Third Pisa Colloquium in Logic, Language and Epistemology

Essays in Honour of Mauro Mariani and Carlo Marletti

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PREFACE

ENRICO MORICONI

In the fall of 1969, I moved to Pisa to start my undergraduate studies and there I met Mauro Mariani and Carlo Marletti. They were in their second year of university and we were all enrolled in the Scuola Normale Superiore. The atmosphere of the Scuola is special in that students live in residences and spend most of their time together, thereby learning from each other and forming lasting friendships. Carlo and Mauro made an immediate impression on me. Already then Carlo was insightful and brilliant and Mauro was a bibliophile, I daresay he was a bookworm. Despite their capabilities and broad knowledge, they were down to earth and eager to help those who approached them with a philosophical question.

Mauro and Carlo were studying logic, epistemology and philosophy of language and they were finding their research paths in these fields. At the beginning of my second university year, when I was looking for a study topic in the same broad domain of all things logical, I naturally spent more time with them, benefitting from their insights and suggestions. Thanks to their inputs, I was prompted to widen my research interests and they provided me with answers to the many doubts I had while I was studying logic, philosophy of mathematics and, more generally, philosophy. At that time, they were focusing on W. V. O. Quine's philosophy. Later, Carlo developed an interest in *nominalism* and Mauro in *modal logics*. They eventually broadened their research topics to include Aristotle's logic, philosophy of language, linguistics, and Kripke's semantics for modal logics.

Years passing, thanks to the special atmosphere of the Scuola Normale, our friendship became ever deeper and together with Lello Frascolla, Ernesto Napoli, and the late Paolo Casalegno we formed a close group that shared a common research agenda. In the 1980s, Carlo, Mauro and I landed jobs at the Department of Philosophy of the University of Pisa, where our mentors Francesco Barone and Vittorio Sainati were the already established scholars working on logic, philosophy of science, and Aristotle. More recently, we were joined by the much younger Luca Bellotti, who is co-editing this volume.

Carlo and Mauro were excellent teachers and their classes included innovative approaches that went beyond the traditional syllabus. Yes, the students had to overcome some difficulties of communication, and not only those raised by the complexities of the philosophical topics treated: Mauro's teaching style was cir-

cuitous and Carlo's was concise, at times elliptical. But they were effective and many of their former students have since secured academic positions all over the world.

Two of their former students, Luca Gili and Giacomo Turbanti, together with Luca Bellotti and me, are editing this volume in honor of Carlo and Mauro. It is our pleasure to present this collection of essays in this year 2019 as Carlo and Mauro are turning 70. We thank friends and former students who contributed papers on the favourite research topics of the two *honorandi*. This volume contains essays originally written for this celebration, and eleven of them are by former students of Carlo and Mauro.

I thank all the people who enthusiastically contributed to the project. I thank Valentina Morotti for her precious help in drafting Carlo's and Mauro's bibliographies and Laura Tesconi for editing and type-setting the volume. This *Festschrift* is a token of friendship and gratitude from us all.

Cari Carlo e Mauro, buon compleanno!

THE PHILOSOPHICAL WORK OF MAURO MARIANI

LUCA GILI

Mauro Mariani studied at the University of Pisa and at the Scuola Normale Superiore from 1968 to 1972. He later landed a job at the University of Pisa, where he taught logic for more than 30 years. From the beginning of his fruitful career, Mariani developed an interest in both Aristotle and 20th century analytic philosophy and, more specifically, in the intersections between logic and metaphysics. It was natural for him to turn his attention to modal logic and to its semantics and to seek the supervision of Vittorio Sainati, the Pisa scholar who had been working on Aristotle's logic from the late 1960s. Unlike Mariani, Sainati discovered Aristotle's modal logic later in his career and was a historian of philosophy with a traditional upbringing. In the 1950s, Italian historians of philosophy were mostly following the historicist approach popularized by Eugenio Garin.[1] Sainati, however, did not give up the ideal of writing a *philosophical* history of philosophy and was happily receiving inputs from his student Mauro Mariani, who shared the same methodological ideal. Thanks to Mariani, generations of students at the University of Pisa were exposed to the Anglo-American Aristotle scholarship or to the most recent debates among analytical metaphysicians. One can hardly underestimate how beneficial it was to these students to read Aristotle, Leibniz or Frege as meaningful authors, whose ideas deserve careful philosophical scrutiny, and not as dusty relics from a distant past. Sainati's and later Mariani's reaction to the *historicistic* approach did not lead them to discard the value of historical research and of philology. These two disciplines, however, are not to be pursued in themselves, but only as means to a better understanding of the philosophical meaning of the texts that they were studying.

In one of his first papers (Mariani, 1982a), Mariani considers the semantics of W. V. O. Quine and of S. Kripke. He will come back to Kripke's theory of truth in (Mariani, 1986), whereas in (Galluzzo and Mariani, 2006) he offers a survey of contemporary essentialist theories. Mariani also wrote a popular introduction to Gottlob Frege (Mariani, 1997b) and several articles on Leibniz (see, e.g., Mariani and Moriconi, 2011 and Mariani and Moriconi, 2015). But among Mariani's favourite philosophers, Aristotle has certainly a unique place. Most of his publications are devoted to the Stagirite and are now collected in a single volume that allows us to have a better understanding of the peculiar interpretation

[1] Cf. E. Garin, *La filosofia come sapere storico*, Laterza, Roma and Bari, 1959.

that Mariani developed over several decades of research (Mariani, 2018). Even though there are many 'possible Aristotles' available today on the scholarly market, it seems reasonable to say that scholars from the Anglo-American tradition tend to present Aristotle as a systematic philosopher who strived to present his doctrines in a consistent way. This is particularly true for the interpreters of Aristotle's logic.[2] Mariani, on the contrary, offers us a fragmentary Aristotle, i.e. an Aristotle who has constant guiding intuitions and possibly a recognizable method, but who offered different, even contradictory solutions to the same philosophical problems over his career. In his *Storia dell'«Organon» aristotelico*,[3] Sainati had already stated that Aristotle's logic is the result of a series of revisions. Sainati maintained, however, that Aristotle's modal logic is consistent despite its apparent contradictions. Mariani, on the other hand, is skeptical about Sainati's and other scholars' attempts to reconstruct a consistent system that can validate all valid modal syllogisms. Even if this were possible, Mariani says, it is doubtful that such a system would represent Aristotle's own understanding of modal logic.[4]

This portrait of a "problematic Aristotle" is not entirely new,[5] but Mariani is certainly the scholar who has argued for the lack of systematicity in the *Organon* in the most detailed way.

In one of his early articles (Mariani and Campus, 1986), Mariani asks himself whether Aristotle endorsed the so-called 'principle of plenitude', i.e. the claim that all potentialities are realized at some point in time. *Pace* Jakko Hintikka,[6] Mariani maintains that Aristotle does not commit himself to the principle of plenitude in *Metaphysics* Θ 4 or in *De coelo* A 12. In this early work, Mariani seems to work under the assumption that Aristotle may not have changed his mind over the issue. Interestingly, Mariani chooses branching-tree semantics to reconstruct Aristotle's modal notions. This interpretative device appears also in Mariani (1988a), an article devoted to the analysis of *De Interpretatione* 9. In that paper, Mariani maintains that Aristotle accepted the principle of bivalence also for singular propositions *de futuro* (Mariani will consider again the issue in Mariani, 2009a). According to Mariani, Aristotle might have had the concept of 'alternative futures' in mind while he was dealing with future contingent propositions. However, there are cases in which a course of event is the case in *all* alternative

[2] Exceptions include G. Striker (cf. *Aristotle. Prior Analytics. Book I*, translated with Introduction and Commentary by G. Striker, Oxford University Press, Oxford 2009).

[3] Mariani edited a recent reprint of Sainati's book (cf. Mariani, 2011b).

[4] Cf. (Mariani, 2018), p. xiii.

[5] E. Berti often presents Aristotle as a non-systematic thinker (see, e.g., *Aristotele nel Novecento*, Laterza, Roma and Bari 1992, pp. 260–267).

[6] Cf. J. Hintikka, *Time and Necessity*, Clarendon Press, Oxford 1973.

futures, as *De Coelo* A 12 seems to imply. In other words, the identification of *necessity* and *truth-at-all-times* (an identification which seems to entail the principle of plenitude) is limited to certain cases, i.e., to eternal substances and to the propositions that describe their properties.

Mariani's work on Aristotle's modal syllogistic includes (Mariani, 1990a) and (Mariani, 2005a). These articles in a way bring to completion the 'history of Aristotle's *Organon*' that Sainati had designed but never finished. Mariani shares Sainati's idea that Aristotle grounds his syllogistic (or, rather, his syllogistic systems) on the theory of predication expounded in the *Organon*. The different syllogistic systems, in Mariani's view, are meant to serve as deductive systems in the Aristotelian sciences (cf. especially Mariani, 1990a). (Mariani, 2005a), however, shows that Sainati's attempted solution to the puzzle of the two modal *Barbaras* appears not to be a viable one.[7]

Mariani (1997c) argues that there was an evolution also within Aristotle's theory of predication and that the Stagirite had two different characterizations of the *differentia*. Other papers are devoted to the problem of accidental predication, to the enigmatic notion of 'logical investigation' that Aristotle announces in *Metaphysics* Z 4, and to the 'Third Man' argument.

In all these essays, Mariani tries not only to offer a critical reconstruction of the Stagirite's often obscure arguments – he wants also to detect Aristotle's real intentions and guiding methods in the *Organon*, in the *Metaphysics*, and in the other treatises. Mariani is aware of textual inconsistencies and believes that they are precious to the interpreter, because they display different working tools or the different ideas Aristotle might have been entertaining while he was looking for solutions to philosophical problems. In Mariani's interpretation, textual and interpretative problems are the keys to understand the Stagirite's complex mind.

Mariani's portrait of Aristotle is dense and includes many underappreciated riches that are will certainly open new paths for Aristotle scholarship in the years to come.

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[7] According to Aristotle (cf. *Prior Analytics* A 9), a *Barbara LX-L* mood is a valid syllogism, whereas a *Barbara XL-L* is an invalid mood ("L" refers to necessity propositions and "X" to categorical propositions).

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THE PHILOSOPHICAL WORK OF CARLO MARLETTI

GIACOMO TURBANTI

The philosophical work of Carlo Marletti is an *esmerada investigación* on the relations between language and thought. All the many diverse subjects that he has dealt with in his research gravitate around this one intriguing and problematic issue. As a student of Vittorio Sainati and Francesco Barone he conceived this investigation as falling squarely within the merit of the analytic philosophy of language, but he was also well prepared to pursue it with the due broad vision right from the start. Throughout all his philosophical career Marletti sharpened an acute sensibility for the analysis of the epistemological issues and nurtured a wide in-depth expertise in logic, linguistics and cognitive sciences. The profits of his study he has always shared as much generously with his students in his courses as avaraciously with the philosophical academy in his publications. By way of better characterizing Marletti's philosophical production in this brief excursus, only some of his most representative contributions will be taken into account.

Marletti began publishing in the 1980s in *Teoria*, the philosophical journal founded in Pisa by Vittorio Sainati and Renzo Raggiunti. In effect, most of his philosophical essays have been hosted in *Teoria* since then. As a young researcher, Marletti cut his teeth on the semantic and pragmatic issues concerning synonimity and the truth-functional analysis of belief ascriptions (Marletti, 1981a, 1983a, 1984). Of course, in the light of the work of Donald Davidson, that was one of the hot-topics in the philosophy of language at the time. Quite interestingly, Marletti noticed a tension between two opposing strategies to cope with such bundle of problems: on the one hand, the strategy of providing hyper-intensional analyses of belief ascriptions in order to identify more fine-grained semantic components, on the other hand, the strategy of acknowledging the existence of idiosyncratic intensions. Both strategies, he noted, convey a wrong picture of the anomalies highlighted by the belief attitudes. The former minimizes the anomalies up to the point of just explaining them away, the latter substantiates the anomalies up to the point of suggesting implausible notion of solipsistic mental contents. However, it is exactly in the tension between these two unsatisfactory outcomes that Marletti recognized the place for the work of the philosopher of language (Marletti, 1993).

In those early years Marletti was contributing to the teaching of Logic at the Department of Philosophy of the University of Pisa. Thus he began preparing lecture notes for his courses and by 1993 he had the first draft of a logic handbook

ready. Later, such material became the basis for the volume *Argomenti di Logica* (Marletti et al., 2010), which is now the central reference for the didactics of Logic in the Department.

Marletti began teaching Philosophy of Language in Pisa in 1997, when Raggiunti retired. The topics of his courses immediately showed the direction that his investigation on thought and language had been taking and that was going to orient his research from then on. He lectured on theories of concepts, representations, naturalism and semantic normativity. He recognized that while the Quinean framework had helped highlighting certain semantic naiveties in the Carnapian model that had characterized the empiricist development of the linguistic turn, nonetheless such framework was still bogged down by its own epistemological roughness that made it ultimately unsuitable to accommodate a naturalistic account of cognition.

The episode that most of all contributed to orient his research in those years was the encounter with the philosophy of Wilfrid Sellars. Marletti got to Sellars through McDowell's *Mind and World* (1994) and, in the comparison, he was impressed by the masterful analysis of non-conceptual contents that Sellars delivered in the terms of his reading of Kant in *Science and Metaphysics* (1968). He has never stopped reflecting on these themes since then.

Marletti developed an insightful interpretation of Sellars, which is rightfully to be considered as one of his most precious contributions in philosophy. He was already clear about how to read Sellars already at the beginning of 2000s, but the most complete presentation of his interpretation is contained in his introduction to the collection of Italian translations of Sellars' papers that he edited in 2013 (Marletti and Turbanti, 2013). The very selection of the texts included in this collection is representative of his reading, whose center of gravity is the Sellarsian theory of sense impressions. The trajectory of Sellars' philosophy is seen as taking departure from the rejection of both the horns of a traditional dilemma between the empiricist myth of the given and the rationalist idea that cognition can be exhaustively accounted for entirely inside the space of reasons. The target of this trajectory is construed as the definition of a naturalistic account of cognition, in which the reasons of the understanding are shown as interacting with what Marletti maybe a bit far-fetchedly, but efficaciously called the "reasons of the sensibility". These *reasons* would determine the non-conceptual contents of the prelinguistic representational systems that we humans share with animals and that allow us to picture states of affairs. Even if prelinguistic representational systems do not utilize predicative structures with subjects and predicates, their neurophysiological states could still play the functions of reference and charac-

terization, because they are appropriately associated with the states of affairs also represented in the language.

The acknowledgment of the role that Sellars assigns to non-conceptual contents in the philosophical account of cognition allowed Marletti to acutely criticized McDowell's analysis of Sellars' philosophy of perception and of his way to discuss Kantian themes (Marletti, 2001, 2003a). Marletti has continued with the same focus to confront with the School of Pittsburgh until his more recent publications (e.g., Marletti, 2015).

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AN INFORMAL EXPOSITION OF VON NEUMANN'S CONSISTENCY PROOF

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Abstract: We consider the rather neglected and difficult consistency proof for a weak fragment of arithmetic (with the successor function only, and without induction) carried out by John von Neumann in 1925. We explain the technical peculiarities of his method of proof with respect to the other early consistency proofs in the Hilbert School.

Keywords: Consistency proof, arithmetic, von Neumann.

1 *Introduction*

Von Neumann's long paper *Zur Hilbertschen Beweistheorie* (1927, reprinted in 1961, pp. 256–302), written and submitted in 1925 (when Neumann János was twenty-one years old), contains a consistency proof for a fragment of first-order arithmetic (the fragment without induction and with the successor axioms only) by a variant of Hilbert's substitution method. A correct estimate of the bounds on the substituents needed was given there, and in fact it is built into the proof (while in most uses of such methods it is computed independently after the proof). The work also contained a clear presentation of Hilbert's proof-theoretic approach (*Ansatz*) and a detailed critique of the most important consistency proof produced until then in the Hilbert School, namely Ackermann's (1925) proof. Moreover, von Neumann gave a very precise and thorough (though slightly peculiar) definition of formal system in general (in which, by the way, we find perhaps the first use in the literature of axiom schemas in the definition of a formal system), a rigorous delimitation of the specific formal system treated, together with many interesting side remarks (e.g., on decidability, on choice principles, on definitions by recursion, etc.).

Our purpose in this paper is to describe the specific features of von Neumann's consistency proof, explaining some of its technical subtleties (the proof is not easy, as it is the case with substitution methods in general, but it needs no 'backtracking', a typical feature of such methods), trying to provide (at least in part)

* I wish to thank Lorenzo Carlucci, Marco Forti and Enrico Moriconi for many helpful discussions and comments.

PARADOXES AND SET EXISTENCE

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Abstract: We present some observations on paradoxes from the point of view of set existence principles, and in connection with self-reference and unfoundedness.

Keywords: Paradox, self-reference, truth, set existence, second order logic, subsystems of second order arithmetic.

1 *Self-reference vs. unfoundedness*

Self-reference plays a crucial role in the whole matter of paradoxes. Nevertheless we share the view of (Sorensen, 1998):

> Self-reference is deeply intertwined with logical and foundational aspects of mathematics, but the notion itself is still surprisingly barely understood...

So it may be of interest to inquire to what extent self-reference is essential or it can be eliminated in favor of alternatives.

Traditionally, some form of self-reference has been regarded as *necessary* to paradoxes; but in recent times there has been an attempt to *challenge the traditional view*, by stressing that there are paradoxes not based upon self-reference, but upon unfoundedness and even in hierarchical formalisms.

Historically, this fact is not novel, since it is well-known that there are genuine paradoxes arising from unfoundedness or ungroundedness, e.g., see (Mirimanoff, 1917a; Montague, 1955).[1] For instance, one can derive a semantical contradiction in presence of unfounded chains (Yablo's paradox). Or even in a *typed* theory of truth *à la* Tarski with a hierarchy of countably many truth predicates $T_0, T_1, \ldots$, provided the hierarchy is *ill-founded*, that is, each truth predicate T_i of level i applies to sentences with truth predicates T_k with higher level $k > i$, e.g., (Visser, 1989; Halbach, 2016).

For the reader's sake, let us recall the paradox in (Yablo, 1993).

Assume that there are infinitely many people a_0, a_1, a_2, ... and each a_i says the same sentence: "everybody following me is lying". Then, if p_i is the statement made by a_i, there is *no classical two-valued assignment* to the p_i's. Indeed,

[1] For an attempt at a comprehensive view, see (Cantini, 2009).

ON FALSE ANTECEDENT IN DIALETHEIC ENTAILMENT

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Abstract: Aim of the paper is to analyze Priest's dialetheic solution to Curry's paradox. It has been shown that a solution refuting ABS, accepting MPP and consequently refuting CP meets some difficulties. Here I just concentrate on one difficulty: one obtains the validity of MPP just using FA in the metalanguage, an invalid rule for a dialetheist.

Keywords: Dialetheism, *entailment*, false antecedent.

1 *Introduction*

Consider a paradigmatic case of self-reference paradox, the *strengthened liar*, having the form:

(a): (a) is untrue.

A solution to the *strengthened liar* is notoriously hard to find. If we admit, by the law of excluded middle, that (a) is determinately true or untrue it is immediately inferred that it is true if and only if it is untrue. Moreover, the *strengthened liar*, differently from the simple one, is a paradox also for those who argue for the so-called *gap* solutions to the paradox: contrary to the law of excluded middle there are some sentences that are neither true nor false.[1] If you assume (a) as neither true nor false one can conclude that, it is, in particular untrue, what the paradoxical sentence says, being so true.

There are different solutions to the paradox. Just to mention two of them one can consider Tarski's solution based on the difference between language and metalanguage and Kripke's notion of semantic foundation.[2]

Aim of this paper is to discuss the dialetheic solution to the paradox, a solution proposed by Priest, for example in (Priest, 1979, 2002a,b, 2006a,b). The dialetheic solution simply consists in accepting the conclusion that (a) is both true and untrue. It is a dialetheia, i.e., a sentence having the form $(A \wedge \neg A)$.[3]

* I would like to thank Enrico Martino for useful discussions on this paper. Parts of it are in (Carrara and Martino, 2014b).

[1] For a discussion on gap theories solutions to the *strengthened liar* see (Field, 2008).

[2] Tarski's solution is in (Tarski, 1956), Kripke's solution is in (Kripke, 1975).

[3] G. Priest uses the terms 'dialetheiae' and 'true contradictions' to indicate 'gluts', which in turn is a term coined by K. Fine in (Fine, 1975).

FUTURE CONTINGENTS, SUPERVALUATIONISM, AND RELATIVE TRUTH

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Abstract: The problem of future contingents is one of the most ancient and debated puzzles in Western philosophy, and *Supervaluationism* is, today, one of the most prominent solutions to the problem. Recently, John MacFarlane has carried a well-known criticism to Supervaluationism (and all other standard approaches to future contingents) and put forward a new solution of the problem of future contingents, which is known as Double Time Reference Theory (DTRT). Here, we compare DTRT with Supervaluationist semantics, and we show that the success of MacFarlane's criticism crucially depends on the expressivity of the language adopted. Once a reasonable expressive power is granted, however, MacFarlane's criticism no longer applies.

Keywords: Future contingents, Supervaluationism, relative truth, truth-attribution, assertion, MacFarlane.

1 *Introduction*

A *future contingent* is a statement *about some future state of affairs* (or *fact*) that is neither impossible nor inevitable. The problem of future contingents is: 'If the present state of the world is not sufficient to determine all subsequent facts (as indeterminists purport), how are we to attribute a truth-value to a future contingent?' The question is pressing, since indeterminism enjoys today a great popularity. One possible reply, which is usually traced back to Aristotle, is that future contingents are *neither true nor false*. In today's philosophical logic, this is the main tenet of *Supervaluationism*, a view that takes a statement about the future to be true (false) if and only if it is satisfied (dissatisfied) relative to every history passing through the moment of evaluation.

MacFarlane (2003) criticizes Supervaluationism and the other standard approaches to future contingents. In particular, he argues that Supervaluationism would not constitute a good ground for a theory of the *assertion* of future contingents, since it could not keep together three features that such a theory should

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AN INFORMATIONAL APPROACH TO FEASIBLE DEDUCTION

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> And according to Chrysippus, who shows special interest in irrational animals, the dog even shares in the far-famed "Dialectic". This person, at any rate, declares that the dog makes use of the fifth complex indemonstrable syllogism when, arriving at a spot where three ways meet, after smelling at the two roads by which the quarry did not pass, he rushes off at once by the third without stopping to smell. For, says the old writer, the dog implicitly reasons thus: "The creature went either by this road, or by that, or by the other: but it did not go by this road or by that: therefore it went by the other".
>
> Sextus, *Outlines of Phyrronism*, Ch. XIV.

Abstract: We discuss some anomalies of the received view concerning propositional logic, semantic information and the meaning of the logical operators. We show that a weaker "informational" approach to the meaning of the logical operators (that was anticipated by W.V.O. Quine) and a corresponding deduction system in the style of natural deduction provides a natural solution to one of these anomalies that is knwon, after Hintikka, as "the scandal of deduction" and looks promising also for the others.

Keywords: Informational semantics, feasible reasoning, logical depth.

1 *Introduction*

Logic started with Aristotle as an attempt to provide a prescriptive formal theory of human reasoning. Between the end of the 18th and the first half of the 20th century, its main propulsive force became the (failed) attempt to provide definitive foundations for mathematics. Later on, the interaction with computer science was mainly directed towards designing efficient machine-oriented proof procedures to use both for automated theorem proving and for computing applications. Thus,

FROM *LOGISTIKÉ* TO *LOGISTIQUE*: THE LONG TRAVEL OF A WORD

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Abstract: This paper aims to follow some of the key stages that the term logistiké passed through thanks to the double meaning it received since its appearance in ancient Greece: a more technical one (i.e. reckoning) and a more general one (i.e. reflecting, thinking). Taking as a starting point the Pythagorean Archytas, the discussion will take into account Plato's very influential contribution, its developments, the modern age with a special focus on Leibniz, and the revival of the notion in French in 19th century.

Keywords: Mathematics, logic, history.

The purpose of this paper is to follow some of the key stages in the development of the term *logistiké*, which came to the forefront in the 20th century as a label for the beginning of mathematical logic.[1] In this process it is possible to see tension between a language that meets the requirements of rigor and unequivocality and the fact that when you give the concept its name you are ejected into its uncertainties, nuances, and ambiguities given to it by natural language.

The term "logistic" comes from the Greek *logistiké*, an adjective which implies the word *téchne* and stems from the verb *logízomai*, which has a double meaning; on the one hand the strictly technical meaning of computing, counting, reckoning, and/or taking into account, and on the other a more general character of calculation, which does not imply the use of numbers, that is to say reflecting, thinking, pondering, and/or intending to do something.[2] This duality of meaning is also found in other derivatives such as *logismós* and *tà logistiká*, which occur in alternation with *logistiké* in the discussed sources.

[1] In the literature three foundational schools are mentioned: logicism, intuitionism, and formalism. The term logicism, however, was not introduced by its founding fathers, Frege and Russell, but by Fraenkel (1928), and was consolidated after the Koenigsberg Congress of 1930, whose proceedings were published in volume 2 of the journal *Erkenntnis* (1931).

[2] In the theory of the tripartition of the soul proposed by Plato in the *Republic*, *tò logistikón* is the rational principle by which the soul argues (*logízetai*), see *Republic* IV 439d:

> "Not unreasonably," said I, "Shall we claim that they are two and different from one another, naming that in the soul whereby it reckons and reasons the rational and that with which it loves, hungers, thirsts, and feels the flutter and titillation of other desires, the irrational and appetitive – companion of various repletions and pleasures."

ON THE SIZE OF INFINITE SETS: SOME WITTGENSTEINIAN THEMES

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Abstract: The paper is devoted to an examination of Wittgenstein's remarks on Cantor's diagonal proof of the uncountability of the set of real numbers. The scenario in which Wittgenstein urges to place Cantor's proof is presented as an alternative to the standard account of size for sets, which establishes a tight connection between the comparison of the sizes of any two sets A and B and the existence of certain functions from A to B. First, the closeness of Wittgenstein's stance to the constructivistic interpretation of Cantor's Theorem, given by Poincaré and Brouwer, is put in relief. Then, Georg Kreisel's ironic comment on Wittgenstein's statement that Cantor, through his diagonal proof, had given sense to the expression "expansion which is different from all the expansions in a system" is thoroughly discussed. The rationale in Wittgenstein's position is traced back to his conception of the relationship between mathematics and meaning, and to his peculiar views on semantic normativity. Lastly, Wittgenstein's use of the criterion of applicability of mathematical theorems outside mathematics as the basis for a substantial rejection of transfinite arithmetic is examined, and the inevitable problem of how to make that rejection consistent with Wittgenstein's quietist meta-philosophical attitude is tackled.

Keywords: Size, diagonalization, meaning.

At the beginning of his *Lectures on the Foundations of Mathematics, Cambridge 1939*, Wittgenstein synthetically delimits the scope and the objective of his analysis as follows:

> I can as a philosopher talk about mathematics because I will only deal with puzzles which arise from the words of our ordinary everyday language, such as "proof", "number", "series", "order" etc. ... all the puzzles I will discuss can be exemplified by the most elementary mathematics – in calculations which we learn from ages six to fifteen, or in what we easily might have learned, for example, Cantor's proof (Wittgenstein, 1976, p. 14).

The fact that Wittgenstein mentions Cantor's proof, that is, Cantor's diagonal proof of the uncountability of the set of real numbers, or, equivalently, of the non-enumerability of the set of all denumerable sequences of natural numbers, as a calculation procedure that is akin to those usually carried out in elementary arithmetic, has great significance, as we will see soon.

For our purposes, it is expedient to start from a short outline of the standard modern account of size for sets, where by "the size of a set A" the number of elements of A, or the cardinality of A, is understood. As known, there are three

SELLARS AND CARNAP ON EMERGENCE. SOME PRELIMINARY REMARKS

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Abstract: The essay analyses the dialogue between Rudolf Carnap and Wilfrid Sellars on emergence and related topics, also on the basis of unpublished materials. The second section briefly examines the different perspectives on emergence which are present in contemporary philosophy. Then Carnap's main criticisms against emergentism are discussed, focusing on his *Remarks on Physicalism and Related Topics*. Finally, in the fourth section, the paper sketches the main features and reasons of Sellars's *intrascientific* emergentism.

Keywords: Carnap, emergentism, physicalism, Sellars, sensory consciousness.

1 *A winter's dialogue*

It seems that Wilfrid Sellars and Rudolf Carnap spent New Year's 1954-1955 together in Los Angeles, talking about emergence and related philosophical topics. On a postcard dated 12 December 1954, Carnap suggests to Sellars two possible motels, not too far from the UCLA campus, where he could stay, also adding: "so far, I have around the time of your coming all days quite free, except Monday and Friday [...] I am looking forward to your coming and to our discussions". And a few days later, in a letter of the 21st of December 1954, Carnap writes: "I was able to change my other appointment so that now I am free on Friday 31st for you; this would give us an apportunity [*sic*] for meetings on Thursday, Friday, Sunday, which seems to be in accord with your wishes".[1] Carnap had at that time just joined the University of California in Los Angeles, after having spent many years in Chicago (1936-1952), while Sellars was Professor at the University of Minnesota (1947-1958), where also his friend Herbert Feigl had been active founding both the *Minnesota Center for Philosophy of Science* (1953) and the *Minnesota Studies in Philosophy of Science* (1956).

* I am very grateful to Willem deVries for his comments on a previous version of this research.

[1] See Wilfrid S. Sellars Papers, 1899-1990, ASP.1991.01, Archives of Scientific Philosophy, Special Collections Department, University of Pittsburgh, Box 159, Folder 1 (available also online). The correspondence spans a period from 1947 to 1963.

IS ARISTOTLE'S MATTER ORDINARY STUFF?

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Abstract: Is Aristotle's matter just the ordinary stuff of which objects are made, e.g. bronze, wood or iron? This paper argues that the answer to this question is qualified. On the one hand, Aristotle's matter shares with ordinary stuff two significant characteristics: it is both the material from which things originate (material origin) and the material of which things are made (material constitution). In one important respect, however, Aristotle's matter differs from ordinary stuff. Unlike ordinary stuff, Aristotelian matter has no properties of its own. The paper explains the meaning and the origin of this controversial claim.

Keywords: Aristotle, metaphysics, matter and form.

1. The Aristotelian notions of matter and form have long become part and parcel of our conceptual framework. The idea that the ordinary objects of our everyday experience – chairs, tables as well as animals and plants – are made of some stuff or other and have a certain form or principle of organization sounds familiar to us and in need of no particular explanation. But are matter and form so commonsensical as we are sometimes inclined to think? There are of course several issues that have been raised in relation to Aristotle's hylomorphism, especially in philosophical quarters: are matter and form *parts* of a material object?[1] Is form the same thing as structure, or is it something else?[2] In this paper, I wish to briefly discuss the notion of matter and to raise in particular the following question: is Aristotle's matter ordinary stuff? My answer will be that Aristotle tries to preserve as much of the connection between matter and ordinary stuff as possible, but his *metaphysical* account of matter, i.e., his account of the nature of matter, parts ways with our intuitions about ordinary stuff in at least one important respect.

In order to clarify what I mean by 'ordinary stuff' and how exactly Aristotle's matter differs from it, let me lay down three characteristics which I think we would be rather comfortable in associating with ordinary stuff:

> C1) (material origin) Ordinary stuff is or may be the material *from which* something originates. We say, for instance, that a statue is

[1] On this debate see (Scaltsas, 1994a,b; Loux, 2006; Johnston, 2006; Koslicki, 2008; Galluzzo, 2018).

[2] See (Koslicki, 2008; Oderberg, 2014; Skrzypek, 2017).

KNOWLEDGE AND OCKHAMIST BRANCHING TIME

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Abstract: In this paper, we interpret and assess the so-called Fitch's paradox of knowability by using the Ockhamist semantics for branching-time frames. We argue that the paradox depends in part on the adoption of a strongly idealised notion of knowledge. We emphasize that weaker idealisations are possible. Their nature and the difficulties they meet are highlighted by contraposition with a conception of knowledge as an empirical, almost fully de-idealised notion, such that both the truth-value and the modal status of knowledge ascriptions can change through time and across possible worlds.

Keywords: Knowledge, knowability paradox, branching time.

1 *Introduction*

Fitch (1963) showed that, under very plausible assumptions, from the premise that any true proposition can in principle be known (the *knowability principle*) it follows that every true proposition is in fact known. This is the so-called *Fitch's knowability paradox*.

A natural reaction to the paradox is to introduce restrictions to the knowability principle, by imposing limits on the kind of true propositions that are guaranteed to be knowable. Our approach is different. Namely, we shall (i) highlight that also principles jointly weaker than the knowability principle have hardly acceptable consequences; (ii) adopt a notion of knowledge that, as opposed to the standard approach in formal epistemology, is suitably de-idealised and does not entail any kind of logical omniscience. Moreover, (iii) we shall look for a way in which a consistent notion of trans-momentary knowledge can be reconstructed from the bottom, i.e., from finite sets of momentarily known sentences, in a (Ockhamist) branching-time framework. This latter goal is pursued by taking into the account the impact of Fitch's results, but also highlighting problematic aspects of the notions of knowledge and knowability that are independent of Fitch's paradox.

To the best of our knowledge, the only other work in which Fitch's paradox is approached from a branching-time perspective is (Wansing, 2015). In the conclusions, we shall briefly highlight some differences between our approach and Wansing's.

A DIALECTICAL ANALYSIS OF *METAPHYSICS* Θ 3

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Abstract: In this paper, I maintain that Aristotle develops dialectical arguments in *Metaphysics*, book IX. More specifically, I maintain that Chapters 3 and 4 belong to the same textual unit and that Aristotle intends to clarify the notions of "potentiality" and "actuality" by means of dialectical arguments.

Keywords: Aristotle, *Metaphysics*, dialectic, potentiality/actuality.

In this article I will state that Aristotle's arguments against the Megarics in *Metaphysics* Θ 3 are dialectical.[1] This claim is not entirely new, but I will try to qualify it by outlining certain basic conditions that an argument needs to meet to be considered dialectic. Some commentators describe Aristotle's arguments as "dialectical" when they are not demonstrative syllogisms, but most scholars do not specify what characteristics enable us to identify an argument as "dialectical".[2] I follow a proposal that Mariani developed at length in several publications[3] and I consider an argument to be "dialectical" if it displays the argumentative structures outlined in the *Topics* (and especially in book Θ of the *Topics*). I will show why Aristotle chooses to engage in a dialectical conversation with the Megarics: I believe that there is a philosophical reason why the Megarics cannot be refuted in any other way.

In this paper, I expand on the conclusions proposed in (Ferroni and Gili, 2016), where Ferroni and I stated that lines 1047b1-6 constitute a single sentence and there is no solution of continuity between Chapters 3 and 4 of *Metaphysics* book Θ.

1 *A general overview on* Metaphysics *Θ*

Aristotle's *Metaphysics* is a complex book both in its content and in its textual structure. Most scholars share the opinion that Aristotle did not conceive of the

[1] In this paper I rely on many ideas that Mauro Mariani presented in his publications and, above all, in conversation. I thank him for what he tried to teach me and I will always keep a dear memory of his contagious passion for Aristotle's logic.

[2] Some scholars introduce a 'second' dialectic, distinct from the discipline outlined in the *Topics*, and they maintain that Aristotle adopts this 'strong dialectic' – which he would never have described in detail in his *corpus* – in texts such as the *Metaphysics* (see, e.g., Irwin, 1988; Mariani criticizes Irwin's interpretation in Mariani, 2018, p. 187).

[3] See in particular (Mariani, 2002, 2006).

IN DEFENSE OF THEORIES AND STRUCTURES IN SEMANTICS. REFLECTIONS ON VECTOR MODELS OF MEANING

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Abstract: Vector models of meaning are regarded as a valuable alternative to traditional symbolic semantic representations. To what extent are vectors actually able to completely replace such representations? We will discuss this question by analyzing the characters and limits of distributional semantics, a computational model for the analysis of meaning based on the hypothesis that semantic representations are not structures of symbols, but vectors whose values are derived from co-occurrence statistics between lexical terms.

Keywords: Distributional semantics, vector representations.

1 *Introduction*

The title of this contribution is directly inspired by Ray Jackendoff's paper *In Defense of Theory*, in which he argues that a central element in the scientific agenda of linguistics and cognitive sciences is the explicit characterization of the **structure of mental representations**:

> In the study of language, the characterization of mental structures is the domain of linguistic theory. Linguists in the mentalist tradition understand the "grammar of a language" as spelling out explicitly the repertoire of phonological, syntactic, and semantic structures in terms of which a speaker can construct utterances in comprehension and production. This tradition originates with generative grammar (Chomsky, 1965), but also includes numerous alternative approaches such as Optimality Theory (Prince and Smolensky, 2004), Cognitive Grammar (Lakoff, 1987; Langacker, 1994), and some strains of Construction Grammar (Goldberg, 1995, 2006) (Jackendoff, 2015, p. 2).

* I would like to thank Mauro Mariani, Carlo Marletti, Enrico Moriconi and the late lamented Paolo Casalegno, who had a crucial role in my education in logic, philosophy of language, and analytical philosophy. In particular, I want to express all my deep affection and gratitude to Carlo, whose genial thinking, depth of analysis and intuitions are always with me, even now that research has brought us along different roads. I will never forget our intense discussions on meaning and language (nor his constantly being late to our meetings!). Carlo and his passion for philosophical inquiry have been the only light in very dark moments of my life.

STRUCTURE *VERSUS* WHOLE *VERSUS* ONE

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Abstract: I argue that substantial holism, in its historical and contemporary versions, does not deliver unity of substance. A substance is one when we turn the parts of the whole into properties of the whole. This is a conceptual operation, which gives rise to a new entity, which has a number of its own and it is qualitatively novel because it is qualified by its parts as properties.

Keywords: Substance, structure, relations, parts, holism, unity.

1 *Introduction*

In this paper I assume as my starting point an ontology that comprises as its building blocks "sparse" fundamental properties: e.g., mass, spin, charge (as *per* David Lewis); only that on my view (but not on Lewis's) such properties are instances of physical *powers*, essentially defined by the type of change they (or their possessors) can bring about in the world (e.g., repelling and attracting, in the case of an instance of electric charge). These power tropes exist as a range of qualitative variation, primitively structured in certain ways (e.g., into the structures of mass, spin, charge that make up electrons).[1] The question I address here is whether, in addition to such fundamental powers and their structures, there are also compositions of them that are unified into one, but not as interconnected parts. Such entities are non-trivially one. I will address the metaphysics of the unification of their complexity, from structures of elementary building blocks of reality into single entities: what are called *substances*, in the Aristotelian/Armstrongian tradition.

I am thus working here within a framework that is different from the Humean/-Lewisean one, within which the only way the building blocks of reality combine (whether they are power tropes, or something different) is into aggregates, where the elements are related to each other (minimally, by spatio-temporal relations), but remain many in number, without giving raise to any metaphysically unified

* This essay is dedicated with much gratitude to Mauro Mariani, who introduced me to the world of analytic metaphysics during my undergraduate studies in Pisa.

[1] I have argued for this ontology and the nature of the building blocks of reality in 2017a, 2017b, 2017c.

PRAGMATISM AND THE LIMITS OF SCIENCE

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Abstract: Usually, the results of scientific discoveries are taken to be descriptions of "real" nature. Why should we think differently, given the great results that science was able to attain in the last centuries? However, uncertainty about the content of our theories has grown fast, together with the feeling that there are alternative theories that can account equally well for all possible observations. Clearly the threat of relativism arises at this point, even though many authors nowadays no longer take relativism to be a threat, but just a fact of the matter.

Scientific realism is a theme where the originality of pragmatist positions clearly emerge. Nicholas Rescher, for example, claims that natural science can indeed validate a plausible commitment to the actual existence of its theoretical entities. Scientific conceptions aim at what really exists in the world, but only get it imperfectly and well off the mark. What we can get is, at most, an imperfect consonance between our scientific ideas and reality itself. And this statement should not sound surprising, if only one recalls how difficult it is to trace a precise border-line between ontology and epistemology.

There is indeed little justification for believing that our present-day natural science describes the world as it "really" is, and this fact does not allow us to endorse an absolute and unconditioned scientific realism. In other words, if we claim that the theoretical entities of current science correctly pick up the "correct ontology", we run into the inevitable risk of hypostatizing something – i.e., our present science – which is only an historically contingent product of humankind, valid in this particular period of its cultural evolution.

Keywords: Science, scientific realism, pragmatism, naturalism, philosophy of science, ontology, epistemology.

It is natural that when the man of the street reads about the results of scientific discoveries he takes them to be descriptions of "real" nature. Why should different thoughts come to his mind, given the impressive results that science was able to attain in the last few centuries? It should be noted, however, that not only philosophers, but even many scientists have often denied the validity of the picture that the man of the street takes more or less for granted. Many examples could be provided in this regard, as any standard text on the history of the philosophy of science might easily confirm.[1] In the past century uncertainty about the content of our theories has grown fast, together with the feeling that there are alternative theories that can account equally well for all possible observations. Clearly the threat of relativism arises at this point, even though many authors nowadays no longer take relativism to be a threat, but just a fact of the matter. A good definition

[1] See for instance (Oldroy, 1986).

A NOTE ON THE LOGIC OF DISTRIBUTED KNOWLEDGE

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Abstract: Distributed knowledge logic is a multi-agent epistemic logic featuring modal operators intended to capture the notion of distributed knowledge among a group of agents. Intuitively, a proposition is distributed knowledge among a group B in case it is entailed by the knowledge of all agents a in B put together. This note presents a new proof of the completeness theorem for the minimal system of distributed knowledge (and some extensions thereof) that appears to be much more simple than the completeness proofs available from the literature.

Keywords: Distributed knowledge, completeness, canonical model.

1 *Introduction*

Like other kinds of knowledge originating through epistemic interaction (e.g., *common knowledge*), *distributed knowledge* is knowledge that arises in a group of agents when the knowledge of each agent is pooled together. Consider – just to recall a typical example in the literature – two mathematicians, a and b: a has a proof that, say, *Collatz conjecture*[1] φ holds true under a certain assumption ψ, but she has no idea whether the latter holds or not; b, on the other side, has proved ψ, but she does not know that ψ implies ϕ. Individually, neither a nor b knows that ϕ; however, ϕ is *distributed knowledge* among the group $\{a,b\}$: should, e.g., the two mathematicians communicate and pool together their knowledge, they would immediately come to the conclusion that ϕ holds.

The notion of distributed knowledge was analyzed in (Hilpinen, 1977) under the name of *impersonal knowledge*[2], but it is only starting with (Halpern and Moses, 1990) that the logic of distributed knowledge[3] has been systematically investigated within the framework of multi-agent (propositional) epistemic logics and Kripke-style semantics.

[1] For each natural number $k \geq 1$, let $f_k : \mathbb{N} \longrightarrow \mathbb{N}$ be the function recursively defined as follows: $f_k(0) = k$; $f_k(n+1) = f_k(n)/2$ if $f_k(n)$ is even, and $f_k(n+1) = 3f_k(n)+1$ if $f_k(n)$ is odd. The Collatz conjecture, still open at present, is: $\forall k \geq 1 \exists n (f_k(n) = 1)$.

[2] "p is impersonal knowledge", in symbols Kp, is analyzed in Hilpinen's paper (p. 2) on the basis of personal knowledge ("a knows that p", in symbols Kap) as: "there are persons $a_1, a_2, \ldots, a_n$ and propositions $p_1, p_2, \ldots, p_n$ such that $Ka_1p_1 \& Ka_2p_2 \& \ldots \& Ka_np_n$ and p is logical consequence of $p_1 \& p_2 \& \ldots \& p_n$".

[3] The original name "*implicit knowledge*" was soon replaced by the now current one.

ON POPPER'S DECOMPOSITION OF LOGICAL NOTIONS

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Abstract: This paper deals with certain positions held by Karl Popper in various logical papers dated from 1946 to 1948, which were the basis of his introductory courses on logic and the scientific method held at the London School of Economics for over two decades (1946-1969). There, he developed a metalinguistic theory of deducibility relations, characterized by purely structural rules, which were the basis for providing (what we could call) *inferential* definitions for the logical constants. First, I will try to situate Popper's investigations within general logical research, and then I will focus on his treatment of negation and implication, exploring various notions and providing some details for the results that he himself only sketched out.

Keywords: Deducibility, negation, implication, classical and intuitionistic logic.

1 *Introduction*

In the late 1940s Karl Popper wrote various papers[1] on logical issues which were the basis of his two-year introductory courses on logic and the scientific method which was his core academic role at the *London School of Economics* for over two decades (1946-1969). Though strictly linked to his teaching, these papers show a real and deep interest, apparently inspired by Alfred Tarski's 1936 work *Über den Begriff der logischen Folgerung*.[2] However, these papers did not receive a warm welcome from the logic community. Many raised objections and highlighted various mistakes.[3] These objections and, in particular, I think, Tarski's *silence* on the matter, eventually led Popper to abandon his project concerning the theory of deductive logic.[4] Recently, thanks to P. Schroeder-Heister and other people from

* I wish to thank my PhD student Leonardo Ceragioli for his very helpful discussions and suggestions concerning Section 5.

[1] I am referring to (Popper, 1946, 1947c,b,a, 1948a,b, 1949).

[2] See (Tarski, 2002).

[3] Including H. B. Curry, G. Hasenjaeger, S. C. Kleene and J. C. C. McKinsey. It should be noted that they all published their reviews in 1948. An exception was L. E. J. Brouwer, who showed great interest in Popper's investigations, especially in his treatment of different kinds of negation. A thorough discussion of these criticisms can be found in (Schroeder-Heister, 1984).

[4] There is no mention of Popper's work either in (Schmidt, 1960) or in (Scholz and Hasenjaeger, 1961), which were published shortly afterwards and were both devoted to themes largely also shared by Popper's investigations. A reference to (Popper, 1947c) occurs instead in (Bernays, 1965).

PROPERTIES AND PARTS IN WILLIAMS'S TROPE THEORY

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Abstract: Trope theory has rapidly gained a central position in contemporary ontological debate. The term "trope" first appeared with its current meaning for ontology in William's 1953 article "The elements of being". Only recently most philosophers have started to follow him in naming particular properties "tropes". In fact, the category of particular property has long been recognized by philosophers under different names throughout the history of ontology. On the other hand, William's seminal paper added something new: in fact, even if particular properties were well known to ontologists of the past, a complete ontology having only particular properties had not been sketched before. In this paper, I analyse his idiosyncratic conception of properties, highlighting the characteristics that differentiate it from traditional discourse about properties. I show that William's innovative approach in defining properties focuses on a extended notion of part and give an analysis of his particular lexical choices.

Keywords: Tropes, nominalism, neo-aristotelian ontology.

1 *Introduction*

The main contribution to metaphysics offered by Donald C. Williams is the article "The elements of Being" (Williams, 1953), where he presents the basic principles of an ontological theory which admittedly makes use of one single category,[1] that of particular properties or, as he named them in his article, with a new term, "tropes".[2] The importance of Williams's ontology is not due to the individuation of the category of tropes as a category on its own right, as many past ontologies

[1] Campbell (1990, p. 4) remarks that "what was novel and bold in Williams was the proposal that abstract particulars were not just *a* category, but a fundamental and irreducible one; and they formed not just a fundamental category, but the *only* one".

[2] Williams (1953, p. 7) refers to Santayana, as the source for his use of the term: "Santayana [...] used "trope" to stand for the *essence* of an *occurrence* [...]; and I shall divert the word, which is almost useless in either his or its dictionary sense, to stand for the abstract particular which is, so to speak, the *occurrence* of an *essence*". See also (Williams, 1966, p. 78). According to Bacon (2011) and Schaffer (2001), Williams takes on Santayana's term "trope", but uses it to express the opposite meaning. In a previous article (Williams, 1931, p. 589), he named tropes "abstract particulars", making a clear reference to the name G. F. Stout used to refer to particular properties. Other sources for the analysis of Williams's ideas about tropes are the articles: "Necessary Facts" (Williams, 1966) and "Universals and Existents" (Williams, 1986).

KRIPKE'S PUZZLE. A PUZZLE ABOUT BELIEF?

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Abstract: In his paper 'A puzzle about belief' Kripke intends to show that there is a puzzle about notional belief quite independent of substitution. Assuming a pretty intuitive weak principle of disquotation (If a normal English speaker, on reflection, sincerely assents to an English sentence 'p', free of indexicals and ambiguities, then he believes that p) we have to conclude that a rational linguistically competent subject believes both that Paderewski has musical talent and that Paderewski does not have musical talent. Assuming an equally intuitive strong principle of disquotation (A normal English speaker who is not reticent will be disposed to sincere reflective assent to an English sentence 'p' free of indexicals, pronominal devices or ambiguities if and only if she believes that p) we have to conclude, to the detriment of our rationality, that a rational competent sincere and not reticent speaker believes that Paderewski has musical talent and that she does not believe that Paderewski has musical talent.

In this paper I argue that disquotation (no matter if weak or strong) is a delicate matter when sentences containing individual names are involved. After all, if individual names are not properly qualified as ambiguous, it is because they have, by design, an unbound number of referents. In the case of semantically ambiguous sentences the disquotation applies to their statement. And it is proper only provided the individual meant by the name in the statement reported as assented is the same as the individual meant by the name in the report of the belief.

Even so, if a subject assents to contradictory statements or assents to a statement and fails to assent to another synonymous with the first this is indication enough that the subject does not appreciate that the occurrences of the name are co-referential and hence that the subject, no matter if sincere and not reticent and reflective, need not believe what she endorses or fail to believe what she does not endorse. Assent, dissent, and considered lack of assent are only prima facie indicators of belief, disbelief, and lack of belief. In presence of conflicting dispositions, the conflict between beliefs may be only apparent and disposed of by eliciting further dispositions apt to sort out beliefs from equivocations.

Keywords: Name, disquotation, belief.

Saul Kripke is celebrated for his attack on the notion that proper names have sense. He has provided various arguments against it. Yet, it is widely accepted that co-referential names are not substitutable *salva veritate* in belief contexts. Substitutivity failure of co-referential terms in belief contexts is a puzzle, unless, says the fan of senses, it is assumed that terms have sense. Kripke's reaction is to argue that belief attributions are a puzzle quite independently of substitution.

* I have to thank Andrea Bianchi, who in spite or because of his dedication to the improvement of the paper has manifested an unwavering resistance to its considerations.

RUTH MILLIKAN ON GOTTLOB FREGE: DISMANTLING AN APPARENT CLASH

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Abstract: Having been invited to contribute a paper to the *Festschrift* for Mauro Mariani and Carlo Marletti, I thought of a theme that connects them. Mauro wrote a relevant introduction to Gottlob Frege and Carlo translated the work of Ruth Millikan *On Clear and Confused Ideas* into Italian. In her book, Ruth Millikan presents a strong attack on Frege. What an opportunity to write about Frege *and* Millikan! I also pursue an old promise I made to Ruth about this Frege-connection in a trip to a SIFA Conference in the South of Italy. However, I discovered it was not an easy task and my final remarks will express my difficulty in understanding the very subtle and sophisticated arguments of *On Clear and Confused Ideas*. At the same time, I will try to go beyond the too obvious contraposition between the "new" ideas presented by Millikan and the "old" Fregean ones, and to suggest some similarities where it would be difficult to find them. It would have required more time to write a better paper, but the deadline compels me to send the paper as it is, in the hope that, reacting to my confused ideas, somebody might help me to make them clear.

Keywords: Thought, concepts, concept formation, classification, Ruth Millikan, Gottlob Frege.

1 *Introduction: some warnings*

In Chapter 12 of *On Clear and Confused Ideas* (from now on *CCI*) Ruth Millikan says that the purpose of her work "is not, of course, Frege exegesis but a clarification of where certain incompatibilities of positions lie" (p. 170n). Yet one may wonder why the author took a philosopher like Frege as her main target, whose interest was very far away from brain and mental processes, which are among Millikan's main concerns. Although he considered the notion of *grasping a thought* central in his philosophy, he did not have much to say about it. Given his definition of thought as something objective and shared by all mankind (preferred examples: Pythagoras Theorem or the law of gravitation), he defined the process of thinking or grasping a thought as "the most mysterious of all" (Frege, 1987, p. 145). He then said: "It is enough for us that we can grasp thoughts and recognize them to be true; how this takes place is a question in its own right" (*ibid.*); and in a footnote he remarks: "I should say that this question is still far from being grasped in all its difficulty. People are usually quite content to smuggle thinking in through a

THE SIMPLICITY OF THE SIMPLE APPROACH TO PERSONAL IDENTITY

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Abstract: I provide a simple solution to the problem of determining the characterising feature(s) of the simple approach to personal identity, sometimes also called the simple view: instead of focusing on claims regarding the analysability, reducibility, or triviality of the concepts used in simple theories of personal identity, I propose instead a metaphysical criterion to define this approach. In particular, I claim that the simple approach is (best seen as) that family of theories according to which personal identity is a relation that essentially depends on a mereologically simple (or impartite) entity the existence and features of which may be known directly (e.g., by introspection) or indirectly (e.g., by deduction from a series of other premises).

Keywords: Personal identity, identity, simple view, soul, mereological simplicity.

1 *Introduction*

The simple approach to personal identity – the label used in the literature is 'the simple view' – is a family of theories of personal identity loosely connected by various philosophical presuppositions, principles, and a general theoretical stance. However, despite several attempts to find a unique or common thread that connects all these features, the variety of such theories may suggest only a loose and theoretically irrelevant resemblance among them.[1] The problem of finding a unifying feature among these theories has been specified by Eric Olson as the task of answering the following questions: "What proposition is it that friends of complex views accept and friends of the simple view deny? What do you have to believe in order to accept a complex view, and what belief (or lack of belief) characterizes the simple view?" (Olson, 2012, p. 44).[2]

There are at least two strategies to distinguish simple from complex theories of personal identity, one that appeals to conceptual or theoretical features of the views at issue, e.g., versions of the simple approach sometimes hold that the concept of personal identity is not further analysable or reducible to simpler concepts

[1] See (Olson, 2012; Hummel, 2017). I use the label 'the simple approach' for what is currently called 'the simple view'. An approach to X is one or a family of more or less specific ways in which a theory or view about X is.

[2] In what follows I focus mostly on those parts of the above questions involving the simple view.

CATEGORY MISTAKES AND THE PROBLEM OF THEIR SEMANTIC STATUS

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Abstract: This paper has a methodological character: it does not offer a solution to a given philosophical problem; rather, it tells us *how* to solve it. The problem relates to the semantic nature of category mistakes. Once at the heart of philosophical debate in the analytic tradition, the study of the semantic status of category mistakes has become a prerogative of the specialist: the project of a small number of scholars who wish to understand the nature of a group of bizarre expressions. This paper argues that the reason why this project has moved to the periphery of philosophical discussion is that philosophers have gradually abandoned the Wittgensteinian idea that the understanding of the semantic nature of category mistakes depends on the understanding of the general principles governing meaningfulness in language. It is argued that the study of those principles is the key to understanding the semantic nature of category mistakes.

Keywords: Category mistakes, compositionality, predication, presupposition.

1 *Isolationism vs Communitarianism*

One of the most impressive features of human languages is their capacity of producing a potentially indefinite (perhaps actually infinite) variety of complex linguistic constructions out of a finite stock of initial lexical units: given a primitive stock of items (say, words), these units can be linked to form phrases; phrases can be conjoined within sentences; due to the insertion of appropriate logical vocabulary, sentences can combine with other sentences to form sentences of higher degrees of complexity; and a whole language can eventually come out.

In order to mark the boundaries of any language, besides listing its primitive terms, one must establish which of their combinations are legitimate and which are not in that language. Most of the time we seem to have little doubt about how to draw the line: e.g., 'The cat is on the mat' is a grammatical English sentence; 'cat the on is mat' is nothing more than a chaotic agglomeration of English signs. Sometimes, yet, we find a grey area in which the boundaries are not so sharp. This area is represented by weird constructions such as 'The number two is blue', 'The theory of relativity is eating breakfast', 'Saturday is in bed', 'Virtue is square', 'My mind is jumping', and so on. Unlike 'cat the on is mat', these compounds seem to be grammatically well-formed; but unlike 'The cat is on the mat', they

AT THE ROOTS OF RATIONAL EXPRESSIVISM

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Abstract: The early writings of Wilfrid Sellars are characterized by the analysis of themes and problems from Rudolph Carnap's philosophy of language. In particular, Sellars investigated the notion of "material" rules of inference and explored the possibility of a "pure" pragmatics. In these initial researches Sellars laid the foundations for his inferentialist analysis of meaning. A crucial component of such an analysis is the seminal form of rational expressivism that Sellars began to develop at the time. In this paper I address the genesis of this idea and some of the main implications that it has on the characterization of the space of reasons.

Keywords: Expressivism, transcendental linguistics, pragmatic meta-language, justification.

1 *Introduction*

Rational expressivism is one of the themes that allow to keep track of the overall direction of the philosophy of Wilfrid Sellars.[1] The notion of rational expressivism I will refer to has been discussed and characterized in particular by Robert Brandom. Although I will not be as much concerned with Brandom's own approach as with Sellars' one, his work is a good place to start. This is how Brandom synthesizes the two main elements of the expressivist enterprise that he undertakes in *Making it Explicit* (1994):

> A theory of *expression* [...] is to explain how what is *explicit* arises out of what is *implicit*. In the first instance, it must explain how propositional content (the form of the explicit) is conferred by norms that are implicit in discursive practice – that is, what proprieties of use having such a content consist in. Then it must show how those same implicit, content-conferring norms can themselves be made explicit in the form of rules or principles (*ibid.*, 77).

[1] Rational expressivism must be carefully distinguished from moral expressivism. The latter is a thesis in meta-ethics: the idea that normative judgments express pro or con attitudes towards what is judged. Rational expressivism must also be distinguished from expressivism in Alan Gibbard's (1990) sense, according to which normative vocabulary expresses the acknowledgment of a system of rules authorizing a certain action, and from Simon Blackburn's (1993) "quasi-realism", which employs expressivist means to vindicate the right to a realist stance in deploying vocabularies like the normative one without committing to metaphysical theses. Drawing the proper differences in the latter two cases is more difficult though (cf. Price et al., 2013).

A NOTION OF INTERNALISTIC LOGICAL VALIDITY

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Abstract: A semantics for a first order language based on a theory of meaning for empirical statements of internalistic inspiration is formulated and a definition of logical validity is given. After the language (§2) and some general assumptions about internalistic ontology (§3), the central notions of Subject (§4), Justification for α (§5) and truth-ground of α (§6) are introduced, and the notion of validity is defined (§6). In the Conclusion some remarks are made about the (in)validity of certain intuitionistic principles.

Keywords: Constructive validity, internalistic semantics, intuitionism, justification, truth-grounds, anti-realism.

1 *Introduction*

In recent years I have developed a theory of meaning for empirical statements of an internalistic and anti-realist inspiration. In the following pages I should like to formulate a semantics based on that theory and to give a definition of validity for a first order language.

2 *The language* $\mathscr{L}$

Primitive symbols:

1. An infinite set $\mathscr{V}$ of c-object variables.
2. An infinite set $\mathscr{N}$ of names of c-objects.
3. An infinite set $\mathscr{P}^n$ of n-place predicates, for all natural numbers $n > 0$.
4. Logical Constants: $\wedge, \vee, \rightarrow, \bot, \neg, \forall, \exists, =$.

The *well formed expressions* are of two kinds: *c*-object terms (*o*-terms) and formulas.

1. (i) If $\tau \in \mathscr{V}$, then τ is an o-term. (ii) If $\tau \in \mathscr{N}$, then τ is an o-term.
2. If $\pi \in \mathscr{P}^n$ and $\tau_1, \ldots, \tau_n$ are o-terms, then $\pi(\tau_1, \ldots, \tau_n)$ is a (n *atomic*) formula.

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