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PHI2014-1030

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ATINER CONFERENCE PAPER SERIES No: PHI2014-1030

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This paper should be cited as follows:
**Wilkens, S.,** (2014) **"The Theory of the Antonyms".** Athens: ATINER'S Conference Paper Series, No: **PHI2014-1030.**

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URL: www.atiner.gr
URL Conference Papers Series: www.atiner.gr/papers.htm

ISSN: **2241-2891**
11/07/2014

# The Theory of the Antonyms

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**Abstract**

Since antiquity, humans have increasingly evolved the habit to think in opposites. Concerning modernity, the principle of contradiction has by far outweighed the foremost counter-principle of dealing with negation in philosophy: the antonyms. In connection with textbook explication and Frege, his restriction on sentence negation is refuted. The main hypothesis is that negation may fuse with terms in a distinctive manner, and consequences are shown in connection with the logical circuit (loop).

**Keywords**: forms of negation, antonymy, contrariety, distinctive fusion, circuit

As an introduction to the theory of antonyms, which implies several horizons within semantics, logic, and general philosophy (metaphysics), an instance of literature may introduce. The passage, by fortune, stems from Condillac. When explaining the performances of the faculty of imagination, he explains that by reason of insensibly connecting the ideas of a certain turn of mind - the normal working of the imagination - "persons of a particular physiognomy strike us more than others. For physiognomy is only an assemblage of features, which we have connected such ideas, as are never revived without being accompanied with approbation or dislike". The conclusion of the explanation reads: "Hence it is that these connexions have a prodigious influence of our conduct: they feed our love or our hatred, they encourage our esteem or our contempt, they excite our gratitude or resentment, and produce those sympathies, those antipathies, and all those whimsical inclinations, for which we often find such difficulty to account."[1]

Obviously, this passage entails a concise bundle of antonyms. Terms which have to recognized as antonyms are about twenty, at first (a) overtly: (i) approbation versus dislike, (ii) to judge versus to be prejudiced; (iii) friend versus enemy, (iv) agreeable versus disagreeable; (v) defects versus amiable qualities, (vi) most perfect endowments (or virtues) versus vices; (vii) love versus hatred; (viii) esteem versus contempt; (ix) gratitude versus resentment; (x) sympathies versus antipathies; (b) latently, the same passage contains further antonyms because the counterpart is not always manifest: so (i) wrong versus right notion or even (ii) true versus false; (iii) to connect versus separate, (iv) to be inclined, to be averse; (v) to be surprized versus to be bored; (vi) an assemblage versus a clutter of features. At this point there may follow a stop because virtually one would find a contrary, but not a real antonym, for nearly every term or concept mentioned. Accordingly, a sort of lexicon may be setup, which is also common practice, and the second key word has been used, the contrary. According to antonyms, the negation involved is a peculiar form which performs and *perfects the contrary.*[2] Contraries or better contrarieties are, according to textbook interpretation, those like ›sympathy‹ and ›antipathy‹, also ›dis-‹ versus ›agreeable‹ or ›like‹ versus ›dislike‹. Nevertheless, if one wants to find the correct antonym, otherwise the contrarieties to a term, one will find a concrete bundle of possibilities: in the passage above, ›dislike‹ was opposed to ›approbation‹, but it might also be the ›like‹, ›approval‹ or ›acceptance‹.[3] This situation, well-known from the translation of a stable logical relation into formal terms, should not be identified with vagueness.[4] What counts is that the opposition is not pure in the

[1]Condillac, E. de Bonmot 1756. An Essay on the Origin of Human Knowledge. Being a Supplement to Mr. Locke's Essay on Human Understanding. Translated from French by Mr. Nugent. London, ch. VII, § 80.

[2]According to Lloyd, G.E.R. 1966. *Polarity and Analogy. Two Types of Argumentation in Early Greek Thought*. Cambridge: CUP. Further reading: Horn, Laurence R. 1989. *An natural History of Negation*, Chicago: University of Chicago Press.

[3]This situation underlies also the interpretation of Lehrer, A. & Lehrer, K. 1982. "Antonymy". In: Linguistics and Philosophy 5, 483-501.

[4]As one might follow from Quine, W.V.O. 1960. *Word and Object*. MIT.

sense of having only two terms, instead of overspanning a peculiar reciprocal relation of mutual extremities, logically opposite, where both ends may be termed with different words. Hence, when negation perfects the contrary, then negation also is necessarily *fusing with one or the other extremity*. And the antonymy, in first instance, must be a form of negation.

This assertion – the main hypothesis concerning the theory of antonyms – should at once be made clear. The extremities, which are opposed within an antonymy like ›hot‹ and ›cold‹, one of the most famous in history, are focal entities. Each side of the extremity must perform a focus because the relation, the fundamental negation, behaves in such a way that each side is necessarily connected to the opposite, and at the same time necessarily separated (to illustrate further, the nano region versus the universe within the sister pair ›large-small‹). As a token, the early Kant says: "The human has a sense to perceive, a mind to think and a will in order to choose or disgust. If he would have nothing else but a sensual faculty to represent and to desire, he would be like a receptive plant or a shell."[1] This aphorism should prove two things, (i) that thinking in antonymies belongs to the human mind, hence it should decline like a primordial property as to how his thoughts must evolve; and (ii) there will always, necessarily, be an opposition against the position which is taken (not to confuse with affirmation). Negation, according to the antonymy, is like a membrane spanning end-to-end over all representations, terms and/or notions, contrary to contradiction if this is taken as the (counter-)principle in advance or as the category. In consequence, one may ask (iii) if the same opposition, its logical base, is restricted to the will or thoughts, if not also to the faculties themselves. Accordingly, the opposition between sensing and thinking, which still founded the core of Kant's mature philosophy, is not only immediately compatible, but evolving within the antonymy. On this line it would be false to purport that there ever should exist pure sensing or *atomic sense data* against similar pure, absolute thinking. Instead of the necessary intersection which is the result of the opposition in which the faculties, sensing versus thinking in main instance, must preserve their performances even on the limit.

## The Horizons of Frege

Antonyms as a peculiar form of negation at the same time include and exclude each other. This will constitute their incompatibility or inconsistency, insofar this, the inconsistency according to modern mathematical logic and linguistic interpretation of negation on the whole,[2] explains negation in itself (apart from Lehrer who take it primarily on a scale of comparability from the linguistic point of view). From this presupposition follows immediately that

[1]AA XVI, 6 no. 1570.

[2]Horn 1989; Wansing, H. 1996 (ed.). Negation. Berlin: De Gruyter. Ladusaw, W.A. (1997). "Negation and Polarity Items." In: Lappin, Sh. (ed.). Handbook of Contemporary Semantic Theory. NY:Wiley-Blackwell.

antonyms form the direct counterpart to contradiction because they include the conceptual counterpart within the extremities instead of falling complementarily apart, as contradiction does. (It should be mentioned that there is also a form of polar opposition, sometimes called strict complementarity, which behaves in the same manner, complete incompatibility). Hence this, contradiction, requires distinct non-fusion of the mutual negative parts, whereas antonyms, quite to the contrary, require exactly the opposite, that is, they bind their opposites by intrinsical fusion according to negation and allow the extremities themselves to be manifested like focal distinctive terms. To elaborate the theoretical context a little bit further, antonyms necessarily belong to term logic instead of the sentence operator 'not'. Second, one should conclude that antonyms, insofar they must represent a negative relationship which can be drafted from essentially two perspectives, must represent an authentic *2-* or *n-relational* form of negation.

This can be made clear with rather easily accessible means. These will also help to see the difference to another theory of negation introducing the pathway to modern logic, the thinking of Frege. In his seldom appreciated paper "Negation" he defends his view that the thought (Gedanke) must be an independent entity which has to be settled against truth/falsity and sense.[1] Relying upon contraposition or a composite clause, there should follow the possibility to relate any part of a sentence to an entity which, according to his formulation, has a being but is not equivalent with truth or sense; of course, this is also well known from his solution concerning the concept of number. Now he introduces striking examples like:

(1)›3 is greater than 5‹
(2)›The Schneekoppe is higher than the Brocken‹
in which cases the negation would be
(3)›3 is not greater than 5‹
and
(4)›The Schneekoppe is not higher than the Brocken‹.

Accordingly, there has been only one form of negation attributed, Aristotelean contradiction (the negation is settled with the predicate, equivalent with the sentence operator like 'it is not the case that'). Now, the matter is by far more complicated, which will have to be shown in several steps. The first one consists in reflecting the predicate ›great/high‹ versus their antonyms ›small/low‹. Frege is only apt to consider the 2-neg-conversion, i.e. instead of ›The Schneekoppe is not higher/smaller than the Brocken‹ to formulate ›the Brocken is higher than the Schneekoppe‹. His argument is that both sentences transform a peculiar entity on the whole, which he names the thought. It has to be differentiated or set apart from the truth value. No question, however, there is a grave fault because he introduces his demonstration by double negation

[1]Frege, G. 1919. "Negation". First published in *Beiträge zur Philosophie des Deutschen Idealismus*, vol.1 = Geach, P. & Black, M. (1966). Translations from the Philosophical Writings of Gottlob Frege. Oxford: Basil Blackwell, 117-135.

(*duplex negation affirmat*) so that ›it is not true that the Schneekoppe is not higher than the Brocken‹ allegedly resolves into ›The Brocken is higher than the Schneekoppe‹.[1] Yet never the double negation of an antonym is coincident with the opposite, it might always be something else (at least even; if somebody becomes hostile towards an enemy he will not make him his friend; or in any case the negation of a negated antonym might take place everywhere on the scale in counterdirection, preserving the negative element; only in cases of strict complementary polar opposition double negation works, still not coincident with contradiction, as +/-well-formed, or even true(-)false apart from pragmatic context, wave(-)corpuscle).[2] Hence, following only the rule of contradiction (or complementary partition on the whole), his conclusion is not correct that negation has no influence concerning the thought or that its intra-connexion is not affected. Of course it is, and what he feels or wants to preserve should be the rule of fusion or the *regular melting of logical entities*, which must affect terms, and in particular terms, instead of only the entity of the thought modelled by a sentence.

As a next step, he also introduces examples like 'Christ is immortal', 'Christ lives for ever', 'Christ is not immortal', Christ is mortal', 'Christ does not live for ever'. He accepts that "it is by no means easy to state what is a negative thought" concerning these extrapolations. His final argument is that "at present" there is no criterion which could decide between a negative and affirmative thought even if in these instances the negative morphem is correlative with the noun or adjective. He concludes: "The criterion cannot be derived from language; for languages are unreliable on logical questions. It is indeed not the least of the logician's tasks to indicate the pitfalls laid by language in the way of the thinker."[3]

Considering modern linguistics and polarity items, which relativize a good portion, further his usage of the term "unreliable" or his comparison "not the least of the logician's tasks", one must wonder why he does not reflect the antonymy on one part, or polar opposition, on the other, which he only reflects concerning the opinion that judgment and negation were polar opposites. Indeed, ›greater than‹ or ›higher than‹ are both classical instances of antonyms. Hence ›if 3 is not greater than 5‹ then, if equivalence or indifference is excluded, it is ›smaller than 5›, and the same is valid for the comparative sentence of the two mountains, hence the ›Brocken is lower than the Schneekoppe‹. What counts is that the negation obviously has the opportunity to alter the place and *eventually fuse* with one or the other item of the sentence: it is following an axis which comprises the centre of the conceptual relation including both focal extremities or opposites. In any formulation of ›not higher‹ versus ›lower‹, where the truth value remains the same:

[1]Frege 1919, 123-124.
[2]Seemingly, Horn 1989 oversees this fact leaving Frege with the only relation of negation to the thought.
[3]Frege 1919, 125.

- the negation has shifted its position in order to be semantically fused with the predicate term itself.

One can see this also in his proper paradigm: ›Christ is not mortal‹, ›Christ is immortal‹, ›Christ lives for ever‹ – here negation has first taken the form of contrariety, then is has been fused with the contrary affirmative expression: obviously, the sentence operator is able to fuse with the internal semantic sphere of the sentence, the linguistic allowance set aside. This fact, on the whole, is sufficient to take negation as the opposition to affirmation, not thought or judgment, and (i) to relate it to an antecedent conceptual role like that Kant invested as categorical because negation has its origin at the very core of the human mind and its resources: considering the opposition consciousness vs. non-consciousness or being versus non-being, it should have the first place (where idealistic orientation would, on the whole, not help to finally resolve the logical and/or theoretical opposition within *one absolute* centre, the plus-minus totally resolved or fused); (ii) to provide negation a necessary place in connection with relational terms instead of the simple one to proposition or thought, as Frege's terminology intended: as an instance of polarity, antonyms must prove the original divisibility of concepts, of a conceptual core or axis (the 'Ø' in Lehrer 1982). Nevertheless, Frege is right to distinguish an entity, in particular a logical level, which he calls the ›thought‹, because in any case the two levels, what thinking does and what the linguistic expression renders, are different, never one-to-one or even identical. Even more, they tend to fuse, and it is one of the main tasks of philosophy, and logic as well, to recognize fusion in its both ends or extremities, when it is distinctive (might be a pole, a focus, a nodded construction or even a topology), otherwise not and thus the ambiguity or traditional confusion. In this sense, thinking and linguistic expression are different even more, if one reflects the whole range of negative expressions which are possible. The antonymy appears to reflect the core of the human mind, its very source or negation-oriented 'stemma' quite like sub- & coordination (or intellectus versus sensus according to Kant's lifelong teaching). Logically, it immediately falls apart from contradiction because, when identity and non-identity as the first necessary ingression of the mind tries to settle with (strict) complementarity and incompatibility, it must include the binding-separating condition to exclude contradiction *on the second level*. So there is good reason to settle it with first priority against scholastic, baroque, and rationalistic principles, very well aware of the modern break of non-continuity, complying with.

To make a further step, Frege does not differentiate between polar negation versus non-polar negation. Both negations stand orthogonal to each other, as the non-polar negation will always result in its primary form, contradiction. The antonymy, on the other side, requires or is equivalent with the fact that each negative, seen from the other side, is necessarily implied on the limit (the strict complementarity of contradiction should therefore not resolve solely to this formulation). From this requirement follows a peculiar form of relation where false and right do intersect ordinarily which provides a

specific regular insight into the opposition of the terms involved. (Besides, this intersection is also the reason for the involvement with the liar theorem, and it is rather well known since the antiquity, obviating into the rationalistic sphere, which will be shown shortly afterwards in connection with the Platonic *Euthypro*). Of course, one may think at once at the famous element-set problem of Russell which demands separation or non-union on the sole presupposition of contradiction or incompatibility in the sense of a strictly non-polar logical foundation. As soon as the polar foundation is permitted and controlled, the problem should acquire an insight of resolution. There must be an instance, where element and set fuse or intersect, as soon as they behave as antonyms or on a polar base: a focus as an element or part might also be responsible for forming the whole set by reason of fulfilling the binding principle (attraction). In addition, in mathematics or any other matter, where rigour is involved, it is possible to have this intersection, the negative of the negative or the limit of one antonym in the other, as a *pursued* contrary axis (and eventually one does not know, where this intersection lies on the whole range). Significantly, Frege concludes his paper with contradiction as the main and only negation a thought can be complemented with, even at the price to overlook contrarieties. He purports that ›the uncelebrated man‹ was the same as ›a man‹ who is simply ›not celebrated‹, and both thus transferring contradiction. Concerning modern literature in linguistics and logic, it does not need a mention that the contrariety or contrary term does not comply with the law of the excluded middle (LEM), hence it opens the way to non-classical truth values. Now the antonymy, even more, has a standing on its own, to the extent that it seems a very entrenched, absolute form of thinking all the time, even increasingly complicated in the present, the Western included. One does not need to rely upon the antiquity, it is still very customary in the background of modern economic or political thinking, p.e. monetary versus fiscal decisions of governance, the aggregation of properties within population, the financial statement or the accounting of profit versus loss, the derivatives, finally the behavior of the markets, as the market is an antonym in itself (crystallized or frozen, as one will, the focus within a periphery that does need at least one primordial counterpart implied). As such, the antonymy is logically dependent on terms, i.e. the opposition of terms, against a propositional foundation which Frege purports (or the sentence operator, in accordance with the well-established first chapter of Horn 1989, settling with philosophy and not only linguistics). So there is enough justification to acknowledge the roots of the antonymy within categorical thinking or the real source of concepts. Once more, one can easily proof that in his own terms. In the beginning of his *The Foundations of Arithmetic* he denies the view of Kant that numbers are grounded in pure intuition. He says: “Yet it is awkward to make a fundamental distinction between small and large numbers, especially as it would be scarcely be possible to draw any sharp boundary between them.” Conceded, the polarisation between large and small numbers does not depend from “135664” versus “37863” or anything else but from terming them “small versus large”; in addition, that there is no sharp distinction between them what bears the utmost difficulty in general terms

concerning universalisation, influence and general validity: when numbers are scaled according to polar terms or on grounds of polarisation, they do not have a real centre quite in the same manner as the universe does not have it.[1]

## The Circuit

[1]. As the antonymy or polar opposition is immediately involved with negation, and also any forms of latent negation, hence also falsity, the antonym is the main instance to explain the circuit or regular loop in thinking. As an instance of the duty already mentioned, at this place should follow a remembrance of the antiquity. *Euthyphro*, the young theologician, is disputing with Socrates over the question about not what the holy means but what at once the holy against the unholy differentiates. Socrates, as everywhere the leader of the inquisition, (i) explains that holy is not only any action being judged to be conform to the ideal of the holy, but also an action that is denied to be holy. This shows that negation is immediately and irreducible involved when referring to the negative of holy: it can be unholy, but otherwise one may also deny the holy. So, as explained above, negation is able to fuse with the opposite term as soon as the unholy, understood not as the contrary term but as the real polar term (see Frege above concerning the immortal versus eternal). Accordingly, Socrates explains and demands that (ii) "the holy is directly opposite to the unholy." Now, concerning the dialogue which expands in expectable terms, there must result a situation where both terms are true or coincident. It is the argument by which Socrates refutes *Eutyphro*, who is willing to believe in only one holy forming an absolute realm of meaning without any incumbent negation. Socrates, however, shows that among the gods the same action may be seen right versus wrong, be liked versus disliked, agreed versus disagreed, and finally be loved versus hated. This, the hatred, is also the term, where the opposite of the holy receives its very polar or antonymous term, hence the hateful instead of the unholy (which might be contrary). Now one conclusion, the rationalistic one, is that there must follow a contradiction because it is impossible that the holy and the unholy should be valid at the same time. Accordingly, if the condition of being holy is pleasing the gods this condition is both not sufficient and not necessary.

[2]. This solution should be a shortcoming as soon as one concentrates on the nature of the opposition. As (i) it has a standing on its own and does represent a necessity that unfolds all over the representations (thoughts) of the human mind; (ii) it represents a peculiar form of opposition and negation that cannot be reduced to contradiction but must be opposite to it, the antonymy deserves a close analysis of its forms, possible situations, and the very sorts of negation it incorporates. Again one may conclude, that the denial of the denial is not equivalent with the affirmation, or that any circular or concatenated uses

[1]Frege, G. (1884). *The Foundations of Arithmetic. A logico-mathematical enquiry into the concept of number*. Transl. by J.L.Austin, B.H.Blackwell: Oxford. [2]1953, §5, p.6.

of polar terms, when coupled with negation, do not necessarily conform to the rule of double negation. When gods dislike each other, thus become instantaneously holy versus unholy, the negation of one instance of unholiness does not necessarily result in the in-/direct holiness of the same or other god. Instead of, (iii) holy and unholy form necessary bundles, or they intersect like polars. In addition, these poles - or necessary perspectives - are subject to the rule of scalar opposition or gradation (linguistically on the scale of incompatible terms according to Lehrer 1982). Hence the negation of the negation of a polar term might easily underpass the degree of a positive polar term. To put this in abstract terms, this situation is equivalent with passing to a real logical circuit, where negativity is the input of progression.

[3]. Now the question comes up how such circuit has to be analysed, how it can be measured according to its several degrees, and where the main fields of application are. Before introducing two remedies against misunderstanding, the antonymy as (i) a form of contradiction by reason of incompatibility (Bolzano), (ii) a form of ambiguity coupled with the analogy (Quine), one has to bear in mind that it is a form of polarity or polar opposition. It can be no question that it has been detracted from the mainstream of the history of philosophy and logic as well, even if sometimes it deserves direct reference as in the following application. When citing Cassirer with an accommodating instance, then the formal sense should be correspondingly extracted. As a token, he explains that in the middle of the 18th century "a peculiar process of thinking commences which seems to be driven by polar forces. The philosophical thinking, within one and the same act, tries to detract itself from mathematics and to attach to it; to get rid of its sole domination and, within this same liberation, to not defy and contest this domination, but to justify it from another side."[1] The polar opposition is logically and/or formally marked by this counter-directed, double relation of at once binding and separating its opposites, which characterizes the main portion of antonyms (like ›dry-wet‹, ›big-small‹, ›rich-poor‹ against ›left-right‹, ›counter-/clockwise‹, ›open-closed‹ etc.). Hence Kant with his interpretation of interaction, disjunction and third category and Hegel with his main interpretation of the dialectical motion comply with the polar opposition, except of expressing its essence. The antonymy - as a polar opposition - comprises a conceptual axis which is driven in at least two extremities and which, at the limit, may intersect because - as the logical, irrefutable condition - these extremities at once must bind and separate each other. When the 'aufheben' or synthesis according to Hegel means (now) the fusion of two former opposite terms, a fusion that proves their intersection on a common conceptual axis or resolution into a common centre concept, then it must prove the polar opposition and, in particular, that the resolution will never arrive at a limit, 'horizon' or stage, where the circuit, the precondition of plus-minus, will become the absolute singular core, nucleus or fused in itself (according to him, hence ideally, the 'absoluter Geist'; according to Marx, and materially, the single or unitary class). This has two

[1]Cassirer, E. (1932). Die Philosophie der Aufklärung. Berlin: Dunker & Humblot, 15.

consequences, (i) the antonym or polar opposition is in itself endless, unlimited or infinite (however not in the sense of the Kantian category (II.3), which does not include a regular opposition in the sense of antonyms instead of disjunction and "Einteilung" on the basis of contradiction), provided that any polar opposition necessarily includes the opposite on the limit, whereas contradiction under similar preconditions is always finite, as it must decide the case for one or the other side *exclusively* – this seems a priori or a law of reason. (ii) It will result the entrance of the non-classical circuit because each extremity is forming and/or implying a focus, and both focusses on a common conceptual axis belong together in order to encompass the diverging manifestation of their underlying circuit. Again, this explanation is compatible with Frege's characterization of the "doctrine of relation-concepts" as analytically and a priori signifying the logical form.[1] With the antonymy and polarity in the precondition, negation becomes $n_i$-relational in a strict sense against the non-relational meaning coupled with contradiction as the sentence operator.

[4]. The internal link to ambiguity may be reckognized by Quine's interpretation of the analogy. He takes it as the learning tool to deliver the comprehensibility of the insensible against the sensible (which, in addition, pertains to the subject). At two instances he also points to "extrapolarization" and the "relativization of polar words".[2] The first one, as a process of analogy, is the functional counterpart to the antonymy because both are systematically (or necessarily) related to the second, the relativization of polar words. Quine does not respect this connection, and also, in line with the tradition, he does not acknowledge the peculiar opposition and negation included, peremptorily orientated to make contradiction the 1-to-1-rule. When items can be systematically scaled in such a manner that the (nano/macro-)extremities do not need to be sensible (his example: *bird – bee – gnat – mote of dust – molecule*) then necessarily they must include the possibility of relativization of polar words as complementary procedure. Hence the "extravagant degree of vagueness" in connection with terms like 'little' and 'big', if it can be "brought under control by retreat to the relative terms 'bigger' and 'smaller', similar for hot and cold, high and low, [etc.]," must include the import of negation by means of the antonymy and the regular concatenation of a circuit. The relativization of each item in the context is equivalent with the possibility to exchange the connected plus/minus value:

(I) $+x_1 \ldots -y_1, -y_1 \Rightarrow +x_2$
(II) $+x_2 \ldots -y_2, -y_2 \Rightarrow +x_3$
(III) $+x_3 \ldots -y_3, -y_3 \Rightarrow +x_4$
(IV) $+x_n \ldots -y_n, -y_n \Rightarrow +x_{n+1;}$ $\quad xn = -y_{n+1}$

This is only the first beginning of the relationships antonyms may manifest, something like the footprint circuit or core plan. It at once explains

[1]Frege 1884, §70.
[2]Quine, W.V.O. (1960). Word and Object. MIT 1960. §§ 4, 26, 13-15, 127.

three things, (i) that conclusions or the procedure of conclusion, p.e. in model theory, might involve antonyms which resolve the argument from one to the other side – no one should assert that he would be able to overlook and see at once where this happens in an argumentation (›lives forever‹ or is ›immortal‹, and the conclusion depends upon; or to check the inductive rule from the passive versus active side: everyone who is mortal must also indefinitely suffer the mortality of everyone else, which may alter the implied set conception). From this perspective, (ii) negation might be used fused or defused within an argumentation, and the conclusion is tributary; (iii) one has to know distinctively which step according to the circuit is involved or relevant within an argument, an issue well-known from dialectics; that is, regarding the circuit, not only the opposites might fuse, hence alter their value on one side, but also the steps themselves, as they happen to follow the same thing, the interchange of polar measure terms on a common or perpertual axis; (iv) one has to know distinctively the real co-operation of the negative terms or nesting of negativity because they might follow different negation within the same instance: contradictory, contrary, and polar opposition, i.e. the antonymy.