

Naturalizing Negation. A Challenge for Cognitive Phenomenology about Phenomenological Possess Conditions of Logical Vocabulary

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ABSTRACT

The negation constitutes one of the main troubles for attempts to naturalise the semantics of the logical vocabulary, as shown by the problems related to the interpretation of disjunction in the treatment of error (Fodor) or to the definition of contraries in the analysis of reidentification abilities (Millikan). There seems to be no way out between “no (naturalised) negation, no grip of logic on the world” and “no (truth-functional) negation, no logic”. Unexpected help may come from the cognitive phenomenology of negation. For three reasons:

- 1) Firstly, because it allows a distinction to be made between semantic analysis, identification of the conditions of possession and psychology of the acquisition of the notion of negation, a distinction whose absence produces many misunderstandings between those who support a naturalisation of semantics and those who oppose it.
- 2) Then because it places negation at the level of the contrast between beliefs, a terrain that is hostile to some naturalizers.
- 3) Finally, because it makes it possible to define a peculiar type of liberalised naturalisation of semantics and, consequently, to present a hypothesis for the naturalization of cognitive phenomenology.

0. In the contemporary literature, the question of the feasibility of naturalising phenomenology boils down to the question of the validity of the following argument:

phenomenology is only naturalizable if it can be taken as a symbolic language that can be interpreted on the model of objects in the cognitive sciences (Petitot et alii 1999).

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To validate the argument, it is sufficient to identify counterparts of the language in the model, just as to invalidate it is sufficient to demonstrate a failure of the language to exceed or fall short of the model.¹

The main merit of this minimal argument concerns the location of the nomic-causal connections: thanks to it, these connections can be legitimately discharged onto the objects of the domain, and it is no longer necessary to claim an extension of language or to introduce them as correlations between language and model. In doing so, the minimal argument makes naturalism an internal or categorical issue, and not an external or frame issue (Carnap 1950; Quine 1951/1966),² and provides a naturalistic refutation of behaviourist reductionism, to which phenomenology appeared, not unjustly, as the sworn enemy, the clearest example of a veteran-metaphysical claim of the unnaturalizability of phenomenal experience, knowledge, and logic.³

The intention of this essay, however, is in many ways the opposite. Instead of starting from the minimal argument, and the conception of naturalism implicit in it, I will start from a problem common to two different semantic naturalisms (Fodor and Millikan). Based on this, I will test whether cognitive phenomenology can be of any help. And only at the end will I answer the question whether this help is naturalistic and specify which naturalisation it admits. The problem that will serve as a case study is that of negation. From its naturalistic-semantic treatment seems to derive a dilemma, which could be expressed as follows: either *no (naturalized) negation, no grip of logic on the world* (Nussbaum 2013) or *no (truth-functional) negation, no logic* (Quine 1970). In the first part of the essay, after clarifying that the question of negation constitutes an obligatory passage for various strategies of naturalising logic, I will review what difficulties are encountered, namely:

- a) disjunction for Fodor, and

¹ I do not deny that there are exceptions, such as those who take naturalism in the sense of a non-revisionist attitude (Maddy 1997; Maddy 2007), for instance in mathematics, and argue for its legitimate attribution to Husserl (Hartimo 2020), or those who, in the field of action theory, ascribe to Husserl the naturalistic ascription of the motivational nexus to a kind of causal connection (Staiti 2019), or those who consider the need to naturalise phenomenology superfluous, since phenomenology would already have been largely naturalised in experimental terms by the intersection of post-gestaltist psychology and differential semantics (Albertazzi 2018).

² On this subject, see Zipoli Caiani (2019).

³ On this broad and varied critical tradition on phenomenology, and especially on its alleged introspectionism, see at least Neurath (1931), Brody, Oppenheim (1967), Dennett (1991).

b) contrariety for Millikan.

In the second part, I will use negation to bring out the aporias inherent in the project of a cognitive phenomenology of logic that, initiated by Husserl, finds a point of fall in Reinach's treatment of negative judgements, starting with the distinction between assertion and belief. In the third part of the essay, after listing the main analyses that Husserl dedicates to negation, I will focus on the most comprehensive version contained in Husserl (1939). This version consists of at least three levels (negation as modality, concessive double negation, and coherential negation) and makes use of a peculiar naturalistic tool: logical self-preservation. Finally, I will define the scope of this tool and explain to whom its use can be imputed. The aim of the essay is to show that the cognitive phenomenology of logic can be used to naturalize the possession conditions of a large part of the logical vocabulary, but also to clarify the differences between this type of naturalization and that conducted by logical semantics or that conducted by the psychology of the acquisition of logical notions.

1. One of the main difficulties for semantic naturalism is negation, its treatment and what are its possession conditions. On different fronts, both Fodor and Millikan have grappled with the role of negation in the theory of content or concepts, respectively in relation to the problems of disjunction and asymmetrical dependence and that of defining the class of contraries indispensable for explaining the mechanisms of reidentification. It must be remembered that both advocate a form of realist naturalism and that therefore for both negation constitutes a twofold problem: that of its natural derivation and that of its real reference. The opposite is the case when the naturalistic project is not also realist.⁴

1.1. In Fodor, the problem of negation is central in the attempt to move from the naturalisation of the mental, by means of the reconduction of the (narrow) contents to the physical strings of LoT symbols, to the naturalisation of the mental, which is achieved through the causal relation mind-world and which thus involves

⁴ An important naturalisation project of logic and negation that will not be addressed is the one carried out by Woods (2013) from the agenda relevance approach (Gabbay, Woods 2003), according to which naturalised logic is empirically sensitive because it is centred on practical, agent-centred, goal-oriented and resource-bound (Woods 2013, 14) and finds its focus in the pragmatization of consequence-having in consequence-drawing (Magnani 2018). The results that are most relevant to negation derive from the treatment - naturalised in the sense just defined - of antecedent negation and the fallacy *ad ignorantiam*.

the wide contents. The reason for this obligatory passage is, as is well known, the difficulties in accounting not so much for Frege's cases (i.e. coreference), as for Putnam's Twins and above all error. Assuming that intentional relations are extrinsic, i.e. that they depend on a nomic connection between thoughts and the world, how can it be explained that two different intentional states can correspond to the same implementation mechanism, or, in other words, to the same cause? And this same question could be formulated more dramatically with:

How is it possible to maintain that two intentional states can be traced back to the same cause? That is, how is it possible to save the uniqueness of the cause - and thus the externality of intentionality?

The most recent Fodorian solution consists of the glossed argument of disjunction and the thesis of asymmetrical dependence. The logical operator that the argument and the thesis share is that of the negated conjunction. The false depends on the true if and only if it is not the case that they are not both or that they are both. And it is not the case that they are not both, nor that they are both, since an exclusive disjunction applies between the two. I can take a (real) fox for a cat. It is dark and I am perhaps on a country road. I usually live in the city and there the possibility of meeting a fox is rather rare. However, if a fox had not (really) passed me by, I could not have taken it for a cat and just because the fox cause normally produces the fox effect, it can also produce the cat effect. But the reverse is not true. Now it is obvious that that *normally* is vague enough, that it can mean *under optimal conditions* and that beyond the obvious flaws of optimal conditions, under optimal conditions (i.e. in daylight, in bright light) a fox, which is a nocturnal animal, will never not be seen, but never even encountered. Nonetheless, we are warned that Fodor's *Folk-Psychology* is a science that accepts *ceteris paribus* clauses and establishes nomic connections (i. e.: a covariance obeying laws of nature) that admit, without great problems, exceptions. The fact remains that the glossed disjunction argument sounds:

$$A \rightarrow_{CN} ('A' \vee^c 'B'),$$

with A for the distal stimulus and 'A' and 'B' for the produced intentional states. Note also that the arrow does not represent a logical implication, but a nomic connection, and that thus the pseudo-inference I have written is not true if A is false. If we focus only on the exclusive disjunction, we note that it is equivalent to the conjunction between a subcontrary formula ($\varphi \vee \psi$) and an opposite on

$$(\neg(\varphi \wedge \psi)),$$

i.e. that:

$$('A' \vee^c 'B') \equiv ('A' \vee^i 'B') \wedge \neg('A' \wedge 'B'),$$

and eliminating disjunctions altogether,

$$('A' \vee^c 'B') \equiv \neg(\neg(\neg('A' \wedge \neg 'B')) \wedge \neg('A' \wedge 'B')).$$

Thus, the glossed disjunction argument implies not only nomic connection and asymmetrical dependence, but also, if not especially, the possession of the connectives \wedge and \neg . But what does the possession of these two logical operators attest to? It is necessary to know, for example, that

$$(P \wedge \neg Q) \equiv \neg(P \rightarrow Q),$$

or that

$$\neg(P \wedge \neg Q) \equiv (P \rightarrow Q)?$$

If this were the case, this naturalisation of content would have to admit, at least in part, an inferential semantics, and thus face the threat of holism and especially anti-realism. In Fodor (1994) it is indeed admitted that the naturalistic theory of content derives from the composition of *World-Mind Causation* and *Logical Syntax*, and that it is only possible to establish the possession of the connectives \wedge and \neg by means of an inferential test. The brake on inferential holism would be the fact that the disjunction argument can be applied to each intentional state, individually taken, that there is no need to reconstruct the set of inferential states of which it is a part, and that the logical-syntactic vocabulary is not interdefined with the non-logical vocabulary (Fodor 1994, 76; Casalegno 1998).

1.2. For Millikan, the treatment of negation is diriment in at least two contexts: the difference between definite and indefinite descriptions and the mechanism of reidentification. Moreover, it is precisely on the functioning of negation that two different criticisms of her have been based: on the one hand, Bermudez (2007) reproaches her for not having gone far enough in naturalizing negation to the point of admitting proto-inferences in non-human animals, on the other hand, Nussbaum (2013) regards her treatment of non-contradiction as evidence of her naturalised neo-Hegelianism. In any case, central to Millikan, even more so than to Fodor, is the relation of contrariety. This centrality also derives from the fact that Millikan seems to fully accept the thesis propagated by Horn (1989), and discussed earlier in Evans' (1981, 24 f.) reprise of Frege (1918-

19), on the priority of internal negation, i.e. the negation of the predicate attributed to the subject or the attribution of the negative predicate (S is not p or S is non-p), over external negation, i.e. the negation of the entire proposition, or, in other words, the negation that it is the case that what the proposition expresses ($\neg(\text{Sp})$) applies. From the priority of the internal negation would also derive the priority of contrariety over contradiction, since between (S is not p) and (S is p) there is contrariety, since they cannot both be true, but they can both be false, whereas between Sp and $\neg(\text{Sp})$ there is contradiction, since they cannot both be true, nor can they both be false. As reiterated in (Horn 2017) this order between contrariety and contradiction, or between internal and external negation would derive from a singular proposition square, which reverses that of oppositions, since at the two upper vertices there would be $\exists xPx \in \exists x\neg Px$ while at the lower ones $\neg\exists x\neg Px \in \neg\exists xPx$, where the latter are equivalent to $\forall xPx$ and to $\forall x\neg Px$. Also, in Millikan (1984/2001, 223) the same reversal applies such that “No A’s are φ ” becomes “Every A is non- φ ”, “Not all A’s are φ ” becomes “Some A’s are non- φ ”, and “It is not the case that a is φ and b is φ ” becomes “a is not- φ or b is not- φ ”.

These theses of Horn are functional for Millikan (2002) to admit negation among the sub-abilities essential to the reidentification mechanism. If, in fact, in order to reidentify S represented in S is p, I must be able to negatively transform by obversion the predicate of S is p into that of S is not-p, thus making S safe, the only way to avoid accepting the unrealistic existence of a negative state of affairs is to recognise that “the fundamental use of negative is not to prohibit assertion of a sentence, but to make a positive, thought indefinite, statement to the contrary” (Millikan 2002, 221).

Already in (Millikan 1984/2001), the tractarian interpretation of negation as a reverser of the sense of a sentence (TLP 5.2341) is rejected, as is the admission of possible negative states of affairs because, since they are not states of the actual world, causality does not apply to them, nor can they be mapped or traced representatively. The main obstacles to this interpretation are negative existential propositions and those that deny identity, since in both cases it cannot be argued that negation discharges predicates. Nor does Millikan argue that in negations such as *ideas are not green* or *stones do not think at Vienna*, the negation does *not* refer to the complement predicates, since he regards those utterances as having no truth values. The proposed solution is that negative representations have an indefinite meaning, i.e. that they constitute a kind of indefinite description, in the same way as “there is at least one S that is p”, whose

truth value can only be assessed when S is replaced with an individual constant, i.e. when the description becomes definite.

Not is not an eraser, except in cases where it serves to reject one's assent to the position expressed by our interlocutor or his interpretation of one of our assertions, i.e. except in cases where negation has the polemical function already traced by Reinach (1911). If, in order to give a representation of the different treatments of negation available in the contemporary debate, we divide the blackboard in two, putting in one column the *Rejectivists* – who consider every occurrence of negation as a variant of a negative answer of the type “no, that's not the case” – and in the other column the *Incompatibilists* (Horn 1989/2001) – who reduce negation to the designation of an incompatibility between predicates – there is no doubt that Millikan would be in the second column for negative propositions and in the first for negative imperatives.⁵

However, it is not negative imperatives that are my target, but negations of predicates. According to Millikan (1984/2001, 226) when we say that “John did not go to the office” we produce the (positive) belief that John is somewhere contrary to being at the office and this is slender yet positive information about what John did do. However, this outcome is only permissible if my interlocutor is able to use the space of alternatives or structured contraries, i.e. the class of contraries, and if this ability is not inferential. In order for a negative sentence to “shunt the mind towards its own kind of specific alternative to believing that p” (Millikan 1984/2001, 237), it is necessary to be able to handle the class of specific alternatives, to be able to grasp them, i.e. that every believing that p selects its contraries.

To realise that John is not at work is to have sufficient reason to avoid calling him unnecessarily on the office phone. Conversely, to realise that John is not at work is not to infer that if he is not at work, then he is at the bar, at home or on the run with his mistress to the Caribbean. If within a few hours of the news

⁵ Whereas negative imperatives would serve to prohibit an action and argumentative negations to remove some occurrence from the mental vocabulary and would have real value when the prohibited action is not performed and the occurrence effectively removed, predicative negations would serve to produce negative beliefs, but not to erase beliefs, leaving the interlocutor with a doxastic void in that same place. One could, in truth, argue that the examination of the negative imperative is complete, for thus Millikan captures only $O\neg\varphi$, but not $\neg O\varphi$, i.e. “you are obliged not to do φ ” but not “you are not obliged to do (or not to do) φ ”. This is no small shortcoming, nor is it resolvable by arguing that after all $\neg O\varphi$ is reducible to $P\neg\varphi$, i.e. “you are allowed not to do φ ”, since I think it is clear to everyone that “you are not obliged to love me” is not at all equivalent to “you may not love me”.

that John is not at work, we receive the alarmed phone call from his wife who already knew he was not at work and yet could not reach him on his mobile phone nor find him at the tennis club where he had said he was going, then we might infer the appropriateness of calling the police, or, if we are aware of his escapades, the appropriateness of leaving him to his leisure. That chain of negations does not immediately constitute the premise of a disjunctive syllogism, and not because the possible disjuncts are many more than we know.

I have assumed that negation produces an indefinite description, and I cannot now complain that I cannot exhaust the number of disjuncts: “John is not at work or at the tennis club. Who knows where he will be”. Rather, what I realise by lining up the few or many disjuncts available to me is that John must be somewhere. That is, that it is always the same John who is not known where he is.

Hence it follows that only properties and relations admit of contraries and negations and that their effect is made possible by the permanence of a common basis that is provided by the logical subject of the proposition, i.e. the reidentifiable individual-substance. Logical subjects have no contraries, and it would be a fact of ontology, and not logic, that the identity of properties and relations is bound up with the identity of their contraries.

Assuming that contrariety precedes negation and that the prevalent use of negation is in contrariety, from the contrariety between “John is at work” and “John is not at work” we know nothing about John and we cannot even know which one is true if the other is false. Conversely, only if John exists is the contrariety actually informative. However, how is it possible to claim that, instead, the mastery of contrariety is a necessary condition for the re-identifiability of individual-substances, without falling into a vicious circle? Millikan (2002, 224) is convinced that it is not an epistemological fallacy to assert that “the ability to recognise contraries of a property through the variety of their diverse manifestations and to recognise them as being contraries, as being incompatible, is required in order to test one’s abilities to identify subjects of theoretical judgment, and vice versa”. In doing so, Millikan places this necessary condition among the specificities of human thought, which is also characterised by the use of language and the ability to construct historical time sequences, along which the changes of substances are reconstructed, and thus it is possible for a logical subject (designating a substance) to be ascribed contrary predicates, i.e. it is only possible to recognise as a logical subject the one to which contrary predicates can be ascribed.

Responding to Bermudez's objections, which also refer to the alleged human exclusivity in the handling of contrariety, Millikan (2007) argues that he cannot accept that if an animal is able to represent to itself that "a is not F" – assuming that this negation expresses an undefined contrariety – then it must also be able to think that "there is some property G, such that a is G and that G is not F", thus demonstrating that it masters concepts of properties, contrarities and modalities. Even in negation and contrariety a skill is rather at stake: to know that a is not G, is not to know how a is, but only that it enjoys a property contrary to or incompatible with G. More relevant is that if one does not hold to a as a constraint, as a hinge, and only refers to the mutual exclusion between F and non-F, that same incompatibility produces a relation of contradiction and no longer one of contrariety. Now it is not entirely clear whether for Millikan the inhibitory mechanisms of the nervous system constitute the root of contrariety or contradiction. While these are ubiquitous, they produce different effects, as for example in the *necker cube* and the *waterfall illusion*. In the former, the front and rear edges are never present at the same time, in the latter the objects appear to move upwards and at the same time remain stationary. Strictly speaking, then, when inhibition works, are contradictors or contraries excluded? The decision in this regard is not so much a question of whether Millikan's conception of the principle of non-contradiction is naturalistic-Neohegelian or not, but of whether negation is part of the logical vocabulary and whether its conditions of possession are not linked to those of other operators.⁶

If negation is not part of the logical vocabulary, then the simplest natural scene in which it can intervene is that of contradiction ($\varphi \wedge \neg \varphi$), in which only negation and conjunction are needed, and not that of contrariety, i.e. $\neg(\varphi \wedge \psi)$, the explication of which implies the possession of disjunction ($\neg \varphi \vee \neg \psi$) as well. If this were the case, however, the grip of negation on reality would be lost, since only if negation serves contrariety does it also serve to make reidentification work. The informativity defect of contrariety traditionally remedied by Aristotle's axiom, i.e. the assumption that terms have

⁶ I point out that for Brandom (1998), who is a champion of semantic anti-naturalism, negation is not part of the logical vocabulary, being in operation already in material inferences, unlike the implication by which the regularity of non-logical practices is logically expressed (Casalegno 2002, Casalegno 2004, Boghossian 2014, Williamson 2012, Wright 2012).

non-empty extension, is implemented by Millikan in the natural-real priority of the reidentification of individuals-substances.⁷

2. The analysis of negation, and of so-called negative judgements, is not only a cross for the various attempts to naturalize logic, but also constitutes the best example to highlight the ambiguities of Husserlian phenomenology with respect to logic: in fact, semantics, philosophy of logic and cognitive phenomenology overlap, and sometimes get confused (Benoist 2002). Negation, moreover, is a major headache for some attempts that, holding phenomenological analysis and cognitive science together, attempt to find logical operators in non-linguistic systems (Lohmar 2016). However, I am convinced that, if confusion is avoided (and it is not necessarily easy), the complementarity of semantics, philosophy of logic and cognitive phenomenology will make the fortune of the phenomenology of logic (Peruzzi 1989), and that this stands out precisely from the treatment of negation. Some preliminary agreements must be made, however:

- a) first of all, I will speak of the cognitive phenomenology of negation, as an occurrence of the logic vocabulary, and I will not make a semantic analysis or philosophy of logic of it;
- b) the agreement, however, is that the phenomenological-cognitive results do not conflict with semantics, nor produce a revision in the philosophy of logic;
- c) the exception, which according to some (Lohmar 1992) could be the epistemic or doxastic use of the double negation in a constructive sense, will only be considered in its concessive use;

⁷ Before moving on, I would like to add a brief corollary on the naturalistic treatment of negation in contraries and the difficulties, or resources, its lack of informativeness represents. Lakoff (1990) argues that the logical vocabulary, and negation in particular, can be traced back to the use of the metaphorical scheme of the container, and refers in this regard to the Boolean algebra's intuitive representation of classes by means of Venn diagrams. What I would like to focus on is not so much the way the diagrams show the non-informativity of contrariety, but the graphic rendering of the complement. The outside of the circle displaying the extension of a categorical proposition can only represent its complement through the artifice of the frame, so that in addition to the scheme of the container, it becomes apparent how necessary the scheme of the container of the container is, i.e. of an albeit elementary ability to box by iteration.

- d) in short, the cognitive phenomenology of logic cannot justify the adoption of deviant logic (Quine 1970), because it cannot justify the adoption of any logic.

These arrangements are indispensable for the idea of naturalization that I will discuss only at the end. Perhaps the whole battle against the bogeyman of psychologism (Husserl 1929, 244), and naturalism, should be reinterpreted as an invitation to the demarcation, within the phenomenology of logic, between semantics, philosophy of logic and cognitive phenomenology. In the same way, it should be remembered that Husserlian anti-psychologism is not superimposable on Fregean anti-psychologism, since although Husserl maintains the distinction between the validity of logical relations and the experientiality of cognitive operations, he not only does not deny the correspondence between relations and operations but employs his entire phenomenology of logical knowledge to explain it. On balance, the cognitivisation of logic is a more difficult fish to fry for a Neo-Fregean than it is for a Neohusserlian.

2.1. I will finally begin with Reinach (1911) and the classification of negative judgements by means of the distinction between assertion and belief or conviction. I do not care to join those who have rightly pointed out that only by equivocation could a belief be considered a judgement, because I shall use that distinction to produce an extension of the language of predicative logic through the predicate of belief B. This is only an extension of predicative logic because it is not Reinach's intention, nor mine, to use B as a modal operator, with all that would follow regarding the choice of semantics. A final clarification concerns the notion of state of affairs and, by derivation, the admissibility of negative states of affairs. Now, in Reinach as much as, but more emphatically, in Husserl, states of affairs are on the one hand products of the substantiation of judgments and on the other hand enjoy a validity and truth-value independent of the truth-value of judgments (Mulligan 1987, Textor 2013). As Husserl (1939, 282 ff.) will make clear, a state of affairs is that which lies to the right of a *that-clause* and is not part of the basic ontology of the world.

A state of affairs is not a relation, but the way in which at least two objects stand according to a certain judgement. To the value of the judgement, however, except in ideal cases, not only states of affairs contribute, but also conceptions, lexicon, and context. Since a state of affairs contains at least two elements it admits at least one other co-referential state of affairs: "(that) this chalk

is white” and “(that) white is the colour of this chalk” are different states of affairs that refer to the same state of fact, to the same segment of the world (real or non-real). They speak of the same thing, but do not say the same thing. The following rule therefore applies: given a state of fact and a number of elements ≥ 2 , there will be ≥ 2 states of affairs.⁸ However, such a rule does not apply to the relationship between states of affairs and judgements: the number of the latter does not depend on the number of states of affairs, nor on the number of elements or objects, and is therefore unpredictable. With respect to the same state of fact, one can say “this chalk is white”, “white is the colour of this chalk”, or “this calcium foot specimen is white”, “this calcium phosphate stick is white”, “this chalk is the lightest colour there is”, etc. What is common to these five cases is the use of “this” only because it serves to mark that the state of fact is currently present. It follows, therefore, that a relation of tracing or semantic rigidity applies to the first relation (between state of fact and state of affairs), which does not apply to the second relation.

The admission therefore of a negative state of affairs does not imply the entry of negative *facts* into the world. By this I do not at all mean that states of affairs are part of the basic ontology of the world. Rather, states of fact are sections of the world: its parts are merely concrete individual objects. Such a parsi-

⁸ The case on which Husserl (1939, 285 ff.) develops this rule is that of a relational proposition (“the Earth is bigger than the Moon” and “the Moon is smaller than the Earth”). Precisely because ‘bigger than’ is a predicate that applies to an ordered pair, if the order of the pair is inverted, the predicate is also replaced by its inverse: thus, the two propositions would have the same validity (or the same truth conditions), but different meanings. Nevertheless, Husserl (2003, 116) is convinced that “every judgement can be transformed into a relational judgement *salva veritate*”, where the clause *salva veritate* stands for equal validity and not identical meaning. This conviction is the result of Husserl’s long confrontation with Bolzano’s, Brentano’s and Jevons’ theory of judgements, i.e. with three hypotheses about the reducibility of judgements and what their elementary form is: the categorical (S has p), the existential (S is and S is p) or the identity (S = p) (Husserl 1979, 49-50, Husserl 1996, 172 ff., Husserl 1939, 242 ff.). As an anonymous reviewer pointed out to me, it is very easy to dismantle both the Husserlian rule (at least two elements for each state of affairs) and the thesis of the reducibility of all judgements to the relational form: just think of “Mario runs”. What are the two versions that can be given? And above all, what would be the reduced relational form? This question cannot be answered, as in Husserl (1939, 6), “Mario is running”, reusing the Aristotelian strategy. Rather, one would have to answer, “Mario is currently running”, so that the other version could be “running is Mario’s current engagement”. The two elements would be “Mario” and “running”, while the relation would be “being currently engaged in/currently engaged in”. The two elements mentioned could also be rendered as objects (in the very broad sense in which Husserl uses “object”, i.e. as that on which one can pronounce).

monious ontology accords well with the phenomenological preference for predicative logic. It is then the convinced admission of a logic of intensional, or superintensional contexts, i.e. mainly of the doxastic-epistemic and the temporal, that extends the catalogue of objects to the nonconcrete as well.

Returning to Reinach's treatment, he isolates three main types:

- 1) the assertion of a negative state of affairs, i.e. $B(\neg Ps)$;
- 2) the negation of a positive state of affairs, i.e. $\neg B(Ps)$; and
- 3) the negation of a negative state of affairs, i.e. $\neg B(\neg Ps)$.

For Reinach, too, the main occurrence of negation is that of internal negation, and for him, too, the first relation established is that of contrariety or contrast. To illustrate this passage better, however, it is necessary to introduce at least the existential quantification $\exists x$. This results in:

- 1*) the assertion of a negative state of affairs, i.e. $B(\exists x(\neg Px))$;
- 2*) the negation of a positive state of affairs, i.e. $\neg B(\exists x(Px))$; and
- 3*) the negation of a negative state of affairs, i.e. $\neg B(\exists x(\neg Px))$.

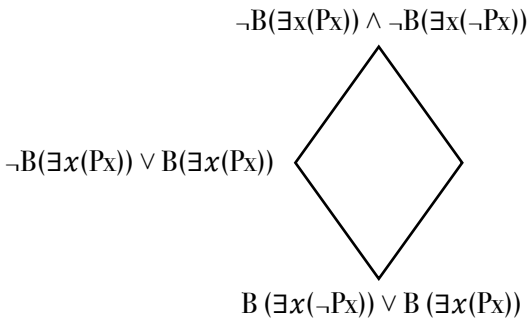
From 2*) and treating, as I said, B as a predicate, we also derive the possibility of negating the existential, and not the predicate, i.e. $\neg B(\exists x(Px)) \rightarrow \neg \exists x(Px)$, and therefore $\forall x(Px)$; this possibility is then also extended to 3*) so that $\neg B(\exists x(\neg Px)) \rightarrow \neg \exists x(\neg Px)$, and so $\forall x(\neg Px)$.

It is therefore correct that between $B(\exists x(\neg Px))$ and $B(\exists x(Px))$ there is a sub-contrariety relationship, between $\neg B(\exists x(Px))$ and $B(\exists x(Px))$ a relationship of contrariety, whereas they are contradictory $\neg B(\exists x(Px))$ and $\neg B(\exists x(\neg Px))$. The emergence of the contradiction is therefore late, and it is significant that it emerges from the *impossibility of joining* two negative beliefs referring respectively to a positive and a negative state of affairs. That is, it is untenable for someone not to believe that "this piece of chalk is white" and not to believe that "this (same) piece of chalk is not white". Should I happen to meet someone who holds both negative beliefs, I might in turn use denial argumentatively, saying "no! You cannot not believe that 'this piece of chalk is white' and not believe that 'this (same) piece of chalk is not white'". In this way, I would reject a position that supports two incompatible states of affairs.

If one puts this last annotation together with the fact that a state of affairs derives from the nominalization of a judgement, i.e. from the resumption

of a judgement made, either by me or by others, previously, one also understands the peculiar position of the cognitive phenomenology of negation in relation to the aforementioned alternative between *Rejectivists* and *Incompatibilists*. Not only is denial doxastic and incompatibility concerns states of affairs, but the states of affairs themselves have a pro-sentential genesis. As pro-sentential are questions of truth about a judgement or questions of justification about the attribution of a truth predicate to a judgement.

If one thinks about it a little, I think one can derive from what has been said that the cognitive phenomenology of negation does not produce a square (of oppositions or singular propositions), but a rhombus of negations: at the low vertex is contrast (i.e. sub-contrariety) and at the high vertex epistemic inconsistency (or contradiction); finally in the middle is doxastic contrariety.



The main findings concern the definition of *contrast* as sub-contrariety and the polemical denial of *incoherence*.

2.2. If we review the various analyses that Husserl devoted to negation up to the mid-1910s (Lohmar 1996, Altobrando 2017), we obtain that:

- 1) in *Logical Investigations*, the consideration of negation (Husserl 1900-01, 425 ff.) as a quality of judgement, and thus as a component of the propositional essence, differs as much from the examination of delusion as an experience of contrast and thus of negation as a negative synthesis, as from that of the incompatibility between meanings *in specie* (Husserl 1900-10, 632 ff.);

- 2) in the courses in logic between 1906 and 1911, the irreducibility of the negation of the predicate to the affirmation of the negative predicate is emphasised in Husserl (1984), as is the centrality of the phenomenon of contrast, and in Husserl (1996) the operative character of negation and the specificity of the negation of the entire proposition. In these courses, moreover, the function of negation in the formation of universal propositions is emphasised, such that if “all S are p” is not taken as a generalising translation of the specific proposition “S is p”, then it implies that “all S not p, none excluded”;⁹
- 3) in the revisions of the *VI Logical Investigation* (Husserl 2002a, 50 ff.; Husserl 2005, 417 ff.), the different phases of the contrast (the initial proof of belief, propensity, and cancellation) are discussed.

Recurring themes are therefore on the one hand the contrast and on the other the non-equivalence between assertion and negation. Be careful, however, of two things:

- 1) for Husserl assertion is not affirmation and that is why there is no sign in ordinary language to designate it. Assertion is not an answer that yes, but is the expression of a simple, unmodified certainty.¹⁰ It should also be noted that the assertion is not a notification (of my state of mind) and that this is why the occurrence of an initial negation, preordained in the latter, does not make any problem. I may well say “I do not feel well”, but then I do not assert that “I feel bad”, but that I am currently suffering some discomfort;
- 2) the function of contrast and its definition in terms of subcontrariety must be handled with care. First, contrast recurs very frequently in phenomenological-cognitive analyses: it exists between fantasy and perception (Husserl 1980, 146 ff., 329 ff., 486 ff.), between perceptual apprehensions, between attention and inattention, and in syntheses of heterogeneity (Husserl 1939, 73 ff.). For it to take place, the contenders must share something: the stage of a theatre on which I see the actors or pretend to see the characters, the shop window in which I see a mannequin or a man, the page of a book that I read with distinction or scroll through confusedly, a portion of the perceptual field that appears to me with or without relevance. And

⁹ Cf. Wittgenstein-Waismann (2003), 164 ff.

¹⁰ About the difference between assertion and affirmation, see Lando (2011).

the same goes for the negative evidence of disappointment or disagreement between two people, both eventualities that can only happen if one keeps still the thing one denies being so and so.

It also seems that, although Husserl continues to believe (as do Reinach and Millikan) that internal negation has priority, he examines the specificity of external negation from another point of view: namely, that while $(\exists x(Px))$ and $(\exists x(\neg Px))$ share the same *subject of judgement*, the same is not true with $(\exists x(Px))$ and $\neg(\exists x(Px))$, as if to say that while the former, once the existential quantification has been exposed and the variable has been interpreted, has *P* as its *matter*, the latter has $(\exists x(Px))$ and is a truth judgement, i.e. a judgement about a judgement, i.e. about the position that there is at least one *x* that is *P*. This is why Husserl can also say that the negation of the whole proposition coincides with the negation of the subject (Husserl 1996, 136).

However, I am convinced that the most interesting treatment of the subject of this essay - the naturalisation of negation - is that contained in Husserl (1939, 325 ff.). The main reason for this, or perhaps the most conspicuous reason, is that in Husserl (1939, 347 ff.) negation is an operation that obeys the tendency towards logical self-preservation. And that by logical self-preservation Husserl means the (or rather the only) natural side of logic.

Criticism of the use of the biological-evolutionist concept of self-preservation to explain the teleological origin of logical principles, as abilities that would prove particularly suited to the demands of adaptation to the natural and epistemic environment as well as being evidently inexpensive, had been the main thrust of the polemic set up by Husserl in the *Prolegomena* (Husserl 1900, 196 ff.) against Mach and Avenarius (Sommer 1985).¹¹ In *Ideas II* (Husserl 1991, 249, 378) and in some manuscripts or lectures of the 1920s (Husserl 1968, 214; Husserl 2020, 473 ff.), a principle of logical self-preservation is introduced instead, which is equivalent to a kind of principle of epistemic coherence and which in later years (especially between 1929 and 1932) would become a tendency or impulse towards self-preservation that would guide the entire structure of experience from its prepredictive levels (Husserl 2008, 281 ff., 519 ff.; Husserl 2013, 93 ff.; Husserl 2005, 18 ff., 89 ff.; cf. Cavallaro 2016). In his reply to a letter from Farber in 1937 (Husserl 1994, 77 ff.) - the same Farber who would shortly afterwards, first in (Farber 1943) then in (Farber

¹¹ One might also add that this was not only the main critique, but also the only critique Husserl makes of what, with a wide sleeve, he calls economy of thought.

1959), engage in one of the actual precedents of the naturalisation of phenomenology now under discussion - Husserl claims transcendental access to evolution, without further specification. Instead, it is Landgrebe in the introduction to (Husserl 1939, 29, Husserl 1973, 34) who writes “everything mundane participates in nature. The naturalisation of spirit is not an invention of philosophers - it is a fundamental error if falsely interpreted and misused, but only under these conditions. [...] In a certain way, everything nonsensible partakes of the sensible; it is an existent from the world, existing in the one spatiotemporal horizon”.¹² Although this notion of naturalisation is still very vague and the very phrase *Naturalisierung des Geistes* is, in this form, hardly to be found in Husserlian texts,¹³ I believe that the only way to specify it is precisely by using the tendency towards logical self-preservation and the function that negation plays in it. But even simply lining up naturalisation, self-preservation and negation does not get one out of the vague either.

One could make it simple and say that basically Husserl starts talking about logical self-preservation when he convinces himself that every cognitive performance is an expectation and that knowledge in its entirety is a desire (Husserl 1939, 231 ff. in contrast to Husserl 1900-01, 573 ff.). Thus, it would suffice to superimpose the Husserlian will to know on the Jamesian will to know and find the pragmatist framework of the biologisation of knowledge (James, Dewey) and it would then be easy to read it in adaptive (Lorenz) or psychological-evolutionary terms (Adenzato, Meini 2006). I do not deny that one would have good reasons to do so, even if one had to take on some not exactly marginal details. Rather, this is not my intention. Not least because I believe that in order to take the idea of the will to know seriously, one must bear in mind the split that Husserl wants to produce in this way: the will to know has as its end the increase of knowledge and knowledge has as its reference some object.¹⁴ As a rule, one

¹² See also Landgrebe (1974, 1978).

¹³ Indeed, Husserl 2001, 176 and 337 speak of a *verkehrte or missverstandene Naturalisierung des Geistigen*, which makes the psychic an accident of the physical. Cf. also Husserl 2002b, 215, 218.

¹⁴ The end of the will and the object of knowledge do not coincide. The will entertains, knowledge operates. Of course, the will to know can motivate one to do cognitive operations, to overcome obstacles and disappointments, or not to do them, to surrender or to become disinterested. Not the will itself is felt, but its satisfaction, its tension. The dynamic vocabulary that Husserl uses has will, interest and motivation as its field of application: dispositions, propensities, tensions, differentials are widely used to describe the phenomenal character of the life of knowledge. To be one

knows something when, by holding fast to some object, one enlarges the set of true propositions that we are justified in asserting, and one satisfies the will to know when one feels the enlargement of that set.

Searle (1983) argues, as is well know, that will (knowledge) and belief are in fact two intentional states that have different directions of fit – mind to world, the former, and world to mind, the latter – and yet share a lack of causal self-reflexivity. On this view, to deny a previous belief (negative belief) or to believe that the doxastic content of the previous belief does not exist (belief of a negative state of affairs), would be tantamount to having replaced the belief that turned out to be unsuitable. If, however, I were to collapse the belief onto the will to know, I would risk losing the regulatory feedback of substitution of the belief, and also give the belief an inverse direction of fit. It is therefore not the adoption of a voluntarist or tendentialist vocabulary that justifies the Husserlian use of logical self-preservation.

On the other hand, if the watchword logical self-preservation were sufficient to naturalize the phenomenology of negation, the naturalization that would ensue would be at the very least crude and would generate, not unjustifiably, suspicions of a less-than-innovative metaphysization of the imperative to preserve oneself through the preservation of one's constancy.¹⁵ Therefore, I believe that, through the phenomenology of negation, one should rather demonstrate:

- a) that the self-preservation spoken of is the preservation of doxastic coherence (and not constancy),
- b) that doxastic coherence consists of the inclusion of one or more beliefs in a frame (Lakoff, Johnson 1999),

who knows, one who makes knowledge is like to feel growth or decrease of the satisfaction of efforts to know. There is no doubt that to know involves feeling and being motivated by epistemic emotions, just as one may be more or less inclined to epistemic emotions. Knowledge, however, is not dynamic in this sense (i.e. because it tends to its object), but because it consumes time, it must admit an interval between the intention, the pointing, the taking and the confirmation. This is why mere naming is not a true type of knowledge. Words seem to stick to things and predication collapses almost instantaneously onto the subject, as when realia are used: I say Allen key, pizza, Nutella and that's all I need to ask for them. Realia are words of will and not of knowledge: they are epistemically static and emotionally dynamic.

¹⁵ On the genealogy of *Selbsterhaltung* see Ebeling 1976.

- c) that negation is an essential tool for the preservation of doxastic coherence, because it allows one or more beliefs to be included in a frame,
- d) that negation serves first and foremost to apply the rest of the logical vocabulary to the temporal structure of the life of knowledge,
- e) that negation, in its coherential function, is indispensable for using I-expressions and for understanding auto-epistemic utterances,¹⁶
- f) that possession conditions of negation are testable in the performance of preserving doxastic coherence.

Only if this chain of theses holds will it be possible to establish what kind of naturalisation is at stake. I suspect, however, that the price to be paid is the decoupling of naturalism and realism, realism meaning the thesis of the semantic reliability of the causal world-mind relation. On the other hand, the well-known passage in which Fodor (1987) asserts that if one were to discover that meaning and intentionality are physical properties, one would also discover that they are properties that supervenes upon other properties that are neither semantic nor intentional, lays bare more of a problem with the naturalization of intentionality than a problem with the reconciliation between naturalism and realism regarding intentionality.

I will examine below the analysis made in Husserl (1939) of three different types of negation: a) negation as modification and modality; b) concessive double negation; and c) coherential negation.

2.3. When Husserl speaks of negation as a modalization, he obviously has a different thing in mind from the one recently argued by Berto (2015) taking up Došen (1986, 1999), although it too has to do with a certain version of incompatibility.¹⁷ First of all, it is worth noting that no longer defining negation as a

¹⁶ This does not mean that the framework, on which coherence depends, is reducible to the stock of beliefs of a single epistemic agent and not to that of groups or communities of agents and their relation to the world.

¹⁷ Berto (2015) has recently argued for a modal reading of negation, taking up Došen (1986, 1999) and claiming that the result thus arrived at does not represent a Quinean deviation (change of argument). Beyond its broader objective (which includes logical pluralism, a peculiar treatment of contradiction and double negation), the modal interpretation of negation rests on the primitive compatibility relation, introduced into the modal semantics N through the negative accessibility relation R_N , such that:

quality (of the content of the judgement, i.e. the intentional essence of the judgement), but as a modality (first of the experience and then of the predicative proposition) is very relevant. It is a change that has a great effect on the rewriting of the table of logical-phenomenological categories: in the modality box are, in fact, negated, true, merely possible or justifiably possible, probable and their negations. The absence of necessity stands out; however, this is not surprising, since if, as Husserl consciously does, one wants to construct in doxastic and epistemic terms a sketch of modal logic, there can be no justification for introducing the operator of necessity (Husserl 1939, 371).¹⁸ And not as a primitive operator anyway. The minimal modal vocabulary consisting only of p - any content of a simple belief, taken for certain or taken for granted - and not, with which p is modified, can give rise to the following compositions (Husserl 1939, 93). Taking the same example from Husserl, I start from:

[p] there is a mannequin in the store window,

Paying attention to the fact that in [p] the character of belief is not made explicit. I am not saying ‘I believe that...’, which I would only say if I were in doubt, and if I were in doubt because I can’t see well or because someone has disputed my previous assertion. [p], in fact, is assumed to be a starting assertion: it expresses a belief content, but it is not characterised with a doxastic mode.¹⁹ There is no immediate transition from p to B(p), i.e. to ‘I believe that p’. I must first encounter some obstacle.

What then would prevent this obstacle? I am walking along, I catch a glimpse of a shop window and say to myself that I see something. Now no one is forcing me to stick to this solitary assertion. Once I pass by, I might as well forget about it, as is the case with the vast majority of what I see. There are then two possibilities. Either I am actually far away from that shop by now; I am in the bookshop, a beautiful edition of Baudelaire’s *Morale du joujou* and I think back to the mannequin I saw hours earlier. Or, I’m still in front of that shop, I stop

$(S_{\neg})x|I \vdash \neg A \leftrightarrow \forall y(xR_N y \rightarrow y|I \not\vdash A)$,

i.e. from x we derive $\neg A$ not when A is false, but when, for every y to which x has access, there is nothing in y that is incompatible with x and yet nothing that is excluded from x is supported by something in y.

¹⁸ I speak of a sketch of modal logic, since a complete phenomenological modal logic can only be found in Becker(1930).

¹⁹ In contrast, Searle (1969, 31 ff.) treats the assertion as an illocutionary act and thus derives a different treatment of negation.

and look at a picnic hat that would look perfect on my daughter, and the mannequin does something I don't expect.

Obviously, the descriptively simpler situation is the latter: to describe the former, I would have to invoke memory, my literary education, the fact that I have read that book and know what is in it. The second possibility is instead that of a blocked perceptual belief. It has nothing to do with memory, short or long, nor with my belief, that subtle compulsion to continue believing what I had believed: pride in one's belief. There was no time. In the extended present of my perception of that dummy - of which one could also specify the time scale²⁰ - something went wrong. And hence

[¬p] the one in the shop window is not a mannequin.

Put like this [¬p] is an internal negation, which not only preserves p, but preserves it as the content of a previous belief. The impediment, the strangeness in the dummy's behaviour, which I did not expect to happen, does not motivate a change of perceptual object, nor does it change the apprehensive quality of a representation that remains the same (Husserl 1900-01, 176 f.). I have no reason to believe that instead of seeing a mannequin, I see a model or a robot. Nor to believe that if what I see is not a mannequin then it is either a model or a robot or something other than a mannequin. I may not even possess the class of contraries of mannequin and still say that [¬p]. Of course I say that "in the shop-window is not a mannequin, but a model", or "this sphere is not uniformly red, but has green spots", etc., and both the fact that I focus on the contraries of the predicates and that I use the conjunction in an adversative form (i.e. *but*) confirm that it is an internal negation, which does not question the subject: "what I see in the shop-window" or "this sphere" remain. On the contrary, they are reinforced. On the one hand, every cognitive performance is semantically rigid, on the other hand, errors on predicates (and thus internal negations on predicates) can informally corroborate the reference to the object.

Two phenomenological guiding principles on experience and meaning construction converge in this first report on the effects of negation: *semantic rigidity* and *doxastic gradualness*. Firstly, intentional reference (like all relations dealing with objects) is all or nothing. If I see, hear, think or even feel something, I do not do so partially, to a large or small extent. I may be mistaken: I may seem

²⁰ In fact, as is well known, the definition of fresh recollection and then retention stems from Husserl's critical reinterpretation of Stern (1897) on the present or extended present, in which the issue of its duration also arises.

to see something and I do not. But it is the very thing I saw (and seemed to see) that is not that way. The intentional reference is the hook for every possible predication, but it is not itself a predication. Therefore, it is not affected by the same errors as preaching. And if it is by means of predication, i.e. by means of the attribution of determinations to something (a substratum, a substance), that I make identifications, then the intentional reference is also immune to the errors of misidentification (Evans 1981, 179 ff.). This does not mean that it is immune to error. It only means that the reference, the subject position, and its simplest syntactic form, the demonstrative, are affected by another kind of error.²¹ Therefore, intentional reference is not involved in predicative identification. However, when predicates with which an object has been identified are denied, not the reference to the object, but my belief that I refer to that very object increases. And the same happens during a dispute. The diversity of beliefs, the doxastic difference, forces one to hold on to the object. So if what is in the shop window is not a mannequin, nor a model, nor a robot, nor a hologram, my embarrassment is proportional to my conviction that something is there, since only if it is there can it make sense to deny all those predicates.

The distinction therefore between semantic rigidity (of the intentional reference) and doxastic gradualness (on the identity of the individual-subject) is decisive for the phenomenological treatment of negation, i.e. the analysis of its phenomenal conditions of possession. What do I notice when I negate a determination and *what is it like to be one who negates?* I notice that I am always referring to the same thing and I seem to be able to negate more and more predicates because I am more and more convinced that I am in front of something that, if it may not be so and so, must somehow be.

Let us return to the shop window: I see something and tell myself it is a mannequin. My perception, veridical or illusory, still has an object and that object I recognise as a dummy, i.e. I use for it an occurrence of my lexicon that is good for exemplifying a type, i.e. an empirical concept. In fact, both semantic

²¹ Only then can one distinguish between illusion and hallucination. Illusion involves predicates, determinations: fata morgana mirages, Muller-Lyer's arrows, Kanizsa's triangles are predicative accidents. Hallucinations, on the other hand, involve reference: autoscopic hallucinations, in which one sees oneself from the outside, extracognitive hallucinations, in which one sees someone behind oneself, tactile hallucinations, in which one feels oneself being stung or crossed by an electric current, are all reference pathologies (Merleau-Ponty 1945). It is therefore not a difference between internist and externist errors, i.e. that for the former there is a distal stimulus and for the latter there is not. But of a difference concerning two different semantic areas of experience: illusions attack determinations and hallucinations attack substrates.

competence concerns objects and lexical competence concerns types, incorporates typifications and is acquired through types (Taieb 2021). This means that each term I choose as subject selects a range of actions, i.e. verbs; if this selection fails, the effect, to a greater or lesser extent, falls on the term that stands for the subject. I see and recognise a hen and select hen to designate her cry. If, however, I listen to her carefully and say that she clucks, the selection fails and the subject suffers. Note, however, that it is not that that hen cannot gobble, but it is that the hen type does not admit the combination with gobble.

Similarly, what happened with that dummy is that it does not behave as a type of dummy. $[\neg p]$ is a modification of $[p]$ not only because it is an internal negation of it, but because it makes explicit something that was implicit in $[p]$. In an extended version, $[\neg p]$ sounds:

$[\neg p^*]$ the one in the shop window is not what *I thought* it was. To wit:

$$[\neg p^*] \quad B(p) \wedge \neg p.$$

I had reasons to believe that p , but now I realise that $\neg p$. The doxastic predicate and the conjunction thus make p and $\neg p$ compatible. It follows that not only can I believe that something is the case when it is not, i.e. that I can be wrong, but also that:

$$[\neg p^{**}] \quad \neg p \rightarrow B(p), \text{ i.e. that} \\ p \vee B(p),$$

disjunction that is not only true when

$$\neg p \wedge \neg B(p),$$

i.e. when what I see is not a dummy. And this conclusion is only admissible because I understood $[\neg p^*]$ as a negation of a belief. In other words, on what I have no reason to believe p , this negation does not apply. It does not escape me that this way of understanding negation has apparently paradoxical implications. For example, true to this interpretation of negation, Schutz (1970/2011, 182-183) argues that although

- a) “the whale is not a mineral” and
- b) “the whale is not a fish”

have the same logical-formal structure, they are not negations in the same sense, since the former has no motivational relevance and the latter does. A doxastic-

motivational negation is therefore not applicable when the predicate negated is neither compatible nor incompatible with the type of the subject, i.e. when the predicate negated is irrelevant to the subject.²² In the case of a) it is obviously the case that $\neg p \wedge \neg B(p)$, in the case of b) it is not. Thus, the phenomenological-modal interpretation of negation admits a disjunction not between contents, but between a state of affairs and a belief.

The further step, which consists of another modalisation, is negative belief. Things are not the way I thought they were and then I no longer believe that things are the way I thought they were:

$$[\neg B] \quad B(p) \rightarrow p, \neg p / \neg B(p).$$

I can describe the situation that arose in this way because, thanks to $[\neg p^{**}]$, I made it explicit that at the initial stage I believed that p , although saying to myself that p I was not expressing it as a belief. Between $B(p)$ and $\neg B(p)$ there is a relation of contrariety that beliefs inherit from the disjunction between state of affairs and belief: either I believe that the one in the shop window is a dummy or I believe that it is not, or I am undecided.

But if I am undecided, it is because I have reason to believe that p and that $\neg p$. Between these two beliefs there is a relationship of sub-contrariety:

$$[B-] \quad B(p) \vee B(\neg p).$$

Since I have now transferred the negation to p , it is from p that I must begin again. Indecision does not consist in the contrariety between a positive and a negative belief, but in the subcontrariety between the belief of a positive and a negative state of affairs. Therefore, I must use states of affairs as sources of the reasons for coming out of indecision. Now, however, while the beliefs are contrary or subcontrary, the motives are in competition: they conflict. It is not necessarily the case, indeed it almost never happens, that motives carry equal weight. What matters is that in order to conflict, the motives must be different. One could even say that indecision, doubt, is the cause of a practical response that consists in the differentiation of motives. I am indecisive and so I go into the shop: I don't just look, I touch what I thought was a dummy, I hear what sound

²² Of course, the contexts of relevance can change. I could imagine a situation where whales are endangered and yet someone says that the threat is not so serious because it has been ascertained that the rocks on the seabed are in a very good state; then I could say: "but, whales are not minerals", using the negation in a performative way, i.e. as a negative imperative: "do not believe that whales are minerals".

it makes if I hit it. If instead of sounding, what I thought was the wood of the dummy responds to me with a scream, the doubt is gone: I make my excuses and leave, with one less indecision and one more embarrassment.

Let us suppose, however, that I could not get into the shop, that I was forbidden to, or let us suppose, more credibly, that my indecision concerned something more important to me than the true nature of the model-mannequin, and that all the practical strategies at my disposal to resolve it failed: in that case, what situation would ensue? I would not believe that p nor that $\neg p$. And only between $\neg B(p)$ and $\neg B(\neg p)$ a contradiction exists. And it is relevant that this contradiction exists between two negative beliefs.

In this case, it would not be my perception that would be disappointed, but my decision tendency to remain frustrated.

2.3. To describe in semi-formal terms the situation we would find ourselves in, should we perceive the doxastic contradiction between the two negative beliefs that p and that $\neg p$, we should say that it is considered unbearable not to believe that p and not to believe that $\neg p$. That is to say,

$$\textit{is not bearable} (\neg B(p) \wedge \neg B(\neg p)).$$

This is, as is clear, a particular treatment of the negation of a contradiction that is nevertheless truth-functional. Put another way, it *is not bearable* behaves in the same way as the truth-functional connective \neg would behave in front of a contradictory formula. To wit,

$$\textit{if it is not bearable} (\neg B(p) \wedge \neg B(\neg p))$$

then (for the second De Morgan)

$$\textit{we are forced to} (B(p) \vee B(\neg p)).$$

The introduction of the double negation here respects the truth-functionality principle. Yet double negation is an attractive theme for cognitive phenomenology, if it is true that already in (Heyting 1931), the formulation of an intuitionistic logic passes through direct or indirect references to Husserl. Moreover, the reference to intuitionistic logic might not be so out of place in the context of an essay on the naturalisation of negation, since it is precisely (Heyting 1931) that begins by arguing that the aim of intuitionists is to show that mathematics is a natural function of the intellect, a free and vital activity of the intellect, a product

of the human spirit. However, although it is indisputable that the intuitionist revision of logical vocabulary passes through an epistemization of logical connectives, and that this has a counterpart in the phenomenological-cognitive analysis of logical operations, what the philosophy of intuitionist logic translates into epistemic and modal terms (Becker 1934) is the will to know.

Already in Heyting (1931) a distinction is made between assertion and proposition; the former is taken as an intention, or rather as an expectation, which “does not refer to a state of things thought of as existing independently of us, but to an experience that is thought to be possible”, whereas the latter is the affirmation of the previous assertion, its confirmation of fact, i.e. “the ascertainment of an empirical fact, that is, the filling in of the intention expressed by the assertion”. A function, on the other hand, consists in the procedure by which one moves from one assertion to another, and the main function is precisely negation, which would designate something positive, i.e. the intention of a contrast with a previous intention. The concatenation between assertion, expectation and the fulfilment of expectation in the form of assertion becomes even more evident in Heyting (1934) and in the translation of the *modus ponens* into the calculus of tasks by Kolmogorov (1932), which Becker (1934, 138) also noted: the task is a special case of the intention, expectation, the seek-find, ask-answer mechanism.²³

Apart from any other considerations that could be made in this regard, it is clear that the epistemic-modal treatment of negation as a function of the transition from expectation to satisfaction is very different from the one I made earlier in which negation served to make explicit the doxastic character of the assertion (and not, mind you, of the affirmation). I have, moreover, already said that a distinction should be made between phenomenological philosophy of logic and cognitive phenomenology of logic, and that since the subject of logical

²³ In this regard, Becker (1934, 138-139) also adds that not even Aristotle would have been so far removed from intuitionistic logic and that the square of oppositions was above all a bad distillation of the commentators, taken from more corrupt passages of the *Peri Hermeneias*. Becker (1930, 511) returns to the distinction between contradictoriness, contrariety and subcontrariety and its relevance in modal contexts: “In the case of the logic of necessities, the ‘principle of excluded middle’ does not apply, but the ‘principle of non-contradiction’ (‘no statement can be both necessary and impossible’) does apply. In contrast, in the case of the logic of possibilities, the ‘principle of excluded middle’ (‘a statement is always possibly true or (*vel*) possibly false’) applies, but not the ‘principle of non-contradiction’ (‘a statement cannot be both possibly true and possibly false’). – In classical logic, these relations between statements correspond to that of contrariety, in the first case, and to that of subcontrariety, in the second”.

revisionism, and of deviant logics, is a subject of philosophy of logic, cognitive phenomenology should refrain from addressing it. However, since there is an examination of a particular occurrence of double negation, the concessive one for that matter, which falls within the possibilities of cognitive phenomenology, a few words on the broader issue of double negation and its epistemic-constructive interpretation are in order. Lohmar (1992), for instance, argues that double negation differs from simple negation in that the former is an autobiographical, i.e. autoepistemic (Woods 2013), account of the history of a subject's decisions and the latter is a reaction to the failure to fill in, and the consequent cancellation of an intention, to show that the law of double negation does not apply in the logic of experience. If one thus designates autobiographical negation [A-Neg] with (\neg_2) and simple negation with (\neg_1) , then one will hold valid

$$\begin{aligned} & [A\text{-Neg}] \neg_2 (\neg_1 A) \rightarrow A, \text{ but not} \\ & A \rightarrow \neg_2 (\neg_1 A), \end{aligned}$$

for reasons similar to those that had led me to say that the negative belief that p was only acceptable if it had been relevant to believe that p : from the fact that A does not follow that I no longer believe that $\neg A$ does not exist, because I might never have believed it. If, however, I translate [A-Neg] into the language of predicative logic plus B that I have so far adopted, I would find myself

$$[A\text{-Neg}^*] \neg B (\neg p) \rightarrow p,$$

which, however, rather resembles the result of an epistemic change, i.e. I no longer believe that not p and therefore I am convinced that p . This, however, already implies the solution of the doxastically absurd situation with which I closed the previous paragraph.

In Gärdenfors (1988), which Lohmar (1992) himself cites, and then especially in Gärdenfors (2005) an example is used that may be useful to us, not least because it begins to put the issue of conservation and consistency in a different light. Let us assume that I know that Oscar always wears his hat when it rains and that he also wears it half the days when it does not rain. Let us assume that p stands for "it is raining today" and q for "Oscar wears the hat" and that I know that p : if this were the case, I would also accept q . But if I were to revise my knowledge because I realise that it is not raining, so $\neg p$, I would be undecided whether to accept q or $\neg q$, knowing that Oscar might still wear the hat. But could I also tolerate the situation of epistemic absurdity mentioned above, i.e. could I tolerate that $(\neg B(p) \wedge \neg B(\neg p))$?

Let us leave aside for now the big target of contradiction and its bearability. Let us consider something only more marginal in appearance. If this were the case, if that doxastic change left the body of my beliefs intact, if my beliefs were preserved without change or loss, I would miss out on a significant use of negative belief and double negation, i.e. the concessive double negation. That is, I would miss the conditions under which it is correct to say: “*although* it is not raining, Oscar *nevertheless* wears a hat”. That *although* and that *nonetheless* would be superfluous: the beliefs that p or that $\neg p$ would make no difference and those two terms would at most modify the emphasis of the assertion.

Although and *nonetheless* are characteristic not only of semifactuals (Goodmann 1979/1983), but also of concessive double negations (Horn 1989/2001). In the case of semifactuals, the antecedent marked with *although* is counterfactual, i.e. it designates a situation that has not been realised and which, even if it had been realised, would not have been a sufficient cause of the consequent; the consequent marked with *nonetheless* describes a real situation that, even if the situation designated by the antecedent had been realised, would still have occurred. The purpose of the one who uses a semifactual is to assert that the cause of the consequent is not that contained in the antecedent. When I say “even if I had braked, the accident would have happened anyway”, I mean that the cause of the accident was not the driver’s inattention, but, perhaps, a failure in the brakes or reckless behaviour of the driver of the other vehicle. In the case of the concessive double negation, the difference between antecedent and consequent does not lie in the factual character, although the fact remains that what is designated by the antecedent is in some way considered a non-sufficient condition. What then is the insufficiency of the concessive antecedent? What do I mean when I state that “*although* it is not raining, Oscar *still* has his hat on”? At first, I believed that it was raining and that therefore Oscar would wear the hat; then I realised that it is not raining and therefore I had to change my belief, with good reason. The reasons that led me to change my opinion on the antecedent, however, are not sufficient to make me change my opinion on the consequent as well: these reasons are not strong enough to make me set aside my belief that Oscar will wear the hat anyway, since I know, and therefore have reason to believe, that even when it is not raining Oscar might have the habit of wearing the hat. In Gärdenfors’s (2005) analysis, this case is useful in gaining a more complex idea of doxastic coherence and the principle of conservatism, because it manages to hold together both the phenomenon of belief contraction

(i.e. the effect of deletion in the event of a change of opinion) and that of entrenchment, such that some beliefs survive the elimination of the beliefs on which they immediately depend, because there are others that motivate them in a mediated and sometimes deeper way.

In the terms of the cognitive phenomenology of negation, the conflict that occurs is not really about beliefs, but about motives. Antecedent and consequent may, however, follow two different patterns. The antecedent can express:

- a) negation of a negative belief: I do not believe that things are as you claimed when you disputed my previous belief. That is, “*in spite of* what you said, I *still* believe that things are like that”;
- b) the fact that the motives that made us change our opinion on the antecedent are not sufficient also to change our opinion on the consequent; i.e.: “despite having a few dents in it, the one in front of me is still a sphere”.

The consequent in turn can express:

- c) the survival of one or more predicates, i.e. “despite some stains, the sphere is still red”;
- d) the survival of the subject, as in b).

The most relevant case of concessive double negation for cognitive phenomenology is the conjunction of an antecedent b) and a consequent c). An antecedent such as (a) consists in a refusal, the force of which may be more or less great, taking the form in any case of a kind of communication of my displeasure. Such a circumstance is regarded by Husserl (1900-01) as the only case in which the speaker expressing a proposition with objective validity can also communicate his momentary state of mind without producing conflict or nonsense. Indeed, saying “I think $2+2$ makes 4” produces an absurd effect, since the communication of one’s cognitive state conflicts with the propositional content expressed. On the other hand, if I listened to someone saying “ $2+2=5$ ” and I replied “it’s a torture to have to listen to these things”, I would certainly be communicating my deep disappointment, and thus a cognitive state of my own, but such communication would be justified. A consequent such as d), on the other hand, is evidently a defence strategy, an entrenchment that, more often than not, is merely a cop-out from the negative belief of the antecedent. “Although it is not a dummy, as I believed before, it is still something I see” is a fallacious argument, because what the antecedent incorporates is a negative belief about predicates

and not about the subject. Quite different would be if to an intolerable racist judgement, I contested ‘although he is not white, nor European, nor does he believe in the same God as you, he is nevertheless a man’: in this case the castling on the subject is instead justified by the fact that instead the antecedent, in a fallacious manner, had cast off the negation of certain predicates onto the negation of the subject.

When, on the other hand, the antecedent is (b) and the consequent is (c) what is expressed is a kind of backlash of the motives on the predicates. The statement does not, however, express indecision; rather, I want to express that the reasons that made me change my mind about the antecedent are not sufficient even to negate all or some of the predicates contained in the consequent. The situation we may find ourselves in if we talk about Oscar or the dummy or the sphere, is one in which both the tendency to criticise and the impulse to decide are present. The tendency to criticism can be triggered by something that is present in the perceptual scenario (by an actual motive) or even not; in the second case it is motivated by a propensity to self-correction. I hold a belief, or even more so I have denied a previous belief, but I am aware that I may have to correct myself again. As in the case of Hume’s shopkeeper, if I realise that I have been wrong once, I also become aware of the possibility that I may be wrong about the fact that I have been wrong. At this point, however, Hume’s account and Husserl’s diverge: the former is only interested in demonstrating that there is no absolute loss of evidence, because evidence is something that one feels and I only feel that it has diminished with the recognition of the first mistake; for the latter, on the other hand, evidence is an operation that must also be conducted by looking for reasons for or against. Thus the tendency to self-correction provokes the practical interest in motives. Limiting, and directing this tendency, there is also an impulse, a deep-seated urge not to stand too long on the gridiron of conflicting motives. After all, the motives do not all have the same weight, the problematic possibilities that are taken into consideration in these contexts differ from the pure ones precisely because it is not possible to equate or replace one with the other (Husserl 1939, 96 ff.). However, it could also rightly be said that not only do motives have a difference in weight, but also in rooting or implicational capacity: there are some that are more basic than others, as well as some that are involved in longer implications than others.

Precisely because in the double concessive negation the protagonists are the motives – their weight, rootedness and implicational capacity – Husserl

places this type of negation between the modes accessible to prepredicative experience and those that are the prerogative of predicative assertions alone. If we return to the impasse signalled by the contradiction of the conjunction between the two negative beliefs, viz.

$$(\neg B(p) \wedge \neg B(\neg p))$$

a double concessive negation could be played: “I don’t think that’s a dummy made in the way I thought before (i.e.: wooden, immobile, etc.), but nevertheless I don’t think it’s not a dummy”. Its semi-formal version, in which one would not notice the difference between the dummy made one way and the dummy made another, would be:

$$\neg B(p) \wedge \neg B(\neg B(p) \rightarrow B(\neg p)) / \neg B(\neg p), \text{ that is,}$$

I do not believe that that is a dummy made as I imagined, but I also do not believe that that is not a dummy at all; therefore, I am convinced that that is still a dummy, albeit made in another way. In other words, a concessive double negation expresses that the epistemic agent does not feel compelled to believe that not-p on the basis of p’s negative belief, because he has other, heavier, more elementary or more deep-rooted reasons for not abandoning his initial belief altogether. In short, the concessive double negation is an utterance *and yet it moves*, a phrase apparently never uttered by Galilei that nevertheless renders well the difference between sufficient reasons for abjuration and insufficient reasons for theoretical change.

To be precise, however, an utterance *and yet it moves* is an utterance that counters sufficient grounds for a change of opinion, but not sufficient grounds for a change of truth judgement on an assertion. And with the truth judgement we also recover the non-empirical-prepredicative side of the concessive double negation and more generally of negation. In Husserl, the assertion with a truth claim, the attribution of truth to an assertion and the justification of this attribution of truth are clearly distinguished. Assertion, truth and justification are modifiable by negation, and so far I have only considered modifications of the former.

For an epistemic agent, the link between the truth claim of the assertion and the claim to its truth is ensured by logical responsibility: only if he takes responsibility for what he has said and the truth claim he has thus formulated is it possible to recognise or deny the truth predicate to what he has said. To ask a

question about the truth of an assertion requires that the assertion can be preserved in its identity. Contributing to this identity is a syntactic identity (the same assertion understood as the same sequence of symbols), a semantic identity (the same assertion understood as, any other sequence of symbols, having the same reference, if not absolutely, then at least in a given linguistic or perceptual context), but also the doxastic identity of the epistemic agent, i.e. its logical responsibility (Husserl 1929, 8-9). If the assertion were kept identical in syntax and semantics, but the epistemic agent cheated by saying that it should not be taken so literally, or that this was not what he intended, it would become impossible to attribute or reject the predicate of truth to the assertion. An essential ingredient to the doxastic identity, or logical responsibility of the epistemic agent is the ability to keep time together, not only to remember what he said, but to be willing to be accountable for what he said. The temporal work that the epistemic agent has to do in order to show himself accountable is not on the constancy of his own permanence in life, or at least in the life of knowledge, since this is already assured to him by the retained continuity of his own internal time. Rather, he must expose himself to the accusation of inconsistency in objective time, in that shared time in which he has exchanged his assertions as if they were common currency. The concessive double negation represents such an assumption of responsibility and demonstrates well how doxastic coherence is neither homogeneous nor limitlessly holistic, as there is a hierarchy of motives. The threat to the identity of the epistemic agent may, however, be more serious. To get an idea of this, however, it is not enough to return to the contradiction between the two negative beliefs: both must be subjected to a truth judgement.

2.4. It is not so much the conflict between motives, but the conflict between truth ascriptions that produces a tear in the fabric of beliefs and endangers the identity of the epistemic agent. If the epistemic agent could admit into his stock of knowledge assertions about which he recognises that he cannot decide whether they are true or not, he would thus also admit assertions for which he cannot be held responsible (Kaufmann 1941-42). And since, without ascription of truth, there is no possibility of justification either, he would not be responsible for the unjustifiability of the truth and untruth of those assertions. It is in this regard that Husserl speaks of negation as an operator that obeys the epistemic agent's impulse of *logical self-preservation*.

Certainly, under this impulse, the epistemic agent may react with accommodation, with a cop-out or even with indifference. What I have fallen into

contradiction about is not so important to me, or after all, it is not even a contradiction that is imputed to me. The difficulty that arises here, however, is often described by Husserl by referring to what he considers to be the initial ground of knowledge: namely the simple certainty of the world taken for granted. On closer inspection, this is not a reference to a paradise lost (Blumenberg 2010), in which there are no doubts, no questions, and no obligation to answer. Rather, it serves to say that knowledge is a fact and it is a fact precisely because it cannot do without assumptions, which constitute the basic certainties, the hinges of knowledge (Coliva, Moyal-Sharrock 2016). These hinges, even if one does not regard them as the aforementioned naturalistic pragmatism in the manner of an animal faith, are natural, just as the attitude that adheres to them is natural. And one of these cornerstones is that the epistemic agent is responsible, that he is accountable for his assertions, that he is contestable, that what he says is disconfirmable. Note that the loss of responsibility, and of logical self-preservation, does not lie in the epistemic agent rebelling by saying: “I did not say what I said”. This could be an abbreviated and ambiguous expression to contest that he did not say what he is accused of saying. The real danger arises when he states: “I did not pretend that what I said was true”. Thus the agent does not perform an act of modesty, nor does he confess a lie; rather, he fails to ascribe truth or falsehood to his assertions, which are epistemic if and only if they claim to be true. Therefore, if his assertions had not claimed to be true, then they would not have been epistemic and the agent might not have been responsible for them.

If, on the other hand, the epistemic agent wishes to retain its identity and responsibility, it must make a negative truth judgement on the contradiction between the two negative beliefs, i.e. it must assert that

$$\neg(\neg B(p) \wedge \neg B(\neg p)),$$

thus using negation as an operator that modifies the truth predicate of the utterance. However, it is not only as a modalization of the truth predicate that negation fulfils a coherent function.

Denial may have a more basic coherent function that again has to do with the temporality of the epistemic agent, with his autobiography. Let us suppose we examine the CV of a candidate for a job and note that his previous experiences are listed with only the start date, but not the end date. We read that in 2015 he started a job as a graphic designer, in 2017 he started another as an editor and in 2019 another as a ghost-writer. From what we know he could be doing all three jobs together or none at all. We then ask for clarification and are

told that when he was an editor, he was not a graphic designer, he was a ghost-writer he was not an editor, and that he has recently not been doing the latter either. We now see much more clearly. And it is all thanks to the fact that our candidate used negations as temporal indications: from 2017 non-graphical, from 2019 non-editor, etc. Again, what is saved is not constancy, but consistency.

In truth, however, negation is not only self-preservative at the last two junctures, but also when it serves as an empirical-doxastic modality and when it is used in the concessive double negation. In any case, to be one who negates is like to be one who preserves his consistency.

The problem, however, lies precisely in the definition of consistency, which negation is supposed to preserve, and in particular of doxastic-autoepistemic consistency, since temporal consistency is also relevant in this context in terms of how it is recovered and reconstructed through coherent negation. A definition of consistency should extend that given by Becker (1930), taking up Lewis' strict implication, i.e. p is consistent with q if and only if the conjunction of p and q is not impossible, in form:

$$p \circ q \equiv \neg \sim (p \wedge q).$$

so as to replace q with a certain doxastic context D and obtain that p is consistent with D if and only if conjunction (and, mind you, not necessarily inclusion) of p and D is not impossible, i.e:

$$p \circ D \equiv \neg \sim (p \wedge D).$$

It is worth noting that the examination of consistency and the predicate of consistency apply on p and not on D , showing that it is a local and not a global consistency. However, consistency in the sense of non-impossibility of conjunction is by no means said to be accessible from a phenomenological-cognitive point of view, assuming that according to (Husserl 1900-01, 637), a failure does not prove the necessity of failure. Consistency, in fact, is a primitive notion for phenomenological semantics (for pure morphology), but not for cognitive phenomenology. In other words, for pure morphology the negation of a proposition derives from its incompatibility with the whole of which it is part ($\Gamma \not\vdash p, p \rightarrow \perp$), whereas for cognitive phenomenology it is the possession and use of negation that makes the acquisition of the conditions of possession of incompatibility possible. This, however, reverses the respective roles of naturalist pragmatism and proof-theoretic semantics on negation and incompatibility. For Fráppoli

(2023), incompatibility is a primitive notion that can be pragmatically accounted for in terms of two propositional contents p_1 and p_2 are incompatible if, and only if, endorsing p_1 precludes endorsing p_2 whereas for Dummett, incompatibility is a notion alien to logic and unjustifiable by it. The inversion whereby, on the other hand, incompatibility is semantically primitive and phenomenologically cognitively derived, whereas negation is a primitive mode for cognitive phenomenology, allowing for the explication of the doxastic commitment and thus isolating the content of the belief that can be considered compatible or incompatible from there on, is by no means a sign of the confusion and idiosyncrasy of the phenomenological idiolect. On the other hand, such an inversion on the one hand makes it possible to reaffirm the division of labour between cognitive phenomenology and semantics, and on the other hand authorises a peculiar naturalisation limited to the phenomenal possession conditions of negation (and not an empirical or naturalistic justification of the logical idiolect).

3. What, then, are the conditions of phenomenal possession of negation that cognitive phenomenology helps to identify and what is the type of naturalisation of negation that cognitive phenomenology achieves?

First of all, phenomenal conditions of possession do not coincide with Neo-Fregean conditions of possession. The intention to cognitivize Frege is realised, for example, in Peacocke (1999), by bringing together two principles about concepts:

- a) that they were not mental states,
- b) that they were accessible or detectable in a state of mind;

and in order to do so it is necessary to distinguish the categorical extension and composition of the concept (F), the relational property (R), which exists between F and thing or event, the individuation condition of F, i.e. A (c), and the possession condition (C), which instantiates A (c) and is therefore traceable in a mental state, although it does not coincide with it.²⁴ For a Neohusserlian theory of content the same does not apply, because the problem is not to connect concepts and mental states, and above all the solution to conceptual individuation

²⁴ It is no coincidence that, from this perspective, Peacocke (1999, 107-113) had to restore the function of the perceptual demonstrative in order to stitch together inferential role and perceptual role, i.e. between conceptual-role semantics and the different beliefs, which guarantee the different modes of presentation.

does not lie in conditions of accessibility. Rather, phenomenal possession conditions are manners of content formation, the exercise of which produces perceptible effects for the epistemic agent. This is why phenomenal possession conditions are testable operations or abilities.

Since these are different operations, and without arguing for any pluralism about negation (which would be a subject for the philosophy of logic and not for cognitive phenomenology), each occurrence of negation that has been reviewed will have different conditions of phenomenal possession. And it is not necessarily the case that all these conditions exhaust the sufficient conditions for the use of the truth-functional connective of negation. This not only does not invalidate the analysis of the conditions, but on the contrary allows us to better demarcate their scope: that of cognitive phenomenology and not of the philosophy of logic. Nevertheless, since the operations of negation follow an order, the same order will also be observed by the phenomenal conditions of possession, so that the most basic will not imply the possession of any other, while the most complex will imply the possession of all the previous ones. Following the order then:

- 1) the phenomenological possession conditions (PhPC) of $[-]$ consists of a contrast between at least two determinations that cannot both be attributed to the same substratum. A prerequisite for the PhPC of $[-]$ is that p has previously been attributed to S ;
- 2) from such a warning derives the ability to disengage the application of a determination to a substratum; this disengagement allows one to be phenomenally aware of the semantic rigidity of experience. This also modifies the perceptual content and makes explicit that this content is the content of a belief;
- 3) furthermore, the reiteration of $[-]$ on other determinations allows for an increase in the degree of belief in the permanence of the substratum and the distinction between doxastic permanence and semantic rigidity;
- 4) from the PhPC of $[-]$ derives finally, and indirectly through the weighting of permanence and rigidity, the possession of the relation of contrariety and disjunction;
- 5) the PhPC of $[-B]$, which has as its basis the explication of the doxastic character of the assertion, consists in the transformation of one belief into another sub-contrary to each other;

- 6) the combination of the PhPC of $[\neg]$ and the PhPC of $[\neg B]$ corresponds to the state of doubt or indecision, in which two negative beliefs cannot both be entertained;
- 7) the impulse to come out of the embarrassment of doubt primarily provokes the practical interest in searching for reasons for and against;
- 8) the estimation of reasons, according to weight, level and entrenchment, can produce the PhPC of the $[\neg\neg]$ concessive, which is the ability to establish the insufficiency of reasons for a change of opinion;
- 9) PhPCs of the negative judgement on the truth of a contradiction are attested when the conjunction of two negative beliefs, on p and on $\neg p$ respectively, cannot be exited with the concessive double negation, i.e. there are neither insufficient nor sufficient grounds for a change of opinion.

It notes that it is not possible to identify a specific PhPC for the coherence or consistency, nor for the negation of p , if p has not first been ascribed to S . These are the two main shortcomings of the PhPCs of the different occurrences of negation with respect to the admitted behaviour for the truth-functional connective of negation.

What kind of naturalisation of negation does cognitive phenomenology propose then?

I do not believe that cognitive phenomenology poses great problems for the naturalisation of the mind, provided it is a liberalised naturalisation (De Caro, Macarthur 2004), i.e. an internal, aposteriorist reformist naturalism (Haack 1993) limited to the analysis of the conditions of possession of the logical vocabulary. What I do not believe the cognitive phenomenology of negation, but perhaps not only, can afford is an external naturalism, i.e. the conjugation of naturalism and realism that finds in causality a reliable guarantee for the unequivocal identification of the reference.

I am convinced, however, that in order to admit the legitimacy of phenomenological-cognitive predicates, and of the *folk-psychological* language that is thus constructed, it is not even necessary to stipulate any epistemic lacunae, and that a few grains of the salt of epistemological pluralism suffice (cf. Falanagan (1997, 99). Moreover, as I have already noted, cognitive phenomenology embraces a moderate linguistic physicalism - i.e. an elementary nominalism (Husserl 1900-01, 71), such that the elements of the basic ontology are concrete individuals - and a glossed behaviourism, such that behaviour is not only a

physically describable reaction to a distal stimulus, but any more or less directly observable intentional attitude. Moreover, if one looks at some of the forms of naturalist semantics from which I have started, such as Millikan's, proposing not a naturalisation of the vehicle and a reduction of the content to the naturalised vehicle, but a naturalisation of the content, one easily realises that from them derives not a reductionist instance of the content to the vehicle, but the claim that the description of the content is naturalistically acceptable.

If naturalism is to be of the content and not only of the vehicle, what should be naturalistically acceptable in the cognitive phenomenological explanation of negation is that negation phenomenally restores the difference of the substratum from the determination and of one determination from the other, thus semantic rigidity and doxastic-informational hardening. That is, that something is in the foreground (focus, theme, relevance, proto-object) and something in the background. That is, negation makes intentionality phenomenal. This can be explained causally, but its semantic reliability is not causal. The two horns are distinguished: the first is naturalistic, the second realistic.

Rather, the problem lies in not embracing the semantic reliability of the causal link, not the existence of this link, nor its explanatory capacity (Kriegel 2015, 127).

To meet this requirement, cognitive phenomenology needs to adopt a moderate *irreductionism*, such that cognitive phenomena are not reducible to physical states, even though they are dependent on them. Among the various possible combinations of intentionality and phenomenality - on which decisions about self-representation, the use of propositions-ego and the function of the first person also depend - the cognitive phenomenology I advocate, I believe while remaining faithful to Husserl, finds phenomenality its necessary condition and intentionality its sufficient condition, so that its analyses concern those intentional performances of consciousness that are also phenomenal and not conversely the study of the phenomenal character of consciousness on which intentionality can also be applied (cf. Mendelovici 2018; Tortoreto 2022). Since cognitive phenomena - including negation - have a double face, such that they are describable either as phenomenal content or as propositional content, and not together as one and the other (McGinn 1997), it is not even necessary to deal with the risk of boxing in to which the naturalistic PIRP of (Kriegel 2011a, 67 ff.; Kriegel 2011b, Chudnoff 2015) is exposed. And precisely if we look at the treatment of negation this becomes evident. Whereas Kriegel (2005) in order to save cognitive phenomenology and naturalisation must hypothesise a

model in which information and phenomenality, i.e. representation and representation of representation, are integrated, such that the phenomenological-cognitive account of the vision of a red circle is equivalent to $\langle (\text{there is an } x) x \text{ is red} \ \& \ x \text{ is circular} \ \& \ x \text{ is represented-to-be-red-and-circular} \rangle$, the salvation of phenomenality in our cognitive phenomenology of negation is achieved by simply considering the result of the application of the first negation. Assuming p as a propositional content that has not been modalized and whose doxastic character has not been made explicit, and assuming negation as the modal operator that first produces the explication of the doxastic commitment on p , then, for $t_1 > t_0$, if, at t_1 , $\neg p$ this means that, at t_0 , p was the content of a belief, i.e. $B(p)$, where B expresses a phenomenal and not a propositional character. It is, in other words, negation that makes the transition from certainty, and thus from the transparent state of consciousness - in which consciousness cannot be seen (first Janus' side) - to belief, and thus to an opaque state of consciousness (second Janus' side), as demonstrated by the decisive role negation plays in the performance of fantasy.

A few remarks, finally, on the comparison between the models of naturalist semantics from which I started and cognitive phenomenology. While on the comparison between Fodor's TRcM and Husserlian theory of experience and mind there is a substantial and sometimes even favourable literature, Millikan has, even as of late, gone out of his way to emphasise his distance from phenomenology (Millikan 2014). Apart from the very different use of teleology (Rump 2018), which would almost make his confrontation with Husserl resemble a repetition of that between economics of thought and phenomenology, as well as the fact that Millikan transposes a phenomenology mediated by Pittsburgh's milieu, Dennett's heterophenomenology and Gibson's ecological psychology, two very relevant elements for analyses on negation should be noted. Namely that:

- 1) Both Millikan and Husserl set up a neo-Aristotelian language of predicative logic, with full awareness of the Fregean reform, such that in "John is married" the predicate is "married" and not "is married". However, the neo-Aristotelian option is relevant because it does not obey a logical requirement, but one of theory of mind: the subject-predicate structure in fact guarantees a connection between experience and logical syntax that would otherwise be lost.

- 2) In both Millikan and Husserl, the ontology of predicative logic is made up of concrete (physical or real) individuals, i.e. substrates or substances that select determinations and govern reidentifications. In both, the difference between substratum and determination is relative. Nevertheless, the distinction, which applies to Husserl, between concrete individual and real individual, which could be concrete, but need not be, allows phenomenological logic to extend its catalogue of objects, by means of modalization. This last distinction, however, implies a decisive deviation between Husserl and Millikan regarding the treatment of possibility and necessity and regarding the difference, admitted by the former, between necessary necessity and contingent necessity, and the realisation by Husserl of an epistemization of modality, of which Millikan also admits a naturalistic feasibility, without however putting it into practice. This deviation, however, lies rather on the realist side of Millikan's naturalism than on the naturalization of semantics itself.
- 3) Finally, and precisely when in Millikan (2013) and (2014) the distance from phenomenology is reaffirmed, the well-known example of the incompatibility between red and green is recalled, and the hypothesis is examined that it is a case of incompatibility not only of characters, but of components, and thus an example of natural contrariety (Nussbaum 2013). The answer is twofold: on the one hand, that incompatibility is rather a soft-wired inhibition between red and green and between yellow and blue reporting cells, on the other hand, more decisive than the incompatibility, so to speak phenomenal, between colours, is the constancy of the colour of the same object. Previously, in Millikan (1984/2001, 271), Millikan had argued that "our confidence that red and green are contraries (thought probably not derived from experience, but built into it) is supported over and over by empirical evidence". I am not sure that this battery of arguments is anti-phenomenological in a successful way, i.e. that it succeeds in refuting the claim that describing phenomenal consciousness in general and colour consciousness in particular is unfeasible due to little or no naturalistic commitment. Indeed, it is not difficult to demonstrate that the example of the incompatibility of red and green is taken as an incompatibility of components in Husserl, precisely on the basis of empirical evidence and not armchair reflections, and that this evidence was drawn from Hering's studies. Nor is it so difficult to recognise that the incompatibility between red and green - extracted from empirical research - was a case of a content a

priori (it concerns a certain type of content, the chromatic ones, and is not an exemplification of a logical-formal law: non-contradictoriness) and a contingent a priori (it only applies to subjects possessing those empirical contents), i.e. that it isn't *derived from experience, but built into it*. The fact remains that the analysis of that incompatibility does not go back to the physiological cause of that phenomenal effect.

This, however, does not exclude causal explicitness, but merely does not use it as justification in the last resort. This, however, is another departure from realism, but not from naturalism.

REFERENCES

- Adenzato, M., Meini. C. ed. by (2006). *Psicologia evoluzionista*, Bollati Boringhieri, Torino.
- Albertazzi, L. (2018). Naturalizing Phenomenology: A Must Have?, *Frontiers in Psychology*, 9.
- Altobrando, A. (2017). La negazione: dal rifiuto al contrasto. Brentano e Husserl sul giudizio negativo, *Verifiche* XLVII (2), 139-177.
- Becker, O. (1930). Zur Logik der Modalitäten, *Jahrbuch für Philosophie und phänomenologische Forschung*, 11, 498-548.
- Becker, O. (1934). Letter to A. Heyting (September 1934), in M. van Atten, The Correspondence between O. Becker and A. Heyting, in V. Peckhaus (Hrsg.), O. Becker und die Philosophie der Mathematik, Fink, München 2005, 119-142.
- Benoist, J. (2002). *Entre Acte et Sens. Recherches sur la théorie phénoménologique de la signification*, Vrin, Paris.
- Bermudez J. L. (2007). Negation, Contrariety, and Practical Reasoning: Comments on Millikan's "Varieties of Meaning", *Philosophy and Phenomenological Research*, 75, 3, 663-669.
- Berto, F. (2015). A Modality Called 'Negation', *Mind*, 124, 495, pp. 761-793.
- Blumenberg 2010, *Theorie der Lebenswelt*, Suhrkamp, Berlin.
- Boghossian, P. (2012). Inferentialism and the Epistemology of Logic: Reflections on Casalegno and Williamson, *Dialectica* 66, 221-236.
- Brandom, R. (1998). *Making it Explicit. Reasoning, Representing, and Discursive Commitment*, Harvard

- Brody, N., Oppenheim, P. (1967). Methodological Differences between Behaviourism and Phenomenology in Psychology, *Psychological Review*, 74, 4, 330-334.
- Carnap, R. (1950). Empiricism, Semantics, and Ontology, *Revue Internationale de Philosophie*, 4, 11, 20-40.
- Casalegno, P. (1998). The Referential and the Logical Component in Fodor's Semantics, *Dialectica*, 52, 4, 339-363.
- Casalegno, P. (2002). The Problem of Non-conclusiveness, *Topoi*, 21, pp. 75-86.
- Casalegno, P. (2004). Logical Concepts and Logical Inferences, *Dialectica*, 58, 395-411.
- Cavallaro, M. (2016). Das „Problem“ der Habituskonstitution und die Spätlehre des Ich in der genetischen Phänomenologie E. Husserls, *Husserl Studies*, 32, 237-261.
- Chudnoff, E. (2015), *Cognitive Phenomenology*, Routledge, London-New York.
- Coliva, Moyal-Sharrock (2016). *Hinge Epistemology*, Brill, Leiden.
- De Caro, M., Macarthur, D., eds. (2004). *Naturalism in Question*, HUP, Cambridge (MA).
- Dennett, D. (1991). *Consciousness Explained*, Penguin Press, London.
- Došen, K. (1986). Negation as a Modal Operator, *Reports on Mathematical Logic*, 20, pp. 15-27.
- Došen, K. (1999). Negation in the Light of Modal Logic, in Gabbay and Wansing, eds. (1999), *What is Negation?* Dordrecht, Kluwer, 77-86.
- Ebeling, H. ed. (1976). *Subjektivität und Selbsterhaltung: Beiträge zur Diagnose der Moderne*, Suhrkamp, Berlin.
- Evans, G. (1981). *Varieties of Reference*, OUP, Oxford.
- Farber, M. (1943). *The Foundation of Phenomenology*, HUP, Cambridge (MA).
- Farber, M. (1959). *Naturalism and Subjectivism*, State University of New York Press, NY.
- Flanagan, O. (1997). Prospects for a Unified Theory of Consciousness or, What Dreams Are Made Of, in N. Block, O. Flanagan, G. Güzeldere (eds.), *The Nature of Consciousness. Philosophical Debates*, Mit Press, Cambridge (MA)-London, 97-109.
- Fodor, J. (1987). *Psychosemantics: The Problem of Meaning in the Philosophy of Mind*, Mit Press, Cambridge (MA).
- Fodor, J. (1994). *The Elm and the Expert*, Mit Press, Cambridge (MA).

- Fráppoli (2023). *The Priority of Propositions. A Pragmatist Philosophy of Logic*, Springer, Cham.
- Frege, G. (1918-19). Die Verneinung. Eine logische Untersuchung, *Beiträge zur Philosophie des deutschen Idealismus*, 1, 143-157.
- Gabbay, D. M., Woods, J. (2003). *Agenda Relevance: A Study in Formal Pragmatics*, Elsevier, Amsterdam.
- Gärdenfors, P. (1988). *Knowledge in flux: Modeling the dynamics of epistemic states*. MIT Press, Cambridge (MA).
- Gärdenfors, P. (2005). *The Dynamic of Thought*, Springer, Dordrecht.
- Goodman, N. (1979/1983). *Fact, Fiction, and Forecast*, HUP, Cambridge (MA)-London.
- Haack, S. (1993). *Evidence and Inquiry: Towards Reconstruction in Epistemology*, Wiley-Blackwell.
- Hartimo, M. (2020). Husserl's Transcendentalization of Mathematical Naturalism. *Journal of Transcendental Philosophy*, 1(3), 289-306.
- Heyting, A. (1931). Die intuitionistische Grundlegung der Mathematik, *Erkenntnis*, 2, 106-115.
- Heyting, A. (1934). *Mathematische Grundlagenforschung. Intuitionismus/Beweistheorie*, Springer, Berlin.
- Horn, L. R. (1989/2001). *A Natural History of Negation*, CUP, Chicago.
- Horn, L. R. (2017). The Singular Square: Contrariety and Double Negation from Aristotle to Homer, in J. Blochowiak (ed. by), *Formal Models in the Study of Language*, Springer, Cham, 143-179.
- Husserl, E. (1900). *Prolegomena zur reinen Logik*, in Hua 18, hrsg. von E. Heidegger, Nijhoff, Den Haag 1975.
- Husserl, E. (1900-01). *Logische Untersuchungen*, 2, Hua 19/1, hrsg. von U. Panzer, Springer, Dordrecht 1984.
- Husserl (1929). *Formale und transzendente Logik*. Versuch einer Kritik der logischen Vernunft, in Hua 17, hrsg. von P. Janssen, Nijhoff, Den Haag 1976.
- Husserl (1939). *Erfahrung und Urteil. Untersuchungen zur Genealogie der Logik*, Meiner, Hamburg, 1999⁷.
- Husserl (1968). *Phänomenologische Psychologie. Vorlesungen Sommersemester 1925*, in Hua 9, hrsg. von W. Biemel, Springer, Dordrecht.

- Husserl (1973). *Experience and Judgment. Investigations in Genealogy of Logic*, tr. by J. J. Churchill, K. Ameriks, Routledge, London.
- Husserl (1979). *Aufsätze und Rezensionen (1890-1910)*, Hua 22, hrsg. von B. Rang, M. Nijhoff, Den Haag.
- Husserl (1980). *Phantasie, Bildbewusstsein, Erinnerung. Zur Phänomenologie der anschaulichen Vergegenwärtigungen. Texte aus dem Nachlass (1898-1925)*, Hua 23, hrsg. von E. Marbach, M. Nijhoff, Den Haag.
- Husserl (1984). *Einleitung in die Logik und Erkenntnistheorie. Vorlesungen 1906/07*, in Hua 24, hrsg. von U. Melle, Kluwer, Dordrecht.
- Husserl (1991). *Ideen zu einer reinen Phänomenologie und phänomenologischen Philosophie. Zweites Buch*, Hua 4, hrsg. von M. Biemel, Springer, Dordrecht.
- Husserl (1994). *Briefwechsel*, Hua Dokumente 3/4, hrsg. von E. und K. Schuhmann, Springer, Dordrecht.
- Husserl (1996). *Logik und allgemeine Wissenschaftstheorie. Vorlesungen 1917/18. Mit ergänzenden Texten aus der ersten Fassung von 1910/11*, Hua 30, hrsg. von U. Panzer, Kluwer, Dordrecht.
- Husserl (2001). *Natur und Geist. Vorlesungen Sommersemester 1927*, Hua 32, hrsg. M. Weiler, Springer, Dordrecht.
- Husserl (2002a). *Logische Untersuchungen. Ergänzungsband. Erster Teil (Sommer 1913)*, Hua 20/1, hrsg. von U. Melle, Springer, Dordrecht.
- Husserl (2002b). *Natur und Geist. Vorlesungen Sommersemester 1919*, in Hua Mat. 4, hrsg. von M. Weiler, Kluwer, Dordrecht.
- Husserl (2003). *Alte und neue Logik. Vorlesung 1908-09*, in Hua Mat. 6, hrsg. von E. Schuhmann, Springer, Dordrecht.
- Husserl (2005a). *Logische Untersuchungen. Ergänzungsband. Zweiter Teil (1893/94-1921)*, Hua 20/2, hrsg. von U. Melle, Springer, Dordrecht.
- Husserl (2005b). *Späte Texte über Zeitkonstitution (1929-1934). Die C-Manuskripte*, Hua, Mat. 8, hrsg. von D. Lohmar, Springer, Dordrecht.
- Husserl (2008). *Die Lebenswelt. Texte aus dem Nachlass (1916-1937)*, Hua 39, hrsg. von R. Sowa, Springer, Dordrecht.
- Husserl (2013). *Grenzprobleme der Phänomenologie. Texte aus dem Nachlass (1908-1937)*, Hua 42, hrsg. von R. Sowa, T. Vongehr, Springer, Dordrecht.

- Husserl (2020). Studien zur Struktur des Bewusstseins. Texte aus dem Nachlass (1902-1934), Hua 43/3, hrsg. von U. Melle, T. Vongehr, Springer, Cham.
- Kaufmann, F. (1941-42). The Logical Rules of Scientific Procedure, *Philosophy and Phenomenological Research*, 2, 457-471.
- Kriegel, U. (2005). Naturalizing Subjective Character. *Philosophy and Phenomenological Research*, 71, 23-56.
- Kriegel, U. (2011a). *The Sources of Intentionality*. OUP, New York.
- Kriegel, U. (2011b). The Phenomenal Intentionality Research Program, in U. Kriegel (ed.), *Phenomenal Intentionality*. OUP, New York.
- Kriegel, U. (2015). Varieties of Consciousness, OUP, Oxford.
- Kolmogorov, A. (1932). Zur Deutung der Intuitionistischen Logik. *Mathematische Zeitschrift*, 35, 58-65.
- Lakoff, G. (1990). *Women, Fire, and Dangerous Things What Categories Reveal about the Mind*, CUP, Chicago.
- Lakoff, G., Johnson, M. (1999). *Philosophy in the Flesh*, Perseus Book, New York.
- Landgrebe, L. (1974). Meditation über Husserls Wort „Die Geschichte ist das große Faktum des absoluten Seins“, *Tijdschrift voor Filosofie*, 36, 1, 107-126.
- Landgrebe, L. (1978). The Problem of passive Constitution, *Analecta Husserliana*, VII, 23-36.
- Lando, G. (2011). Assertion and Affirmation in Early Wittgenstein, *Wittgenstein-Studien*, 2, 21-47.
- Lohmar, D. (1996). Beiträge zu einer phänomenologischen Theorie des negativen Urteils, *Husserl Studies*, 8, 173-204.
- Lohmar, D. (2016). *Denken ohne Sprache Phänomenologie des nicht-sprachlichen Denkens bei Mensch und Tier im Licht der Evolutionsforschung, Primatologie und Neurologie*, Springer, Cham.
- Maddy, P. (1997). *Naturalism in Mathematics*. OUP, New York.
- Maddy, P. (2007). *Second Philosophy. A Naturalistic Method*. OUP, New York.
- Magnani, L. (2018). The Urgent Need of a Naturalized Logic, *Philosophies*, 3, 4, 44.
- McGinn, C. (1997). Consciousness and Content, in N. Block, O. Flanagan, G. Güzeldere (eds.), *The Nature of Consciousness. Philosophical Debates*, MIT Press, Cambridge (MA)-London, 295-307.

- Mendelovici (2018). *The Phenomenal Basis of Intentionality*, OUP, NY.
- Merleau-Ponty (1945). *Phénoménologie de la perception*, Gallimard, Paris.
- Millikan, R. (1984/2001). *Language, Thought, and Other Biological Categories*. New Foundation for Realism, Mit Press.
- Millikan, R. (2002). Varieties of Meaning, Mit Press, Cambridge (MA).
- Millikan, R. (2007). Reply to Bermúdez, *Philosophy and Phenomenological Research*, 75, 3, 670-673.
- Millikan (2013). Reply to Nussbaum, in D. Ryder, J. Kingsbury, K. Williford (ed. by), Millikan and Her Critics, Wiley-Blackwell, Oxford, 193-197.
- Millikan, R. (2014). An Epistemology for Phenomenology?, in R. Brown ed., *Consciousness Inside and Out: Phenomenology, Neuroscience, and the Nature of Experience*, Springer, Cham.
- Mulligan, K. (1987). Speech Act and Sachverhalt. Reinach and the Foundations of Realist Phenomenology, Springer, Dordrecht.
- Neurath, O. (1931). *Empirische Soziologie*, Springer, Vienna.
- Nussbaum, C. (2013). Carning the Ultimate Skyhook: Millikan on the Law of Noncontradiction, D. Ryder, J. Kingsbury, K. Williford (ed. By), Millikan and Her Critics, Wiley-Blackwell, Oxford, 176-197.
- Peacocke, C. (1999). *A Study of Concepts*, MIT Press, Cambridge (MA).
- Petitot et alii, eds. (1999). *Naturalizing Phenomenology: Issues in Contemporary Phenomenology and Cognitive Science*, Stanford University Press, Stanford.
- Peruzzi A. (1989). Towards a real phenomenology of logic, *Husserl Studies*, 6, pp. 1-24.
- Quine, W. V. O. (1951/1966). On Carnap's views on ontology, *Philosophical Studies*. II (5): 65-72; then in *The ways of paradox: and other essays* (2nd ed.). Harvard University Press.
- Quine, W. V. O. (1970). *The Philosophy of Logic*, Harvard University Press.
- Reinach, A. (1911). Zur Theorie des negativen Urteils, *Münchener Philosophische Abhandlungen. Festschrift für Theodor Lipps*, hrsg. von A. Pfänder, J.A. Barth, Leipzig, 1911, pp. 196-254.
- Rump, J. (2018). On the Use and Abuse of Teleology for Life: Intentionality, Naturalism, and Meaning Rationalism in Husserl and Millikan, *Humana.mente*, 11, 34, 41-75.

- Schutz, A. (1970/2011). Reflections on the Problem of Relevance (1947-1951), in Id., *Collected Papers*, V, ed. by L. Embree, Springer, Dordrecht, pp. 93-208.
- Searle, J. (1969). *Speech Acts. An Essay in Philosophy of Language*, CUP, Cambridge (MA).
- Searle, J. (1983). *Intentionality. An essay in Philosophy of Mind*, CUP, Cambridge (MA).
- Sommer, M. (2005). *Husserl und der frühe Positivismus*, Klostermann, Frankfurt a. M.
- Staiti, A. (2019). Husserl's Account of Action: Naturalistic or Anti-Naturalistic? A Journey through the *Studien zur Struktur des Bewusstseins*, *New Yearbook for Phenomenology and Phenomenological Philosophy*, 17.
- Stern, W. L. (1897). Psychische Präsenzzeit. *Zeitschrift für Psychologie und Physiologie der Sinnesorgane*, 13, 325-349.
- Taieb, H. (2021). The Structure and Extension of (Proto)Type Concepts: Husserl's Correlationist Approach, *History and Philosophy of Logic*, 43, 2, 129-142.
- Textor, M. (2013). 'Thereby We Have Broken With The Old Logical Dualism' – Reinach On Negative Judgement And Negation, *British Journal for the History of Philosophy*, 21, 3, 570–590.
- Tortoreto, A. (2022). Intentionality and Dualism: Does the Idea that Intentionality Is the MOM Necessarily Entail Dualism?, *Phenomenology and Mind*, 22, 82-91.
- Williamson, T. (2012). Boghossian and Casalegno on Understanding and Inference, *Dialectica*, 66, 237-247.
- Wittgenstein, L., Waismann, F. (2003). *The Voices of Wittgenstein. The Vienna Circle*, Routledge, London-New York.
- Woods, J. (2013). *Errors of Reasoning. Naturalizing The Logic of Inference*, College Publication, London.
- Wright, C. (2012). Meaning and Assertibility: Some Reflections on Paolo Casalegno's "The Problem of Non-conclusiveness", *Dialectica*, 66, 249-266.
- Zipoli Caiani, S. (2019). Lo statuto metodologico dei contenuti intenzionali. *Rivista Internazionale di Filosofia e Psicologia*, 10, pp. 265-281.