mutually logically dependent events or happenings that stand in some, internal or external relation tends to be made in some metalogic account. Because of all this, definition of logic should be gradually reached by stating preliminary characterizations of its field of research, its subject, its principles, i.e. its application, its vocabulary and role in scientific theories and philosophical systems.

Logic is the science that establishes laws and procedures of different complexity that correspond to objects of different complexity that are being investigated. In logic, norms and rules show how logical forms should be formed and transformed and logical operations applied to them, so that the result (consequences of formation and operation) has a true value, i.e. it is true or false. Logic is the scientific research of objects called logical forms or logical relations between parts of conceptual content, which is carried out in the field of linguistic-grammatical representations (symbols) of the mentioned objects and their relations. Logic is therefore a *heuristic*, *descriptive* and *normative* science that is not independent of ontological and epistemological assumptions and that cannot be fully defined without connecting all aspects of its theoretical and practical part. Logic can be said to be a science that deals

1) with characterizing the predicate "logical" for a given linguistic form of a statement that has at least one logical operational constant (and, or, no, if, if and only if,), or such statements that have either a form of negation or a form of conjunction, or a form of disjunction, or a form of implication (conditional), or a form of equivalence (biconditional).

2) with characterizing the predicate "true" for a given linguistic form of statement that has at least one logical constant and at least one variable ($F\,(x)$), or such a form of statement that contains one or more truth-values,

3) with the research, description and revision of conceptual scheme, logical and grammatical categories (epistemological aspect, descriptive metaphysics);

4) with the origin and application of the form of valid thought (critical aspect);

5) with the semantic and syntactic structure of logical systems (linguistic-grammatical aspect);

6) with the type and existence of the entities to which the symbolic notation refers (formal-ontological aspect, formal-semantic aspect);

7) with discovering the basic laws of thought, their application in the process of formalization in the substitutional and quantification form of speech (methodological-deductive aspect);

8) with verifying the views of non-philosophical sciences (methodological-inductive aspect);

9) with the contextual analysis of the use of symbolic systems (pragmatic-semiotic aspect),

10) with translating the idiom of natural languages into the canonical notation of artificial languages.

Therefore, from the above, it is shown that logic for its subject has not only valid forms of thought and their application, but also deal with ontological and epistemological assumptions (Dewey,1938), or with inferential, referential and pragmatical models of the logical pragmatism in epistemological strategies of philosophy and science (Ibrulj, 1999).

Logic as a Calculus with Words in Natural Language

The traditional approach to logic starts from the fact that logic is exclusively a philosophical discipline that deals with the correct conclusion, i.e. research of the form of valid thought and their application in the process of forming evidence of arguments. As a philosophical discipline, logic is today reduced exclusively to calculus, to the so-called formal monotonic logic as the basis of formal argumentation in the medium of natural languages (*soft computing*, *computing with words*, *fuzzy logic*) or to formal symbolic logic in the medium of the languages of symbolic notation (*crisp logic*).

The development of epistemology and cognitive science (cognitive psychology, computational linguistics, computational science, informatics), and the development of multivalued logic (Łukasiewicz, 1963), modal logic (Kripke,1972), fuzzy logic (Zadeh, 1968), logical programming, computing with words (Zadeh, 1987) and soft computing,

these scientific disciplines have taken over scientific research and explanation of cognitive processes, construction the procedure of defining objects (entities) in homogenized and hybrid contexts (Rieger, 1999) and therefore largely defining the functioning of logical and linguistic competence in humans.

Now the rational and linguistic competence of intelligent systems (animals, humans and machines) is studied experimentally in connection with neurobiological processes (John R. Searle, Patricia Churchland), mental activities and their ability to manipulate symbols (Jerry Fodor, Paul Churchland), and not only through introspective and hermeneutic insights of man.

The traditional approach to logic can be called a *dichotomous approach* because the existence of an object or entity of cognition (subject content and subject form) is taken as completely independent and separated from their conceptual or intellectual existence (logical content and logical form) as well as their linguistic representation (linguistic content and linguistic form). This approach has created basic dichotomous categories of traditional logic and traditional epistemology such as substance vs. accident, subject vs. predicate, form vs. content, a priory vs. aposteriori, analytic vs. synthetic, empirical vs. transcendental, particular vs. universal.

The understanding of logic created on these dichotomies was a consequence of the close connection between logic and metaphysics in the pre-Socratic, Platonic and Aristotelian traditions. Logic was understood here as tool (*organon*) of deduction from the principles set by metaphysics and about which logic could say nothing. Metaphysics was in charge of finding principles, especially the *first principles* and the *first causes* (Aristotle, M. 982 a 33), and logic was only in charge of deduction or derivation from such *true* principles. That is why metaphysics was the *first philosophy*, physics the second philosophy ... and logic itself was only an *organon* or an *instrument* of deduction and derivation that uses logical laws and rules (Aristotle, *Prior* and *Posterior Analytics*).

Metaphysics also included the proof science (analytics, syllogistics, apodictics) which dealt with the logical (formal) causes of the truth of propositions, while metaphysics as the "first philosophy" provided all scientific fields with knowledge of the first causes and first principles of being, i.e. knowledge of being as being (τὸ ὂν ᾗ ὂν) (Being).(Aristotle, M. 1003 a 21). Ontology as onto-theology set the being (what is) and its structure, and it remained for logic to correctly map that structure into its categories / structures with the help of concepts and terms (Aristotle, *Categories*). The metaphysical concept proceeded from the system of the

veritative being that is, from the connection and mutual conditioning of true expression and necessary existence. In this system of veritative being, the theory of truth and the theory of the meaning of essentialist logic are expressed: in one statement, "true statement" that something belongs to something means "necessarily being" in reality that way; and "necessarily to be" in reality so-and-so means "to true statement " that it is so-and-so. This concept of logic includes the definition of the concept as a valid thought about the essence of what is being thought about.

Necessary or accidental existence of object and its properties is expressed in traditional logic as a necessary or accidental affiliation of predicates to one subject, or as a necessary (synonymous) or accidental (homonymous) prediction (affirmation or denial) of a property to a subject (Aristotle, *Categories*). So the dichotomy between what is necessary (what exists by itself) and what is accidental (what exists by something or because of something else), which is set as an ontological difference between the being as being and singular being, is then carried out in both the conceptual and linguistic plane of cognition. Traditional logic is an integral part of traditional (essentialist, metaphysical) epistemology in which the central concept is the logical foundation or logical justification of true knowledge or cognition. In this concept, the truth of a thought or statement can be established if its logical justification can be found, i.e. if it is possible to find a set of true thoughts or statements from which, by applying logical rules of inference, the claims or thoughts in question can be derived. The proof consists in the formation of a chain of connected claims that logically follow from each other and into which nothing sensual, i.e. no experience and nothing individual, enters.

The definition of a subject in the traditional approach to logic is essentialist. A definition is a judgment that determines the content of a concept (notion), that is, gives an answer to the question of *what something is* (τί ἐστιν) or what is the essence of something. At the same time, this means that the object has some substance (οὐσία) of its own or some all-time essence of its own (πρωτη οὐσία), and that the meaning of the word just communicates or expresses that essence. This connection between the object, its concept and the meaning of the word in use has led to semantic paradoxes such as the liar: when a Cretan says: "All Cretans lie" then that judgment is true and false at the same time.

In this sense, the notion of formal logic (συλλογισμός, ἀναλυτικά πρότερα) is conditioned by the understanding of the relationship of parts of the thought content expressed in natural language. This relationship is established as a relation of that part of the thought content which

precedes (antecedents) and that part which follows (consequent) and which stand in a cause-and-effect relationship. This relationship implies the construction, reconstruction or deconstruction of parts of the thought content according to the logical relationship that can be established between them: as a *subsumption* of objects under a concept or as a *subordination* of a subordinate concept under a concept of a wider scope.

In this sense, formal logic can be defined as a formal (from the given form of conceptual content) relationship of some content whose parts can be divided into some units that have *different levels of logical generality*: narrowest (individual, ὀν, οὐσία, ἀτομοσ, ἕν), middle (species, ειδοσ), widest (genus, γένοσ) of which, within a sentence or judgment (λόγοσ, λόγοσ ἀποφαντικόσ), take the position of a subject (in linguistic predication) or a subject (in logical predication) or a substrate/ substance (in metaphysical predication).Because there are formal rules of composition of this content that apply to any content and which due to their application can lead to the truth of the statement, this type of truth obtained on the basis of valid manipulation of parts of the content is called logical or formal truth.

Partial Formalization of the Logic: Syllogistic Logic

The syllogistic system of inference (συλλογισμόσ) and proof (ἀποδικτική) is an Aristotelian formalized system based on

(1) Formal-logical principles or laws of thought
(2) Formal-logical differentiation of the concept of identity
(3) Predicative schematism of concepts that form the structure of judgment.
(4) A quantified scheme of logical predication
(5) The logical relations of subsumption and subordination
(6) Logical operations of affirmation and negation
(7) Logical schematism of predication

Formal logical principles (ἀρχή) or laws of thought are the standards or rules of formation and use of thought forms in their intuitive-practical and scientific-theoretical application either in natural language or in artificial language. The purpose of the application of logical laws or laws of thought is the consistent noncontradictory formulation of simple and complex thoughts in affirmative or negative form and the homologation of predicates in relation to a given subject of statement.

Logical laws are not laws of nature (Frege). Logical principles or laws of thought are logical truths or logical rules, or logical generalizations by which or in accordance with which is possible to

(1) deduce a valid and correct inference , that is

(2) deduce the conclusion (drawing conclusions from the given premises),

(3) draw correct, valid and true conclusions.

By logical principles or laws of thought, different authors meant different things (different objects), but in the traditional sense, there are four laws of thought

- (PID) principle or law of identity, symbolically expressed in traditional logic A = A or A is A; in the notation of modern logic the corresponding symbol is $p \equiv p$
- (PC, PNC), principle of contradiction (or: the principle of non-contradiction); in modern logical notation $\neg (p \wedge \neg p)$.
- (PEXM, PEXT) principle of exclusion of middle or third; in modern logical notation the formula $p \vee \neg p$.
- (PSR) principle of sufficient reason.

Logical principles or logical laws are static generalizations or constructive schemes of thought processes of comprehension, judgment, inference, such as natural laws of static generalization of natural processes in space and time. It is reasonable to ask a questions: Are there any changes in logic at all ? Are new standards possible? Whether the laws of logic change or only the ways of their application or only the ways of their notation.

Characterization of logical principles is done according to the area of their application and according to the objects to which they are applied, which can be existent entities and virtual (subsistent) entities. The following characterizations should be stated: (1) in the ontological sense, (2) in the formal logical sense, (3) in the epistemological sense, (4) in the linguistic-grammatical sense, (5) in the logical-mathematical sense.

The formal-logical differentiation of the concept of identity in syllogistic logic is based on the distinction and combinatorics of the three concepts of identity that establish different predicate schemes (synonymous predication, homonymous predication and paronymous predication).

IDENTITY (type-1) in the sense to be of the SAME-GENUS (things that belong to the same genus, that is, they have the SAME ESSENCE: ὧν μία ἡ οὐσία)(Aristotle, M.1021 a10). According to this concept of identity in the predication scheme, subject and predicate are synonymous things, i.e. they have a common name (name of the genus to which they belong) and therefore have the same definition (the same notion of essence marked by name, because genus is the notion and essence of these things). All beings belonging to the genus of living beings have a common name: "animals", and every being that is a living being has the same definition of "living" or the same notion of living in its provision. This does not mean that they are physically identical beings (e.g. man and ox).

IDENTITY (type-2) in the sense to be of the SAME-SPECIES (things that belong to the same species, that is, they have the SAME QUALITY OF ESSENCE: ὧν ἡ ποιότησ μία). According to this concept of identity in the predication scheme, the subject and the predicate are only the homonymous things, i.e. they have only the same species name, they do not belong to the same genus, and they have a different definition.

IDENTITY (type-3) in the sense to be of the SAME - NUMBER (things that have the same number, that is, things that have EQUAL QUANTITY: ὡν τὸ πόσον ἕν). According to this concept of identity in the predication scheme, the subject and the predicate are only the things which are identical in number.

Logical operations within such types of predication have different logical operations from the point of view of their apophantic form: propositions that are apophantic affirmations or apophantic negations of the relationship of subject and predicate are logically necessary consequences in a synonymous predication, while those in homonymous predication are probable or accidental consequences.

Logical Relations of Subsumption and Subordination. *Subsumption* (falling of an object under a concept, inclusion of an individual object in a type or class) is a logical operation of bringing or falling (inclusion) of an individual object under a concept. *Subordination* (subordination of a concept under a superior concept, generation of subordinate genus and species) is a logical operation of subordination (inclusion) of one concept under a superior higher concept. Here, logical operation is determined by the relationship between a narrower and a broader concept, i.e. the concept of a lower degree of logical generality and the concept of a higher degree of logical generality.

Logical operations of affirmation and negation. Affirmation (confirmation, attribution, predication of a property to a subject: τί κατά τινόσ) is an apophantic form of pronouncing or affirming the affiliation of a property to one subject in whole or in part. Negation (denial of a property to a subject, denial of belonging to a subject, τί ἀπό τινόσ) is an apophatic form of denial or denial of a property to a subject in whole or in part.

Logical schematism of predication. The syllogistic concept of truth and validity of the conclusion is based on the predicative scheme and its models of the relationship between the subject and the properties of the first order, the predicate in the role of the subject and the second order predicate, or analogous schemes of paronymy. The type of syllogistic schematism depends on the type of identity by which one predication is formulated. There are three basic predicative schemes within the syllogistic system of formalizations that allow inference and proof

Syllogistic logic is determined by the predicative form of judgment and inference. Synonymous and homonymous predication differ in categorical and intercategorical predicative schematism (Aristotle, *Categories*, 1a 1-15). *Synonymous predication* is a vertical and continuous or subordination-determined predication of subordinate and superior predicates (species and genera) which are pronounced as predicates to all subordinate entities / genera, species, individual beings. *Homonymous predication* is a horizontal and discontinuous predication or subsumption of entities from different categories where predicates, genders and species are combined that do not fall under each other, but are properties and differences that are random members of a subject or random properties of a subject. *Paronymous predication* is a predication by analogy between things: according to the term for the property of bravery, a man received the predicate brave, according to the term grammar, someone was called a grammarian, according to the term philosophy, someone was called a philosopher.

Syllogistics in Figures of the Components of Judgements: Calculus of Terms (Concepts)

The logico-linguistic apparatus of syllogism or indirect deductive inference in the schematism allowed by natural language is set out in Aristotle's work "First Analytics (Αναλυτικὰ πρότερα). The schematism of the premises from the point of view of quantity (major and minor) depends on their degree of logical generality: one is always universal. Schematism of the premises from the point of view of the arrangement of terms: the premises contain three terms, two of which

are predicates (genus, species) and one is an individual term. The notion of species (εἶδοσ) is the middle notion: it is the cause of the truth of the conclusion (Aristotle)!

Elements of syllogistic structure (judgements)

MP - the Major Premise of the conclusion or U - PREMISE (universal P)
mP - the minor Premise of the conclusion or P - PREMISE (particular P)
C - Conclusion; logical result of calculus; logical score

Elements of structure of syllogistic premises (terms, concepts)

S	[subject / minor term]:	TERM 1.
M	[predicate - 1 / middle term]:	TERM 2.
P	[predicate - 2 / major term]:	

TERM 3.

The table below, known as the syllogism figure, shows the relationships of the three terms in the syllogism, which are arranged in two premises and a conclusion. The notion of subject (minor term) is narrower in scope than the notion that first encompasses it in the system of provisions (middle term), and this is narrower in scope than the notion that the second encompasses it in the system of provisions (major term). The subject is always defined with two terms that have a wider range than it: the minor (first) predicate and the major (second) predicate. This scheme is the complete structure of the predicate model of deduction in Aristotle's logic.

Aristotle's key to interpreting the predicate scheme in a syllogism is a mode that shows how one term is contained in another term that encompasses it: (1) as a part of the whole that generically (vertically) encompasses it below itself, (2) as a whole as a whole

The second key to the interpretation of the predicate scheme in the syllogism is the mode of identity on which the predicate scheme is constructed: (1) (2) (3)

Minor Term	(S) = Subject of Conclusion	T 1
Middle Term	(M) = Term that occurs in both premises	T 2
Major Term	(P) = Predicate of Conclusion	T 3

	I.	II.	III.	IV.
Major Premise	M P	P M	M P	P M
Minor Premise	S M	S M	M S	M S
Conclusion	S P	S P	S P	S P

The table below shows the relationships of three terms of different levels of logical generality or three terms of different scope. The sign < indicates that the term on the left is a lower level of logical origin than the term on the right of the sign.

A term that has a lower level of logical generality is included in a term that has a higher level of logical generality.

The general scheme of the relationship of these three terms is as follows:

T1 <T2 <T3> T2> T1.

	I.	II.	III.	IV.
Major Premise	T2 < T3	T3 > T2	T2 < T3	T3 > T2
minor Premise	T1 < T2	T1 < T2	T2 > T1	T2 > T1
Conclusion	T1 < T3	T1 < T3	T1 < T3	T1 < T3

Two Translations of Syllogistic Figures in the Form of "Aristotle's Sudoku"

1 2 3 2 1
S < M < P > M > S

I.F	**Barbara**	**Celarent**	**Darii**	**Ferio**
MP	M > S	M > S	M > S	M > S
mP	P > M	P > M	P > M	P > M
C	S < P	S < P	S < P	S < P
II.F	**Cesare**	**Camestres**	**Festino**	**Baroco**
MP	P > M	P > M	P > M	P > M
mP	S < M	S < M	S < M	S < M
C	S < P	S < P	S < P	S < P
III.F	**Darapti**	**Datisi**	**Disamis**	**Felapton**	**Ferison**	**Bocardo**
MP	M < P	M < P	M < P	M < P	M < P	M < P
mP	M > S	M > S	M > S	M > S	M > S	M > S
C	S < P	S < P	S < P	S < P	S < P	S < P
IV.F	**Bramantip**	**Camenes**	**Dimaris**	**Fesapo**	**Fresison**	
MP	P > M	P > M	P > M	P > M	P > M	
mP	M > S	M > S	M > S	M > S	M > S	
C	S < P	S < P	S < P	S < P	S < P	

Here it is clearly shown how the terms in the premises of the syllogism and in the conclusion relate from the point of view of the logical relations

of *inclusion* and *exclusion* into each other, ie from the point of view of the logical relations of *subsumption* and *subordination*.

S < M < P > M > S
T1 < T2 < T3 > T2 > T1

I.F	**Barbara**	**Celarent**	**Darii**	**Ferio**
MP	2 > 1	2 > 1	2 > 1	2 > 1
mP	3 > 2	3 > 2	3 > 2	3 > 2
C	1 < 3	1 < 3	1 < 3	1 < 3

II.F	**Cesare**	**Camestres**	**Festino**	**Baroco**
MP	3 > 2	3 > 2	3 > 2	3 > 2
mP	1 < 2	1 < 2	1 < 2	1 < 2
C	1 < 3	1 < 3	1 < 3	1 < 3

III.F	**Darapti**	**Datisi**	**Disamis**	**Felapton**	**Ferison**	**Bocardo**
MP	2 < 3	2 < 3	2 < 3	2 < 3	2 < 3	2 < 3
mP	2 > 1	2 > 1	2 > 1	2 > 1	2 > 1	2 > 1
C	1 < 3	1 < 3	1 < 3	1 < 3	1 < 3	1 < 3

IV.F	**Bramantip**	**Camenes**	**Dimaris**	**Fesapo**	**Fresison**
MP	3 > 2	3 > 2	3 > 2	3 > 2	3 > 2
mP	2 > 1	2 > 1	2 > 1	2 > 1	2 > 1
C	1 < 3	1 < 3	1 < 3	1 < 3	1 < 3

The traditional interpretation of these figures is based on their schematism of the relationship between subject and predicate in two premises and one conclusion in which according to the form of the figure

three notions of different logical generality (genus, species, individual notion) are arranged in the relations of subsumption and subordination.

The middle level of logical generality is the notion of a species that mediates between the notion of genus and the individual notion: a species is encompassed by a genus and is given all the properties of a genus, and it encompasses individually and determines it.

The roles that these three terms have in judgement are marked by the positions they can take as terms

Minor Term	(S) = Subject of Conclusion
Middle Term	(M) = Term that occurs in both premises
Major Term	(P) = Predicate of Conclusion

The position of the middle term is decisive for deduction, because, as Aristotle states in every conclusion, the middle term is the cause of the truthfulness of the judgement. In courts that are premises, all terms (major, middle, minor) can have all the roles, be in the position of both subject and predicate. Only a minor term and a major term can be in the conclusion, and that is strictly a minor term in the position of a subject of the judgement and a major term in the position of a judgement predicate. The middle term does not appear in the conclusion.

Aristotle's key for the construction of the mode of syllogism. It is made from the relationship of parts of statements that have calculative logical properties: the logical degree of generality (genus, species, individual, species property, property of the individual) in the role of subject or predicate; logical relations of subsumption and subordination of concepts, from logical operations of affirmation and negation. By applying these elements of the syllogism, the figures and modes of the syllogism are constructed

1. To be a subject (ὑποκειμένον) - to be a predicate (κατηγορουμένον) in relation of SUBSUMITION
2. To be a predicate (κατηγορούμενον) in the position of the subject (ὑποκειμένον) in relation of SUBORDINATION
3. To be an adverb (κατηγορούμενον) in the position of an adverb to a subject (ὑποκειμένον) who is an adverb
4. To be contained in the subject - to be expressed about the subject
5. To be individual - to be a species, to be genus, to be a difference
6. To be a genus that is below the genus (differences of vertical genera)

7. To be a genus that is not a position below a genus (differences of horizontal genus)

Rules for interpretation by the form of predicate scheme. To be a mode of syllogism that has the structure of a synonymous predication (serial-vertical predication - generic predication - homologization); necessary belonging – definition. To be a mode of syllogism that has the structure of a homonymous predication (parallel. Horizontal predication); accidentally belonging to the subject - division of the genus into species.

Complete Formalization of the Logic:
Symbolic Logic

The modern approach to logic starts from the fact that logic is a scientific discipline that is identical to mathematics (Boole, Peano, Frege, Russell) because of its procedures and laws, and more recently that logic is identical to the pure logical syntax of language (Carnap,1937: p. xiii) of artificial (symbolic) language that allows computer logic programming procedures and their application.

Accordingly, mathematics, which is based on axiomatization systems (Hilbert, 1930), is actually only a more developed logic, that is, the whole mathematics can be reduced to a few basic logical laws (Russell, 1905) or to several logical procedures (algorithms). Since every natural science, when it reaches a certain level of knowledge about its subject, necessarily sets the principled or axiomatic basis as the starting point of its further knowledge (Hilbert, 1970:156), so every science necessarily requires logic as its syntax or as its (scientific) language (Carnap, 1937: xiii).

In the modern approach to logic, a term is taken as a symbol (simple or complex), a judgment or statement is taken as a function (Frege, 1879), truth is seen as the truth value of one statement or one set of related claims, proof is taken as a formal system, algorithm or system of procedures, validity is taken as the consistency of a set of statements, truth of propositions as its coherence.

At the same time, this approach is based on scientific research of logical procedures for solving problems, making the right decisions, making the right choice. Logical syntax is taken as the language of science (Carnap, 1937), that is, one artificial language (symbolically) is taken as a tool for

expressing multiplied logical generality, and the logical operations that prevail between representations of these logical objects become a large part of mathematical derivation. It is therefore necessary that the correct definition of logic in addition to philosophical contains a scientific characterization.

This approach to logic can be called a unifying or non-dichotomous approach, i.e. an approach that connects and connects formal logic and formal semantics and thus enables the production of formal-logical entities or a formal ontology from whose interpretation semantic paradoxes disappear.

Thus, the distinction between objects, concepts and terms lost its meaning and passed into the research of semantic and structural properties of formal deductive and inductive systems.

Thus the theory of natural classes, fundamental to the metaphysical concept of logic and to the formulation of logical categories, and the theory of sets, fundamental to the symbolic and mathematical concept of logic and to the formulation of transcendental categories replaced by the theory of virtual classes which became fundamental to the computer or computer concept of logic. This process brought about the transition of the interpretation of formal systems from an object-bound variable to a substitutive interpretation of a variable as a virtual class. (Quine, 1986: 72).

The modern approach to logic understands formal logic as the unity of formal semantics and formal ontology as it explores proper inference and valid proof through formalizations of whole statements (systems of symbolic representation) rather than just terms as in traditional logic (Frege, Russell, Wittgenstein).

A new or mathematical (symbolic) logic was created by Gottlob Frege's work on theidea of *Begriffsschrift* (concept letter), the discovery of the account of statements and the account of predicates, and the treatment of statements as functions. Bertrand Russell, Ludwig Wittgenstein, Rudolf Carnap, Alfred Tarski, and more recently Willard Van Orman Quine have made important contributions to the development of mathematical logic.

This concept of logic is an integral part of a different epistemology or naturalistic epistemology. Within this epistemology, the truth of a thought or assertion is grounded if it is possible to find in a (past) experience of a thing or fact or process a justified belief that must stand in connection with a network of beliefs that have the same logical form

(because they always connect causes and consequences in the same way in the knowledge of an object, property, fact, state of affairs).

The definition of the subject in the modern approach to logic is functionalist. A definition is a judgment that determines the use of a concept. The definition provides an answer to the question of how something works or how it works in an empirical environment and in connection with other empirical concepts.

In connection with this definition of the concept, a different definition of the meaning of a word has been developed: "the meaning of a word is its use in the language". (Wittgenstein, 2009, p.25e §43). Modern (symbolic or mathematical) logic as a way of avoiding and solving semantic paradoxes that arise in object language has developed formalized systems of interpretation, translation and paraphrase of object language expressions in meta-language expressions.

In this way, hierarchies of formalization emerged as a relationship of pure and descriptive syntax in which the logical and the linguistic and the ontological are harmonized at different levels of their generality, i.e. at different levels of formalized systems that translate variables into constants and open expression schemes or expression functions. into statements that have meaning and significance (truth value).

Logical ability is the formal ability and skill of manipulating with symbolic structures that represent parts of the logical content of one thought or one complex whole of conceptual content. This formal ability in use is referred to as logical calculus or calculation by logical forms. Conclusions and proofs are viewed as a valid calculation or calculation by symbolic representations (symbols, notation, signs) of conceptual content, i.e. as a construction of logical functions based on law and application of logical rules of establishing relations between parts of thought (concepts) and whole thoughts (judgments, statements).

Each logical form is determined by its capacity for logical functioning within the whole of a calculative procedure (calculations, computations, inferences, inferential transformations). A logically valid form of opinion (concept, judgment, conclusion, proof) is a logical form that has the following properties:

1. One-meaning
2. Truth value
3. Ability to integrate
4. Ability to distribute
5. A certain degree of logical generality

6. Translatability into another logical form by retaining the truth value
7. Assumption and interchangeability of the role of the subject or predicate
8. Ability of formal construction, reconstruction and deconstruction (formation, transformation, expansion and reduction)

Logical function as a general form of predication. In syllogistic logic, the main role in the conclusion and proof was played by the judgment (logos apofantikos) which affirms or denies the fact that one property belongs to one subject. The quantity and quality of the premise, the place and position of the subject and the predicate in the premises determined the formal derivation of the conclusion. But the deduction was determined in advance by the quantity and quality of the premise that determined the positions of the terms in them and their logical relations.

From the beginning, symbolic logic removed judgments and their subject-predicate structure from the logical calculus and replaced it with the mathematical form of statements as a logical function that has an argument and a predicative part that are equally subject to quantification and determination of their semantic and syntactic properties.

The reduction of logical statements in symbolic logic has turned judgments into logical functions that are themselves a symbolic representation or construction composed of symbols that have their positions and roles (constants or variables) and operational properties (logical constants). Thus, all referential or semantic properties disappeared from the logical calculus and the syntactic and structural properties of symbols and logical operations came to the fore, ie the inferential construction of the whole of conceptual content, its possibility of translating or reconstructing into other symbolic formulas using other logical operations (expressing disjunction by conjunction and negation and expressing conjunction by disjunction and negation,…).

Thus, the predicative form was no longer semantic but syntactic, it was no longer based on subordination and subsumption but on the calculable properties of symbols and their representation, which introduced procedures for determining (granulation or unification) of logical variables by their quantification in atomic or complex logical functions. The predicative form in symbolic logic is a logical function through which the calculus of statements, the calculus of predicates, the calculus of classes, the calculus of relations are carried out.

Equivalence of logical formulas as a concept of identity in symbolic logic. Symbolic logic drastically *changed the concept of identity* and the *concept of predication* based on it from Aristotelian *generic identity* and *synonymous predication* based on the genus and species properties into a syntactic concept of identity that enabled logical identity as syntactic equivalence or as a tautology of symbols. Thus, genus, species and individual identity as a semantical (referential) relation between things or beings and words disappeared from the logical calculus, and identity as the equivalence of symbols (*x* means the same as *y*) were introduced into the logical calculus, which in different ways denote the same conceptual content or its sequences which by their logical structure provide evidence without reference to empirical givens.

Symbolic (mathematical) logic has enabled the development of artificial intelligence, ie the development of artificial languages and the automation of deductive systems, making it the main instrument of modern technology based on *logical programming*.

Truth-value as the meaning of symbols. What counts in the symbolic logic is not the meaning of words because the words of natural language are reduced to symbols, that is, whole sentences are represented by symbols. The only meaning of symbols is what is attributed to them in the process of deduction: that they are true or false, that symbols are therefore representatives of the true values of the statements they stand for. Their truth values of ptopositions represented by symbols are what is calculated or computed in formal symbolic logic, and the factual or material truth of the statements that the symbols represent is not determined by logic but by exact emoirical sciences.

Extended Characterizations of the Logic

According to Scholz (1961:172) there are several very important characteristics of symbolic (mathematical) logic as formal logic that distinguish it from other types of formal logic such as Aristotelian syllogistics or Stoic propositional logic. Here we will briefly paraphrase them.

1) Symbolic logic is the first stylistically pure type of formal logic that deals exclusively with pure forms free from any psychological contents of consciousness.

2) Symbolic logic is the first exact formal logic that is

a) precisely defined its axiomatic material so as to coincide with the precision and clarity of the axioms of mathematics;
b) the first logic that clearly defined the rules by which the propositions and concepts derived from axioms are obtained,
c) by applying symbols her propositions are as precise as those of mathematics;
d) unlike non-symbolic formal logics that are able to formulate their statements, symbolic logic is able to *formalize* statements;

e) is able to formulate non-Aristotelian syllogistic rules by symbolic notation;
f) is able to explain what is happening in the judgements silogisation procedure;
g) the first is a formal logic that is able to accurately analyze the role of copula in different types of statements from the point of view of applying the rules of reasoning;
h) is the first formal logic that gave an exact analysis of existence that can be a predicate of an individual object, express the existence of properties and the existence of relations;

3) Symbolic logic is the first formal logic that was developed strictly synthetically, ie the first type of logic that developed methodically from a simple to a complex form;

4) Symbolic logic is the first perfect formal logic, ie the first logic that gave us complete inferential rules that are necessary for the development of modern mathematics;

5) Symbolic logic is the first experimental logic, i.e. the first logic that investigated systems of syllogistic rules that are not identical with Aristotle's;

6) Symbolic logic has freed us from psychologism, ontologism, the portage of evidence-based evidence;

7) Symbolic logic analyzed precisely the exemplary techniques of negation and created forms of statements in which negation refers accurately and precisely to the element of the statement that is being denied.

When all that has been said about the broadly branched science of logic and about formal logic, which is only a reduced part of it, is taken into account, then only some preliminary characterizations of the notion of

logic can be given. “Logic”, taken in the context of logical science, is a term with multiple meanings (Ibrulj, 2005) that characterizes

(i) intuitive ability to properly use thought forms laid down in natural languages and intuitive ability to adjust the semantic properties of natural languages and thought contents with appropriate logical sentence structures that have the character of material implications made in object-language. - we all have some logical intuition when we speak, a feeling that allows us to express thoughts without contradiction or to avoid tautology

(ii) the calculative skill of using the formal features of rational language of human thought, applying logical addition and multiplication operations to produce integrations and distributions of subjects and predicates of statements or whole statements into well-ordered symbolic structures that can be transformed into descriptions or symbols generalities or translated into statements that have the character of formal implications in meta-language.

(iii) the science that deals with research, therefore: discovering, forming, transforming, and using ideal thought objects [logical forms] of different complexity and different levels of generality, materially represented in different types of semantic characterization and different hierarchies of structural characterization;

By "thought objects of varying complexity" we mean the logical forms concept, judgment, conclusion, definition, proof, context, theory, theoretical models. By "different level of generality" we mean the range of representation that a logical form can have as a variable within a theory.

Logic is the science within which objects of varying complexity are explored, and therefore logic is the science of hierarchy the characterization of the logical [“true on the basis of form”]. Within logic as well as within mathematics it reigns

[1] hierarchy of complexity of objects under investigation,

[2] hierarchy of languages (notations) by which these objects are characterized (described)

[3] hierarchy of object operation techniques used for this purpose.

(iv) the set of techniques for characterizing the true value of different types of “the logical one” [“true on the basis of form”], some of which are primitive or unconditionally true (unconditioned); some types

are characterized as unilaterally conditionally true (conditioned), some types of logical are doubly or bilaterally conditioned in their truthfulness (biconditioned); some are multi-conditioned (multiconditioned-polyvalent)

(v) the scientific tool of natural and social sciences that establish a network of analytical hypotheses on the subject of its interest and deduce from them theoretical statements that connect into consistent theoretical units by applying standard and non-standard techniques of quantification, substitution, unification, etc.; or inductive procedures integrate the characterization of the subject of the research, which turns into conclusions; the tool and language with the help of which individual sciences formalize or axiomatize their research and the results of their research - it is logically laid down in deductive systems of formation and transformation, in derivations and procedures of symbolic notation and notation systems. It does not depend on the reference or the extension, it does not depend on the ontology, it is virtual and the variable is only a substitute interpretation

(vi) the artificial programming language of procedures of constructed technical systems based on application of artificial intelligence algorithm, control of degrees of realization of inference, or based on non-monotonic logical operations, primarily a new type of negation (negation-as-failure) [LOGIC PROGRAMMING]

(vii) the philosophical discipline that produces a variable critical and analytical idiom or methods of interpreting and re-interpreting epistemological and ontological assumptions of theory, or that produces the principle of logic as an ideal matrix for identifying and re-identifying the validity of logical principles in any procedure leading to any theoretical model or meaningful description in philosophy.The logical that logic deals with depends on the critical and analytical idiom (ontological, mathematical, pragmatic), i.e. it depends on the choice of ontological and epistemological assumptions of a theory. The logical is contained in the language of theory, in the whole of the statements that a theory formulates in relation to its subject. It depends on the object-related variable, the reference, or the extension.

Here we have listed seven types of characterization of logic, highlighting aspects of the logical that is its subject. Simply put, logic deals with the characterization of (1) thoughts or thought content expressed in (2) statements that are presented (expressed or uttered) in a form in which (3) the existence or non-existence of a state of things or facts is claimed. The ways in which logic deals with these subjects are also different: it reveals valid forms of thought (logical forms), characterizes their type of

generality, and finally sets the rules and laws of their formations and transformations into other forms of higher or lower type of generality. Conception (formation and explication of the concept) judgment, inference, proving are only forms of manifestation of logical methods and techniques, correct or incorrect application of logical laws, principles and rules to the stated logical forms in the process of inferential thinking or construction, reconstruction or deconstruction of everyday discourse, scientific theories or philosophical systems.

Conclusion

Logical science can be reduced and simplified to formal knowledge of manipulating with concepts, with conceptual relations in statements, with operations on concepts and their properties only because logical forms have a calculative capacity that includes both quantitative and qualitative properties of operations and logical relations. The overall logical science taken in this way is reduced to formal logic (syllogistics, logic of propositions, logic of predicates) to which quantification forms are added.

Ontologically oriented logic (*referential model of logic*) such as syllogistics rests on a specific complex of three types of identity and three types of predication. Ontologically oriented syllogistics that is partially formalized in apodictic syllogism rests on the concept of truth as correspondence: the conditions of truth of conclusion are given in the premises structure and arrangement of terms, but the conditions of premises truth are given in the extra logical concept of truth of judgements as their correspondence with facts of experience. The meanings of a premise are the meanings of terms that have the role of names of subjects or descriptions for predicative parts.
Symbolic logic (*inferential model of logic*) requires the complete formalization of the deduction system, either by axiomatization or otherwise, requires formal language (syntax and semantics), requires formal rules of deduction. The conditions for the truthfulness of conclusions and evidence in symbolic logic are the implications that exist in the whole of the conceptual content of thought as its parts. This whole of thought (one statement, atomic or complex) is symbolically represented together with its conditions of truth-implications (conditional). The meanings of symbols are logical objects and symbols have no meaning other than the truth value that is postulated to them (true-false). Symbolic logic drastically changes the concept of identity and replaces it with the concept of equivalence between symbols or signs.

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4

LOGICAL IDENTITY: A HOLISTIC APPROACH

Introduction

In Quine's (1980) version of the philosophical explanation of how world, language and thought work together is established the chain of dependency: ontology of a theory depends on the language; the language of the theory depends on the conceptual scheme of language users; the conceptual scheme of the language users depends on the idioms of identity and quantification; the idioms depends on the culture in which are adopted by the natural language; the culture is dependent on psychogenetic and ontogenetic roots (Quine, 1976) of each individual. Every individual has therefore his own conceptual scheme that can be fully utilized only within a culture that shares the same ontology and the same language. A theory expressed in one particular language is not fully translatable into another language due to differences of idioms of identity and quantification ("indeterminacy of translation"), that is, and because of the ontology ("ontological relativity") or because of different inclinations of a society and a culture towards the attribution of property of existence to objects ("inscrutability of reference").Question about retrieval "objective reference" with Quine, according to Peter F.Strawson, begins with eleboration of theory and language and ends by decline in mentalism, into discovering of "psychological mechanisms" who remain in the *background* (Strawson, 2000, p.124).

This is a simplified scheme exposed relativistic and pragmatic foundation of knowledge - *the holism of knowledge* - which form from perceptual and rational blocks who epistemologically set the relation between world, thought, and language, and it is here given in general characters. If this scheme paraphrased in terms in which the world, thought and language appear directly one to other, then a chain of dependence looks somewhat different: ontological status of physical object depends on ostensive (re)actions of agents and singular parts of speech; singular parts of language depend on the idioms of identification and quantification of the language penetrated from conceptual scheme; the range of singular and existential quantifiers depends of position or level at which there is a physical existence of the object in the hierarchy

of cultural facts (as Quine said "from atom to Homeric Gods "), that is depends on what is in one culture takes as physical and what as a non-physical object; types of cultural facts depend on whether their roots predominantly ontogenetic (as part of perceptual psychology) or the dominant psychogenic (as part of mental ontogenesis).

By carefully reading the above paragraph will not miss the fact that what of the general scheme is not paraphrased in the particular is an expression of "idioms of identity". So far we have mainly followed the stream explanations given by the American philosopher Willard Van Orman Quine. His version of holism, as opposed to say, of those Donald Davidson, which is offered in the article *Reality Without References* (Davidson, 1977 In: Davidson, 1984), is reduced on the scientific theory and the conceptual scheme. The theory in Quine's kind of holism of knowledge has, as in Wittgenstein, internal and the outer limits: external border is the experience, but internal is defined by the structure of the conceptual scheme, what is the logical core theory. The subject of the judgement of experience are not individual proposition of a theory, but the whole theory all the way to its logical center, because the theory actually is a conceptual hierarchy made of ontological and linguistic hierarchy that is formed from the ontological and linguistic particulars and universals with different levels of generality. The theory is actually "equilibrium" of propositions (Quine, 1980, p. 43) who has relation with experience. This equilibrium that exists in theory could be thought of as *the equilibrium of identity* with different types of identification of identity. It is a suggestive thought of this text.

Knowledge, in Quine's theory, is doubly dependent: from ontology and from ideology. The same experience, the same ontology, in the conceptual scheme of another person may not be equally judged (Quine, 1980, p.10). The theory depends on the choice of ontology since the "one's ontology is fundamental to the conceptual scheme by which he interprets all experiences "(Quine, 1980, p.10), and on what are referential possibilities of language. Thus, Quine talks about inscrutability of reference, about indeterminacy of translation and about ontological relativity (Quine, 1960).

The holism of identity - an idea that I want to defend here – initially is , like the holism of knowledge, in reltion with the Wittgenstein's idea about the "language game" or the "life form" that contains in itself the *network of analog reactions* of mental, physical, linguistic, and social acts (Wittgenstein, 1948, In: Wittgenstein, 1960). The difference is that what would a developed theory of holism of identity - what here suggest - which should be viewed identity as *a network of parallel distributed*

reaction of identification, physical reactions, language reactions, reactions stimulated by external impact, reactions stimulated by social influences, reactions produced by ontology of first-person, reactions stimulated by ontology third person, reactions produced by social ontology in general and reactions produced by sequences or stereotypes of logical identity. Such an interpretation of identity was closer to Quine's later thinking in his book *Philosophy of Logic* as it is estimated that the substitutive interpretation of identity is more appropriate (Quine, 1970, pp.47-60) than the objects inteipretation of identity, as Quine strongly expressed in the book *From Stimulus to Science* (1995, p.91)

On the basis of Quine's slogan "No entity without identity", and on the ground that the entity for a theory that what the theory believes "what is" and what sets as existent (positum), whether it is about the Homeric gods or about physical objects, and on the grounds that the difference is only one of degree of belief in their existence, it would be possible to offer a consequential slogan: "How much identity that much of existence", i.e.: "What (kind of) identity such (kind of) entity", introducing the argumentation that it is not just about differentiated ontology or ontological hierarchy but about the *differentiated concept of identity* and about *differentiated use of the sign of identity*.

If it is necessary to get closer to the idea that I represent, and that can always open the possibility for new derivations, it must be characterized so that it becomes clear what is different from other ideas in the same area. Therefore, it is good to say the following directly: *the holism of identity is the idea o of distinguishing interactive degrees identifications of identities and hierarchies of representation that intertwine or distribute in parallel in one functionalist definition or in the function of unambiguity that connects them as a whole*. In other words, If Quine's claim holds that the ontological difference is a matter of theory and its degree of belief in the existence of entities which are engaged, then one can also argue that identity, which is within the theory attributed to these entities in the process of creation of knowledge about them, dependent on whether the identity form of the relationship between the entities to be one essence (*substantial identity-unity*), from the standpoint of a quality that entities have independently of the essence that is different (*qualitative identity-similarity*) or from the standpoint of quantity of a property which they possess (*quantitative identity-equality*). Of course, this differentiation in terms of ontology can be expressed as the distinction degree of ontological generality which attaches or ascribe to entities in one theory (in which otherwise there is nothing singular) and at the same time is depending on the hierarchy

and the capacity of logical forms that are filled with atomar propositions about given entities, and on the hierarchy of languages which are used for scoring identification of identity in the above theory.

My intention in this article is to outline some consequences of Quine thesis about depending ontology from ideology (Quine, 1980), or depending the entity from identity, or of dependency of ontology from the language. If Quine's thesis is correct, then we can expand the resolution of this conclusion and say that ontology depends on the identity or identification of the "identity criteria for conceptual schemes "(Davidson, 2001, p.184) which is constructed in theory. This means that we want to talk about *different types of identity* which adapts choice of ontology and of which depends ontology of a theory. I would like to remind here of the distinction between types of identities to which Aristotle already said (M.1021a10-15) something when he distinguished "identity of things" based on the network of concepts and words that name them and that are predicated to them (1) as homogenity / to be identical by essence, to be in same genus, (2) as specificaly identical / to be similar by species or by specific quality, and (3) as numericaly idnetical / equal, ie: synonymous identity of things, homonymous identity of things and paronymous identity of things (Aristotle, *Categories*.1a1-1a20). If, therefore, Quine's statement: "There is no entity without identity" is valid (Quine, 1969, p.27), then it could also be valid the claim "What identity such entity"

Quine spoke about this dependence as about dependence on the language of conceptual schema or idioms of identity and quantification, but under that is mostly or largely thought of idioms of quantification, or quantification of variable which dominates our entire ontology. Idioms of variable quantification, quantificational words or "variables of quantification" according to Quine (1980, p.12) are above the whole of our ontology: the terms "every", "some" and "non" are the only way our entry into "ontological commitment", or into ontological choice of a theory to which we commit from the periphery to the center, or how now I want to say, *at all levels of identification of identity*. These idioms in fact stand in the grounds of Rudolf Carnap statement that " to be mean to be part of the system "(Carnap, 1956, p.207) (Carnap thought of linguistic system or linguistic framework), and then stand in center Quine claims: "To be is to be the value of the variable" (Quine, 1980, 15). But this way of existence of objects is strongly complicated by the logical connectives within the logical calculus or within the calculus of propositions. Idioms of quantification demonstrates the scope of one fact is taken as an objective ("object bound variable "), and not what kind of existence is ascribed to the fact. This can be done, in my opinion, only by

the idioms identification of identity by which two things are identified as "identical" because they have the same essence (exist in the same genus) and common name, or because they are only named with the same name because of one property they share (or in which they participate), or because the name of one thing is derived from the name of another thing.

The idioms of identity identification are what we want to point out here. Thereby are important reasons why these idioms, peripheral and centric, harmonize and build *equilibrium of identity* in different types of predication. In particular I want to point out the following: the type of identity or type of identity identification is in the direct connection with the kind of existence that an object has before it is ascribed to him or modified or only confirmed within one theory. And that means that we adopt the kind of realism that according to John R. Searl (1998, p.11) objects have "by default". This also means that we need to rethink Aristotle's opinion in a new way that the identity is the relationship between things (ων) and not between words "without reality". This disrupts the harmony of relativism which the relationship between the world, language and thought brings Quine and for the initial ontology is taken the one that lets something be before we say by our theory that it is so-and-so.

Use of of Identity Sign

Ludwig Wittgenstein in his two main works, stronger than Frege or Russell, started an interest in research of the world-language-thought relations, actually carried out a different use of the sign of identity..

In the *Tractatus Logico-Philosophicus* Wittgenstein (1922 In: Wittgenstein, 1960) try to analyze this relation by identifying and representating it as a *structural unification of the world and language* by a special using sign of identity as a sign for the equivalence of two sets: a set of the WORLD and a set of the LANGUAGE in the form of {W} = {L}, where it is about positional classification of the facts that make up the ontology of the set {W} and the facts that make ontology of the set {L}. In doing so, their identity is postulated as a result of the mathematical criteria of equalization of the given in the method of *mutual mapping of the both sides*, which is due to the philosophy from the works of Georg Cantor over Gottlob Frege to Wittgenstein. Therefore, in *Tractatus* the set {L} is the image of the set {W} because the atomic proposition {p} is a image of the atomic fact {w}.

In *Logische Untersuchungen* Wittgenstein (1948 In: Wittgenstein, 1960) changes the sense of using the sign of identity seeking *semantic unification of the world and the language* in the form {W = L} which is analog form {L = W} and to any other which is derived from this form, where the one set consists of the one holistic *language game* (l = w) or one *form of life* (w = l), which contains a network of mental, physical and linguistic reactions as one set of facts which are in correspondence or are in analogy. The criterion of identity in this theory is given in functional definition or in use of the idiom of identification for each language game particulary. It is therefore not possible to know in advance the meaning of words in a language game as it is not possible in advance to determine its ontology: it depends on the type of stimulation, which can be physical, mental, verbal, or social. If in one language game are set all of its elements, then it is meaningful unification of all reactions. If words have no meaning or if they can not have it with regard to the criteria of identification that dominates in linguistic game, then there is no objects to which can be attributed.

However Quine's slogan "No entity without identity" (1969, p.27), can't be converted if the term entity thinks something that has existence in space and time. Conversion in this case does not apply. This is precisely the reason why is possible to accept his claim about an *ontological positum*: something that is the physical object and something that is Hermes (one of the Homeric gods) can equally be the object of a theory, and vary only the degree of existence that they are in this theory is attributed, and not belonging to them by itself. This means that the identification of their existence, be it external or internal due to the holism of the mental, regardless of the degrees of state of things and processes and the degrees of mental states of things and processes, is dependent on the conceptual scheme and that their existence within the theory is further dependent from the theory of language which represents the achieved identification. Attributing (ascribing) the meaning to the words is in direct relation to attributing the existence of objects that are identified.

Let's try to repeat Quine's *Gedankenexperiment* wit the rabbit and the identification of the identity of "rabbit stages" (Quine, 1960, pp.26-31), now in the second "type of attribution". Description of movement of the rabbit in one space made in the vocabular of natural language differs from the algorithm of movement of the rabbit which is written in the vocabular of mathematical language. It is important that in the conceptual scheme which works in the natural language of an object such as a "rabbit" (lat. *Lepus*) identifies with "rodent that belongs to the family of mammals characterized by the broken cleft upper lip, long hind

legs, a short tail and long ears "or, in the child's epistemology, as "sweet-with-large-ears-fast-hairy-hot-animal" which is "not called squirrel "than just named by word " rabbit ". In mathematical description of a natural state of things, or moving of the rabbit, object identification is not done through its definition than is done by description one of his spatio-temporal properties without specifying what is the object or what is characteristic of movement of the rabbit. The question is how an object behaves in space and time given a characteristic which is desired to be identified at various time sequences. What inside a culture that covers the space and time where this description is done means rabbit paw - it does not matter, as it does not matter in what kind of animal is one rabbit and if it's the same kind in which falls squirrel nor which specific differences exists. Even less is essential that the Latin name for the wolf is *Lupus*.

At this point, we can go through which is set Gottlob Frege (1918 In Patzig, 2008) in the article *Über Sinn und Bedeutung* wondering whether the identity is the relations what is claimed / attributed (by a theory which contains unambiguous symbolic language) or what exists by itself. Frege expressed this question of whether the identity relations is relation between signs which designate some objects or relations between the objects themselves. Graphic difference between "a = a" and "a = b" was enough to suggest to Frege that *without danger to the truth* (truth value of the statements) the same thought content (same thought) be represented in different ways in the same artificial (symbolic) language. But the question that might arise if moved away from Frege and come closer to Quine's proximity is: is there "a" in the phrase "a = a" more or less existence or the same ontological status than it has "b" in the expressions "a = b"?

By this we are not far from the road that went Strawson (1990, p.17) when asked what is ontologically primary, "a" or "b", and concluded that "a" is primary if it contains in itself "b". It is an analytical question, about the hierarchy of languages and complexity of symbols that is to Strawson came through Carnap. My question concerns the differentiated ontology and differentiated identification of identity. Whether in the same theory can be entity with different ontological status at different levels of theory, and hence hierarchy of ontological generality, and whether this means the hierarchy of existence objects or hierarchy of identification of existence of objects? Secondly, what does it mean for the theory itself, for idioms quantity and identification? Maybe it is good at this point to recall the Wittgenstein's intellectual effort and ask whether by the type of identity (or the type of attribution of meaning, and then

existence) we adjusts structural or semantic unification of the ontologies and language?

It is necessary, however, to rethink what follows from such relationship to the ontological and epistemological assumptions of the theory. Quine considers entities of the scientific theory as cultural facts that differ only in degree of belief in its existence and not by type of its identity and existence: physical objects and the Homeric gods are positums (Quine, 1980, p.44) entering the theory on the basis of belief or on the basis of their existence attributed to them in a cultural framework. Well, if so, then we would have the right to bring the level or degree of existence in correlation with the level or degree of identification and to say: "What an entity such an identity." Or: "As much there is identity, so much there is entity". To remind on the other way to a notion here I defend is the following: if the object of thought differ in degree belief in their existence, the degree of their positioning in a system of beliefs on which this positioning rest, then there is the mental coherence of knowledge of these objects differs by the degree of identity identification or by type of identity that is epistemologically formed.

Ontological Status and Identification of Identity

Quine's distinction between ontology and ideology of the one science theory (Quine, 1980, p.131) is an integral part of the thesis that the world is dependent on the conceptual schema of language, which is filled by it. Ontology is dependent on the particular culture or ontological facts are cultural facts. That what within a culture is taken as existing, no matter how existence has and how much depends on the sensory stimulation, works in a theory ("theory based on one specific culture ") as an object about which is constructed a theory which is made up from the center (logic) and peripherals (experience). The culture, as for example was ancient culture had in its ontology included the immortal Olympian gods (ἀθάνατοι θεοί) and various mythical creatures as existing, as that "what is" (what exists) next to people, things, animals, plants and heavenly bodies.

But what stands in relation to all these cultural facts as a scientific paradigm or (at one time) as rationally acceptable ideology of science is a theory that gives physics as a science of nature and that speaks about self-created matter, for which exist atoms and electrons, forces and fields of forces, movements and rest, and for which without contradiction can't speak about immaterial beings as space-time phenomena in terms of describing things (the language about things). On the scientific paradigm, which lovers of ancient culture may or may not must adopt as true or as rationally acceptable, which can accept or reject, is based one

conviction which is called atheistic and located in all monotheistic cultures as well as cultural facts for whose argument in the language about things is the most rational evidence, or whose idioms identification identity provide the highest level uniformity (one-meaningness).

Different cultures with different ontologies or share or not share, accept or do not accept one physics: the one to which the educated people come at one time. Within one, second and third or fourth culture it is known exactly what is a physical object and what are the physical properties, and what is the language about things in which explicates this ontology, we know what are the mental objects and their properties, what is the language in which this ontology explicates, and we know what are the objects of beliefs and their properties and what is the language of the theory in which this ontology explicates. It can not be unambiguously theory as the set "periphery / experience-plus-center / logic" applied to all cultural facts although all ontological states can be declared as cultural facts.

Within a culture strongly dominated by monotheistic belief, statements containing a supernatural ontology cannot be verified individually or all together based on the experience of the periphery shared by physical material objects with atomic structure and the force of gravity. They are verified in relation to experience beliefs of the entire believing community, in relation to holism of the mental within which the mental states of belief and hope appear in types of representation or types of statements “I believe that_____,” “I hope that_____,” and what identifies these mental states as real or as existing forms of one ontology of belief rather than a phenomenology of things. The question of whether words are rigid signifiers in all "possible worlds", initiated by Saul Kripke (1972), could also arise in the form: whether the identification of identity and contradiction, which is related to the identification of truth and falsity of statements, performs according to the same rigid logical principles in all "possible conceptual schemes", phenomenological and non-phenomenological, or maybe we have one principle for one ontology and another for other?

What I want to suggest here is this: primary or particular, not global, ontologies of different theories are not different because the cultures that produce them are different but because the identification framework of the theory, and then the ontological status of objects, is complex regardless of culture which produces it. The ideological or identification status of objects that is ascribed to objects in one theory depends on the dominant type of identity that the theory constructs on one of its levels.

For example, the hypothetical level of a theory is not equal to its analytical or synthetic or conclusive level. Idioms of identity identification depend on culture and language, but their function is universal for every culture: they serve to discriminate sensory and perceptual objects, large and small forms, current and frequency configurations, short-term and long-term procedural activities, mental discrimination of object classes, formalized class discrimination of classes, etc. They permeate all hierarchies of the perceptual and mental process of identification, beginning at lower levels and ending at higher cognitive levels (Kosslyn, 1995).

The identification area of a theory provides identification status objects theory by being in that area or at that level, which may be hypothetical, or analytical, or synthetic, provides criteria identity that sets the basis for the treatment of identity as superior / conditional identity, categorical / unconditioned identity, analytical / deductive identity, synthetic / multyconditional identities and so on. The identification status by object gets suddenly highly theoretical criterion of identity which satisfies the uniformity of the function which is formed at that level and involving all parts of the conceptual content that semantically and structurally adjusted to the truth-conditions values imposed by the criterion of identity.

Within each culture there are entities to which are attributed existence as a space-time (physical), as conceptual (logical), as well as mental (psychological), as well as linguistic (verbal). In regarding the nature of existence or level of ontological context that is attributed to the objects there is formed or constructed theories in language which belongs to it by the context in which it belongs. So, what by itself suggested at this level is that you should not seen relationship between entity and identity within the theory in the scheme of "one culture - one ontology "(one entity - one identity), but can speak o complex ontological context in which it belongs more or less an object of the theory, which can be more or less more objectively works. The ontology of a theory cannot be in collision with the logical center of that theory, i.e. with what there is a logical instrument of grounding and justification for. One culture produces a multitude of ontologies and languages that belong to them contextually. There is, however, a different level of identity that can be formulated or achieved with such an ontology and with such a vocabulary. Identity is a whole, something that a theory should achieve by adjusting semantic and structural sequences, which, if scientific, stand within logical stereotypes composed of if-then sequences. The criterion of identity is what Davidson refers to as the “criterion of translation” for conceptual schemes (2001, p.184), and what can be

characterized as the criterion of adjusting the structural and semantic levels of identification.

Let's remember: Quine did an ontology of one theory dependent on the ideology of that theory. His slogan "No entity without identity" may mean this:" There is no ontology (of a theory) without ideology (just this theory) ". This actually expresses that the ontology depends on the language of the theory in which it appears. That could means: "There is no ontology without ideology". However, I introduced as a counterweight the slogan “What ideology such an ontology”, i.e. “What identity such an entity”.

Let's try now to make own *Gedankenexperiment* that would be helpful to the arguments of this statement. We can, for example, accept the ontological context of the KAPPA books of Homer Odyssey as part of a separate theory arose within a culture and distinguish it from the ontological context LAMBDA books. Inside KAPPA book can be considered a cultural fact or ontological positum " beautiful-hair Circe": Κιρκή εὐπλοκαμός (Odysseias, K. 136) or Κιρκή καλλιπλόκαμος (Odysseias, K. 220), or "herbal-healing Circe" dealing with herbs and prepared a wicked poisons to make men forget their homes; we can accept and that she is able to turn with the stroke of a stick sailors in pigs. But in this context and at the account of such an ontology we can not in its operational conceptual scheme give to Circe the same ontological status which have eg. " beautiful-haired graduate pharmacist employed in pharmacy 'Old Town' in Sarajevo " and / in " plavolasa diplomarana farmacevtkinja, ki dela v 'Lekarni' na Miklošičevi ulici v Ljubljani" (regardless of the different languages in which these two ontology, as opposed to those of Homer, appear) although dealing with herbs, but none of them is able to perform miracles with magical bat nor is able to make magic drinks of which man forgets his country. Also we can not identify the meaning of words which in the book KAPPA has term Κιρκή φάρμακου (Odysseias, K. 276) with the meaning of words "apotekarka Zlata" or "farmacevtkinja Mojca". We can do ontological gradations within the KAPPA books and say that the existence of pigs has higher degree of ontological existence then magician and herbs-collector Circe, but we can not graded whole ontological context in relation to the ontological context LAMBDA books, where Odysseus descends to the Underworld and encounter dead souls waiting to drink the blood of sacrificed animals, and to tell the truth, or ontological status of the soul of the prophet Tiresias ftom Teba that Odysseus speaks the future (Odysseias, L., pp.100-135). Both of these books, KAPPA and LAMBDA, belong to the superior context of Odysseias where there are 24 parallel ontological context each with its own ontology or with

varying degrees of identity identification (spoken by my terms) or ideology (in Quine terms).

Logical Identity and Its Semantical Differences

The type of identification of identity speaks about the kind of existence of entities. Identity is primarily type of identification, the way the parts of thought content equate according to their semantic function participating in the formation of a statement as a function of unambiguity that has a truth value because it has by itself a (logical) law or, as it is called Donald Davidson "criterion of identity for conceptual schemes". At the same time the identity is a kind of representation of this unambiguity or the function that have not only semantic, but also structural competence or "fulfillment" ("satisfaction") (Tarski, 1956, p.189). One simple thought content can be represented by a complex symbol, for example by double negation, while a complex content can be represented by a simple symbol.

Now let's look again at what is offered by Aristotle in differentiated concept of identity exposed in *Metaphysics* (M.1021 a 10). If we want to identify things (ὦν) as identical, then it can be done in three ways

(1) things are identical (τό αὐτόν) because they are homogeneous, or they have a same essence (ὦν μία ἡ οὐσία) or because they fall in the same genus (the genus is the essence of things);

(2) things are identical (τό αὐτόν) because they are similar (το ὁμοῖον), or because they have same quality of essence (ὦν ἡ ποιότησ μία); and

(3) things are identical (τό αὐτόν) because they are equal (τό ἴσον), or because they have a equal quantity (ὦν τό ποσόν ἓν)

Let's try now to connect these three ways of identifying identity distinguishing between their linguistic-grammatical and logical realization through their triple kind of predication based on synonymy, homonymy and paronymy, about which Aristotle speaks in the *Categories* (Aristotle, K. 1a 1 - la l5). In the case of (1) if things have one essence then they have (a) a common name (ὀνομα κοινόν) and (b) identical concept of essence (definition) marked with the name (ὁ δέ κατά τούνομα ὁ λόγοσ τήσ οὐσίασ ὁ αὐτόσ). Said in Aristotle's way, it is the co-named (synonymous, συνώνυμα) things (ὦν) or *synonymous identity* which is the basis of *synonymous predication* and which necessarily connects the subject and predicate. In this context, we should name things by common (and not same) name because genus is one: so we can name by word "animal" (ζώον) some "man" (ἀνθρόποσ) and some

"ox" (βοῦσ) because they fall under same genus which is essence attributed to them by deffiniton. So if we want to say by what man and ox are identical, then we can say that they both are "animal". This is a remote or generical logical notion of identity. If we want to prove this definition and state why the common name "animal" appears in the definition of man and ox, then we will list the properties of the animals that belong to man and ox to the same extent. This notion of identity is about logical or analytical identity.

In the case of (2) if things have one quality, then they have (a) only the common name (ὄνομα μόνον κοινόν) and (b) different concept (deffinition) marked with the name (ὁ δέ κατά τούνομα ὁ λόγοσ τήσ οὐσίασ ἕτεροσ). Told in a way that Aristotle spoke on it in *Categories* it's about the same-named (homonymous, ὁμώνυμα) things (ων) or homonymous identity (similarities, τό ὅμοῖον) which is the basis of homonymous predication or accidental connection between subject and predicate. The homonymous predication is synthetic, ambiguous, because it does not follow from the same definition but from accidental belonging of two or more predicates to one subject. Things can only be called a common name, but they do not have the same definition as it does not belong to the same genus and have not the same essence but just same quality. One single "man" on the street and "image of man" at the Greek vase can be named by a common name as "animal", but definition or the concept of "man" is different from the definition or the concept of "painted man".

In the case of (3) if things have analogical name, a thing is named by analogy to some othar thing. Then the name of one thing derives from the name of another thing: the name for a "grammarian" is derived from the name "grammar". In the way Aristotle said on this in the *Categories* it's about paronymous things (ων) or about things named by the name of its same quality or things having paronymous identity (analogy of quality) or on paronymous identity in paronymous predication .

Now we go back again to what is sed by Frege in the article *Über Sinn und Bedeutung*. The difference between "a = a" and "a = b" is not only difference in the type of representation that says that sign "b" is an equivocation or homonym or another name for "a", or that "b" is a different way of existence of linguistic entities "a" as the sign "5" is another way of the existence of linguistic entities "2 + 3". Rather this difference either indicates a difference in the ontological status of the entities that are brought into the identity relation or indicates a difference in the types of identification of identity attributed to the same entity. It is shown that the named entity does not allow denoting with

only one set of characters or that it can be applied to it only with one criterion of conceptual scheme, or only with one criterion of translation, within which one conceptual content is identical only to itself (substantial identity), but that he himself, or one of his properties which characterizes him in definition and in which he can be transformed into a definition, may be denoted by a series of signs formed in a single function of unambiguity. Cognitive conversion or cognitive synonymy is what Frege established as a possibility of his *Begriffsschrift*.

Here, then, it is not a question of whether an object or entity exists or does not exist, but in what way it is possible for it to exist *for us* as identical in all of its phases, in the physical, in the mental and linguistic complex which we form. If "b" is a common name for "a" and "b" or if "a" and "b" are two different signs for the same entity, then the difference is in what entities are identified as identical. If the relation "a = a" and the relation "b = b" are contained in the relation "a = b", then nothing in the signs thus written allows a transition to the relation "a = b", unless there is something third by which both characters are connected as his names and which gives them an identity. In Aristotle's syllogistics it is not possible to prove that the relation "a = b" is valid as true if there is no common name / sign "c" for which it is valid: "a = c" and "b = c". In Aristotle's syllogistics it is not possible to prove that is true as true relation "a = b" if there is a common name / mark "c" for which applies: "a = b" and "b = c". Because of that, in Aristotle there is a difference between definitions: ὁρίσμοσ (a = b, b = c, c = d) and evidence: ἀποδείξισ (a = b, b = c, then a = c).

Frege took this relation as equivalent of its designations of content: "a" and "b" are different linguistic ways of conceptual existence of the same object, different way of giving the same conceptual content represented by these signs. For Frege there is the same identity in the expressions: "Venus = Venus", "Venus = die Morgenstern", "Venus = die Abendstern", "die Morgenstern = die Abendstern" and all the other combinations that follow. But Frege's words and sentences linked not only with things and objects but also with concepts, with the sense of words and not just with their meaning. Thought for Frege is the sense of proposition and the way its linguistic givens or structures of thought (*Gedankengefüge*) (Frege, In Patzig, 1966, p.72). In the case of "a = a" we are talking about an analytical proposition and talking about the logical identity or equality of entities with themselves (substantial identity) which is valid regardless of the type of entity, whether they are imagined or real, whether their existence of this or that degree, be they entities or semi-entities. It is valid even when the whole reality would be reduced to the sign "a".

Let us now consider only the case "a = b". In the traditional sense that it is about synthetic proposition. Let's see now, trying to connect traditional (Aristotle) and modern (Frege) interpretation of the notion of identity in some opportunities designed just as *Gedanekenexperiment* for this exercise. What are possible combinations or syntheses or just answers to the question of what is meant by this form of identity? Let's take into account those thoughts that are counterfeit and that we can only imagine without any real possibility to get confirmation in experience.

a) Substantial identity (identity of the things)

(1) the relation between entities: entity "a" and entity "b"

(2) the relation between the signs / names that refer to the same entity, between the sign "a" and the sign "b"

(3) the relation between the existence of the one entity in different time sequences

(4) the relation between the phases or sequences of one entity in space

(5) the relation between different types or levels of identification of one entities in the process

(6) the relation between different levels of identification of the two entities

(7) of the relation between different parts of one logical content: subject "and" the predicate "b"

b) The qualitative identity (similarity of the things)

(8) the relation between the degree of identification of some of the same properties of one entity, ie. different levels of logical generality that attributed to one propety and different hierarchy of complexity of representation which the property represents

(9) the relation between the degree of the logical generality under which fall entities

(10) the relations between two ontological degree of generality, which has an entity in theory

(11) the relation between two linguistic degree of generality that apply to an entity

c) Quantitative identity (equality of the quantity of things)

(12) the relations between the different degrees of quantity of the same properties which posess one entity (quantity "a" of the property D of the entity P and quantity "b" of the property D of the entity P.

(13) the relations between the different marks of the same property for the one entity (mark "" a "" of the property "a" for the entity P and mark "" b "" of the property "b" for the entity P.

Here we let our imagination run wild to visually show a number of mental rotations that lie behind the idea of identity holism. At all levels or in any isolated type of identity identification it is obvious that all other types are present, in one way or another. In fact, in each individual possibility from (1) to (13) the ontological, logical and semantic types of identity identification are intertwined in parallel. These identity differentials clearly show the complexity and intertwining of types of identity identification. This is to say that identity is not a rigid analytical identity of an object with itself, nor is it a rigid or necessary affiliation of a predicate to a subject that is thought of as already present in the notion of the subject.

There is even a difference in the notion of necessity or rigidity, the one described by Saul Kripke introducing the phrase “a priori based on experience” (Kripke, 1972). In other words, the path to rigid conclusions in one theory is difficult, gradual, and it establishes a network of identity identification in language and metalanguage, in the first consequences and in later derivations. In addition, identity, like contradiction, must be re-identified each time (Ibrulj, 1999: 212) and therefore scientific theory, like everyday speech, is always open to degradation, reconstruction and interpretation.

Idioms of identification are truth functions, open statements which in addition depend in their ontological capacity on related variables or on the idiom of quantification that function in some language, also depend on the system or construction of the type of identity that is established at one theoretical level and which integrates and distributes subjects and predicative parts of statements by arranging logical matrices.

Conclusion

The strategy of this text was predetermined by the idea that not only does the ideology of a theory determine its ontology, but that the different types of identities of the theory contains as algorithmic blocks or stages of identification of parts of conceptual content, and which it

uses as elements of a function of unambiguity that reaches objects of experience, determine the ontological status of objects theory, the type of entity and thus the context and language of the theory, that is, everything that enters into the complex notion of the truth value of the whole theory.

It was more than a seductive opening up opportunity to connect Aristotle's complex notion of identity or triangulation of identity as a logical-ontological-linguistic framework within which subjects and predicates are distributed and integrated in parallel at different levels by means of identification criteria acting through homonymous identity, synonymous identity and paronymic identity. It turned out that this difference that resides in the use of the sign of identity or in the ways in which the same is said should be used only in a certain direction and scope, or more as an illustration of the possibilities to which, as Aristotle himself says, "the same is said"(τό αὐτό λέγεται) or in which all ways the relation of identity can be considered when thinking about the language-world-opinion structure which is exemplified or adjusted in one relation in a semantic and structural sense.

Identity is a complex relation that emerges on a semantic and structural level, concerning logical, ontological and linguistic particulars and universals from which lay, religious, mythological or scientific theory is formulated o objects that can be called cultural facts, as Quine does, but for which in every culture there is an established stereotype of the existence they have and which is attributed to them. This stereotype depends on the type of identification that is arranged within the theory that is chosen for the type of objects that should appear in it. The theoretical paradigm or stereotype of identification does not arise from the discovery of an object, whatever its properties, but strongly influences whether the object will show itself in the light of theory as physical, rational, irrational or fantastic.

In contexts in which several objects of different identification criteria occur, it is possible to establish ontological discrimination by determining the ontological status of individual objects in relation to the cultural context from which they are positioned, in relation to the global conceptual scheme or global picture of the world (Davidson) shared by participants in a culture within which there is a linguistic division of labor (Putnam) but also knowledge o of the types of ontological status objects have in themselves.

The idea about the holism of identity is an idea that goes in favor of understanding a theory as a set of criteria of identity, each acting vertically, in the direction of synonymous or in the direction of logical

relationships of belonging, inclusion and predication, as the relations of different levels of logical generality; horizontal direction or in the direction of reduplication names ending with deviant, what paronymic identity, and in a direction that operates with the same names or homonymy type of identity.

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Logic does not operate in Universe or in Nature, but in the *universe of discourse* in which variables can be transformed into constants by means of logical operations quite compatible with mathematical operations based on general algebra, set theory, and function theory. Models of logically possible worlds and logically possible discourses with logically possible objects are subjected to logically possible syntactic operations in logically possible models of meaning and reference. And what is logically possible could be empirically possible, could be possible as a fact and state of affairs, could be positively possible and could be possible as a conceptual construction / conceptual scheme from a logical atom to a logical molecules! These constructions are rational descriptions of the reality on which the scientific world and scientific consciousness are focused, and which are possible as re-constructions and re-cognitions in the process of analytical deduction and analytical formalization. It is the basis of the logical construction of the world, which is the basis of scientific knowledge. Thus, logic appears as a formal condition of knowledge, that is, as a rational competence of what can be causally explained since it contains such kind of causal implications as logical structural characteristics. And the logical is actually a concrete-general mirror of possible worlds that have sense and meaning.

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