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VALUES AND LOGICAL TOLERANCE: JOHN DEWEY AND RUDOLF CARNAP

VALORES E TOLERÂNCIA LÓGICA: JOHN DEWEY E RUDOLF CARNAP

Ivan Ferreira da Cunha[1]
clockwork.ivan@gmail.com
Universidade Federal de Santa Catarina

Abstract: *This paper discusses the relation of Rudolf Carnap and the Pragmatism of John Dewey, exploring two points of apparent disagreement between their philosophies. The first one is the claim that Carnap's logic is committed to the traditional duality between form and content, which Dewey rejects. The second one is the supposition that Carnap would reject Dewey's treatment of values as a sort of pseudoproblem. Following Carnap's comments on his Principle of Tolerance and the consequences such principle has in his philosophy of science, this paper shows that there is no fundamental disagreement between the two authors, but only a difference of approach. Carnap doesn't have the objective of reconstructing philosophy, as Dewey does; he aims at developing tools for the advancement of semantics, which is a specific field of inquiry in Dewey's sense. On the other hand, it is possible to understand Dewey's theory of valuation as a legitimate empirical science in the Carnapian sense.*

Keywords: *Logical Positivism. Pragmatism. Philosophy of Formal Sciences. Theory of Valuation.*

Resumo: Este artigo discute a relação entre Rudolf Carnap e o Pragmatismo de John Dewey, explorando dois pontos de aparente desacordo entre tais filosofias. O primeiro é a afirmação de que a lógica de Carnap é comprometida com a dualidade tradicional entre forma e conteúdo, que Dewey rejeita. O segundo é a suposição de que Carnap rejeitaria o tratamento dado por Dewey à questão dos valores, como uma espécie de pseudoproblema. Seguindo os comentários de Carnap sobre seu Princípio de Tolerância e as consequências que tal princípio traz em sua filosofia da ciência, este artigo mostra que não há desacordo fundamental entre os dois autores, mas apenas uma diferença de abordagem. Carnap não tem o objetivo de reconstruir a filosofia, como Dewey; ele procura desenvolver ferramentas para o avanço da semântica, que é um campo de investigação específico no sentido de Dewey. Por outro lado, é possível entender a teoria da valoração de Dewey como uma ciência empírica legítima no sentido de Carnap.

Palavras chave: Positivismo Lógico. Pragmatismo. Filosofia das Ciências Formais. Teoria da Valoração.

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[1] Ivan Ferreira da Cunha is a doctoral-level student at the Philosophy Graduate Program – Federal University of Santa Catarina (Universidade Federal de Santa Catarina – UFSC). His advisor is Dr. Luiz Henrique de Araújo Dutra.

1. Dewey on the Formal Sciences

John Dewey states that philosophy has been traditionally involved in controversies about dualisms which are produced by social situations and not by matters of fact. The understanding of such social situations allows philosophy to overcome such controversies by noticing that there is continuity between the extreme poles of the dualities in question. Therefore, it is fundamental to understand the contexts in which philosophy's subject-matters arose and developed so that philosophy can make an important contribution to human knowledge. Thus, Dewey proposes a reconstruction in philosophy, in which philosophical problems are to be re-elaborated in order to comprehend the contexts which originated and gave meaning to them.

In Reconstruction in Philosophy, Dewey presents how such reconstruction is to happen in general. As to the fields of logic and mathematics, he says that traditionally it has been maintained that these areas are purely formal; i.e. logic and mathematics put forward abstract rules for thinking and reasoning. Such rules would be "dependent upon a priori canons and supra-empirical material" (DEWEY, [1920] 2004, p. 79). However, if one considers closely the history of such supposed "formal" disciplines, one will see that formulas which today are thought of as a priori had a long process of development. Reasoning strategies have been forged during the history of mankind in virtue of their efficiency. And the efficiency of a so-called logical form is largely related with the context in which it was developed, with the problems it was designed to solve and, by consequence, with the content it was about. Dewey tells us that "the present-day mathematical logician may present the structure of mathematics as if it had sprung all at once from the brain of a Zeus whose anatomy is that of pure logic. But, nevertheless, this very structure is a product of long historic growth" (DEWEY, [1920] 2004, p. 79).

Another source for the understanding of Dewey's proposal on the philosophy of formal sciences is his theory of inquiry, which Dewey calls 'logic'. In Logic: The Theory of Inquiry Dewey explains that he chose that name because of the fact that, considering we do not think without language, the theory that systematizes the most efficient method of thinking – a method of inquiry – also systematizes reasoning forms, which is usually called 'logic'. Thus, Dewey differentiates the usage of the term 'logic' in a strict sense, as regards relations among propositions and arguments, and in a broad sense, as regards the theory of inquiry. The strict sense is included in the broad sense, i.e. "all logical forms (with their characteristic properties) arise within the operation of inquiry and are concerned with control of inquiry so that it may yield warranted assertions" (DEWEY, [1938] 2008, p. 11).

Hence, Dewey puts forward a pattern of inquiry, described in stages, so that every particular inquiry, no matter the field, can be understood as an instance of such pattern. The procedures known as induction and deduction are included in the stages of Dewey's pattern of inquiry, but there is more than that. Dewey provides a way to understand reasoning processes as parts of investigative contexts. Such contexts start with an indeterminate doubt situation that moves the inquiry so that the indetermination can be solved (Dewey, [1938] 2008, chapter 6).

In doing so Dewey wants to break up with traditional dualities in the field of logic, such as the duality between form and matter (or content): Dewey's approach provides tools for understanding the continuity between the two concepts, since an argument form is directly related with the problem that motivates the argument and the subject-matter it deals with.

Dewey makes some comments on mathematical discourse in chapter XX of Logic: The Theory of Inquiry. He says that just like any other ordered discourse mathematics is characterized by operating transformation on meaning according to certain rules and aims. He

goes on saying that "such transformation is possible only as a system of interrelated abstract characters is instituted. Common sense conceptions, for example, do not satisfy the conditions of systematic interrelations" (DEWEY, [1938] 2008, p. 392). Dewey points out a difference between science and common sense: science deals with objects in a context which is different from that considered by common sense. This is clearly the case as to mathematics, which is a field of inquiry quite abstract, even if we consider such field as motivated by problems posed by common sense situations.

Thus Dewey conceives of mathematics as a science whose nature is not fundamentally different from the natural sciences. Mathematics' conclusions are usually seen as necessary, but this is only because it deals with abstract concepts, or ostensively defined entities. One can notice mathematics' likeness to natural sciences when we think of the application of such kinds of knowledge to concrete situations: scientists making approximations between certain calculi and experimental data is evidence that mathematical necessity is restricted to its abstractions. The same situation can be seen in physics, for example, as models proposed by such science usually represent ideal situations, which can never be perfectly realized in a concrete situation. Hence the study of both applied mathematics and applied natural sciences is a different field of inquiry; it is about how to move between the abstractions characteristic of these sciences and the operational prescriptions typical of technology (Dewey, [1938] 2008, pp. 403-14).

Dewey states therefore that mathematics is an activity restricted to an abstract context. The process of the formation of such a context is the target of Dewey's attention. He maintains that the very transformation operations, characteristic of any ordered discourse, are abstract, so that mathematics deals with a context of transformability. Mathematics is not an inquiry about meaning transformations observed in existential situations, but it is about the possibilities of transformation. What made possible such an abstraction leading to the development of mathematics we know today was the fact that the research started to be done in a symbolic context. Numbers, which previously referred to existences, to the register of counting things, became representations of instrumental abstractions. The problems that motivate mathematical inquiry started to arise in such abstract contexts. Mathematical applications are thus seen as instrumentalities (Dewey, [1938] 2008, pp. 395-414).

Dewey also comments that the movement known as logical positivism made an important contribution to logic, namely the construction of a symbolic system, similar to that of mathematics, which is called symbolic logic and allows logical inquiries to be made in an abstract field of transformability. Logic couldn't develop so much as it did if such abstract context had not been created. Even acknowledging that achievement, Dewey criticizes logical positivism. He says that such an approach does not take into account the contexts in which logical problems arise and, therefore, endorses the duality between form and content that Dewey is willing to rethink in logical theory (Dewey, [1938] 2008, pp. 283-8).

In two places in Logic: The Theory of Inquiry Dewey presents this criticism to logical positivism, but he mentions no specific author belonging to that philosophical school (cf. Dewey, [1938] 2008, p. 284; p. 512). Apparently, Dewey is talking about a folklore version of logical positivism, which might be evidenced by his usage of the expression "popular positivism" (cf. Dewey, [1938] 2008, p. 511n). The most mentioned logical positivist is certainly Rudolf Carnap. So, in order to evaluate Dewey's criticism, let us compare Carnap's proposals within the philosophy of logic.

2. The Principle of Tolerance

Carnap is deeply concerned with the logical systematization of the natural sciences, especially physics. It must be emphasized that he presumes the strict sense of 'logic', as we saw earlier in this paper as to Dewey. Carnap's work can be described as an inquiry in the field of symbolic logic, centering on its syntactical and semantical dimensions, aiming to construct a logical system for science. At the metalogical level – i.e. the discussions about how logic is constructed – Carnap's position is usually labeled as conventionalism. This stance is marked by the Principle of Tolerance, which was first stated in Carnap's book The Logical Syntax of Language. This principle states basically that "it is not our business to set up prohibitions, but to arrive at conventions. […] Everyone is at liberty to build up his own logic, i.e. his own form of language, as he wishes" (CARNAP, [1934] 2002, p. 51-2). Carnap is saying that philosophers of science should not ban certain expressions from the scientists' language, but they must arrive at conventions concerning how to represent such expressions in their system.

Such points of view were developed many years later in the paper "Empiricism, Semantics, and Ontology", in which Carnap deals with the problem of abstract entities. The problem is that empiricists are not usually willing to commit themselves to the existence of the unobservable entities talked about in science. Traditionally, the empiricist interpretation is that the meaning of a term is the entity denoted by it; the problem arises when one is not willing to categorically assert the existence of the entities which cannot be perceived by the senses. Carnap puts forward the thesis that to recognize such unobservable entities doesn't represent the abandoning of empiricist principles; so the ontological commitment is not forcibly imposed on us. Carnap introduces the notion of a linguistic framework for the introduction of new terms in a certain language. He says that "if someone wishes to speak in his language about a new kind of entities, he has to introduce a system of new ways of speaking, subject to new rules; we shall call this procedure the construction of a linguistic framework for the new entities in question" (CARNAP, [1953] 1956, p. 206).

This is a very common procedure: if we do not know an object, we have to learn its name and the circumstances in which we can use such name. Carnap proposes that when scientists want to introduce a new term in their language, they must define the rules for the usage of such term. For example, if they want to interpret some occurrences in their instruments as the detection of a subatomic particle, what they have to do is to specify in which way such particle is different from other kinds of particles and how we could detect it, i.e., which outcomes of the instruments would allow us to talk about that particle. In his text Carnap presents a way of introducing new terms, or new classes of terms, in order to expand the everyday language – or, the thing-language, as he calls it – and the specific dialect of the physicists, with terms for all the mathematical entities required by such dialect (Carnap, [1953] 1956, pp. 206-13).

Carnap's proposal is consistent with the criterion of meaning put forward in his "Testability and Meaning", originally published in 1936 and 1937, and republished in 1950. According to that criterion the statements of science should refer to either observable, testable, or confirmable circumstances. 'Confirmable' can be here understood in the following way: to say that a statement is confirmable is to say that the users of the language to which a certain sentence belongs know how to use that sentence in order to make a statement about their observations (cf. Carnap, [1950] 1996, pp. 204-26). To build a linguistic framework for a theoretical term is therefore to establish how it can be confirmed, i.e., to point out in what circumstances it can be used along with observable terms of a certain language.

Hence, Carnap is proposing that we shouldn't commit ourselves to the existence of abstract entities, strictly speaking, but that we just know how to use the names of such entities in dealing with the objects referred to by terms of the thing-language. As an example we can mention the case of numbers. According to Carnap's viewpoint we may talk about relations between numbers without any ontological commitment, i.e. ruling out any metaphysic according to which numbers exist. To accept an entity is then to accept a linguistic form. In other words, we can talk about a certain entity in given circumstances without "any theoretical justification because it does not imply any assertion of reality" (CARNAP, [1953] 1956, p. 214).

Carnap tells us that, in order to determine the circumstances in which we can talk about a theoretical term, we must distinguish between internal and external questions of the system we are dealing with. Internal questions are about the usage of linguistic expressions, their presence and relations inside the language system; they determine the adequacy of certain expressions in their relations with other expressions and the rules already accepted in the system. Internal questions are about issues concerning the linguistic framework.

External questions may be about the existence of the entities dealt with by the system, i.e., external questions do not have to do with the usage of the terms for unobservable entities, but their nature, their ontological status in themselves. And this kind of question cannot be asked in a linguistic framework built out of the thing-language, since we do not even know how to use a metaphysical sentence about the reality or ideality of a certain entity, observable or not. Ontological questions can only be asked as internal questions, i.e., as questions concerning the existence of the entity according to the linguistic framework; in a branch of science, for instance, an ontological question about an unobservable entity is a question about what the theory says about such entity – and so, it is an internal question.

But not all external questions are meaningless in this sense for Carnap. In the conclusion of "Empiricism, Semantics, and Ontology", Carnap states that the decisive question for the construction and usage of a semantic system is not the ontological external question about the existence of abstract entities, "but rather the question whether the use of abstract linguistic forms or, in technical terms, the use of variables beyond those of things (or phenomenal data), is expedient and fruitful for the purposes for which semantical analyses are made" (CARNAP, [1953] 1956, pp. 220-1). This question is also an external one, but it can be answered without metaphysical commitments – not in a yes/no manner, but as a matter of degree. Some lines ahead, Carnap reminds us that in the history of science there are examples of dogmas which arose outside the boundaries of the scientific investigations and that prohibited the use of certain abstract entities. Carnap's proposal is intended to be an effort to avoid such dogmas. Hence, Carnap states the Principle of Tolerance, making sure that only pragmatic rules may define the semantics of a language. He proposes that we should "grant to those who work in any special field of investigation the freedom to use any form of expression which seems useful to them. (…) Let us be cautious in making assertions and critical in examining them, but tolerant in permitting linguistic forms" (CARNAP, [1953] 1956, p. 221).

Thus, we notice that Carnap's inquiries, since they are guided by the Principle of Tolerance, do not consider that a logical form is a priori correct, or valid, in the Kantian sense.[2] A symbolic system must be evaluated as to its efficiency, i.e. its capacity of attaining its aims – and not by holding any pre-determined point of view.

[2] Information on how to understand Carnapian logical forms as *a priori*, may be found in Friedman, (1999). Actually, Carnap does not use the term '*a priori*' in any of the works mentioned here.

3. Carnap and Inductive Logic

As we have been discussing, Carnap proposes that the elaboration of a logical system for understanding science must be guided by conventions. But what are the origins of such conventions? Carnap answers this question in the paper "Testability and Meaning". In that paper he maintains that philosophy of science can't be restricted to a logical (syntactic and semantic) study of science, but it must also include an empirical study of the use of the language of science; i.e. it must include pragmatics (Carnap, [1936-7] [1950] 1996, p. 209).[3] In other words, Carnap maintains that the activity of constructing symbolic logical systems for certain relations found in the language of science must reflect a certain study of how the language of science really is. This study is made in such a way that suggests conventions that are to be adopted in the system which is being constructed.

A good example of this attitude can be found in Carnap's works on inductive logic. In spite of Karl Popper's criticism and his claim that an inductive system would never be able to justify scientific procedures, Carnap insisted in searching for such a system.[4] Carnap proposes that the degree of confirmation of a hypothesis, given one's prior knowledge, is to be considered as a function of qualified instances. It means that a hypothesis is to be considered well confirmed as a function of some occurrences which are important for the research in question. A high degree of probability can be found in some favorable cases if one considers relatively few instances to be observed; this doesn't happen when one considers all the instances that can ever be observed, circumstances in which the value of probability is always near to zero (Carnap, 1962, pp. 562-75). Carnap is saying that when the scientists base their beliefs on the probability of a hypothesis, they are not taking an unrestricted universal domain as the range of the hypothesis, but they are taking a restricted domain of certain qualified instances.

This inquiry on inductive logic that Carnap carried through was guided by conclusions obtained by means of the observation of scientific activity (cf. Carnap, 1962, chapter 1). Surprisingly enough, Carnap comes to a conclusion which is similar to Dewey's in The Quest for Certainty: that the quest for some kind of immutable certainty (as a law applicable to an unrestricted universal domain) is not characteristic of science, but only a pretension of traditional philosophy. Science seeks only methods of control, as in the case of a hypothesis applicable only to some qualified cases (Dewey, [1929] 2008, chapter 1). A (pragmatic) study of the context in which scientific inquiry occurs showed Carnap how the problem of induction presented by Popper should be re-thought, so that the prescription that philosophy of science can only appeal to deductive methods wouldn't be taken as absolute. And it motivated an inquiry by Carnap to find a way in which the inductive procedure could be represented in a semantical system.

Therefore, we can see that Dewey's criticism of logical positivism doesn't apply to Carnap. His attitude towards his investigations at the specific field of symbolic logic reveals a deep concern with the context and the ends of his proposals. When Carnap fled to the United States, by the middle of the 1930's, he sought to drive off the logical positivist label, preferring other denominations, such as 'scientific empiricism', when he associated with Charles Morris.

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[3] Carnap uses the terms 'syntactic', 'semantic' and 'pragmatic' in the sense proposed by Charles Morris, i.e. as the dimensions of the semiotic study of language (cf. Carnap, [1936-7] [1950] 1996, p. 209; and also Morris, [1938] 1955, pp. 79-91).

[4] For Popper's criticism of Carnap's inductivist project, cf. Popper, 1963.

4. Dewey's Theory of Valuation

Considering the pragmatic aspects of Carnap's philosophy, we can reevaluate Carnap's commitment with the traditional dualism between theory and practice which was proposed by some commentators as a fundamental point of departure between Carnap's and Dewey's philosophies (cf. for example, Richardson, 2008, pp. 298-300). According to this view, Carnap would separate in an absolute way the theoretical field of scientific knowledge from the practical field of decisions and values. Dewey rejected such distinction, proposing that both activities are of a practical nature: the former would be a kind of planning action and the latter would be executive action (Dewey, [1925] 1958, p. 314). We can identify the two practical fields Dewey talks about with the two levels of language according to Carnap: there would be a practical activity of planning, constructing, selecting, and appreciating a linguistic framework (metalanguage), and a practical field of applying such framework.

If this is correct, Dewey would not see Carnap's work as tainted by the traditional duality (perhaps just by the traditional vocabulary). Dewey would see Carnap as someone interested in the development of the specific field of formal logic – and Carnap would be doing it the right way, as his principle of tolerance proposes, i.e. that logical constructions must be guided by fruitfulness and expediency.

Alan Richardson in the paper "Carnapian Pragmatism" maintains that it is not possible to approximate Carnap's proposals to the works of John Dewey. Richardson points out the above mentioned Carnapian commitment to the theory/practice duality; and he also says that from Carnap's point of view, as shown in "Empiricism, Semantics, and Ontology", one of Dewey's most important proposals, the theory of valuation, would be seen as external to the scientific, linguistic framework – and as such, it should be eliminated from science, just like the metaphysical theses of realism and idealism (Richardson, 2007, pp. 297-311).

However, considering what Carnap says in "Empiricism, Semantics, and Ontology", we can notice that not all external questions are necessarily pseudoquestions that should be eliminated from science. Questions concerning the usefulness of the abstract entities are allowed, provided that such questions are answered in degrees. In "Empiricism, Semantics, and Ontology", as in the most part of his work, Carnap is thinking of the construction of a language that suits physics – and the part of mathematics which is needed for physics. And it is possible that a theory of valuation be constructed in a specific framework, different from the framework of physics. Let us see then what Dewey says about valuations.

In his book Theory of Valuation Dewey intends to sketch a science of values. He says that we cannot conceive such science out of the debates on values that are currently found in philosophy. Such debates seem to be trapped between two conceptions – and the many intermediate positions in between. The first conception maintains that values "are but emotional epithets or mere ejaculations". On the other hand, there is another conception that states that "a priori necessary standardized, rational values are the principles upon which art, science, and morals depend for their validity". Dewey notices that the debates between these positions, or between the intermediate ones, is "profoundly affected by epistemological theories about idealism and realism and by metaphysical theories regarding the 'subjective' and the 'objective'" (DEWEY, [1939] 1970, p. 381).

We can notice that Dewey is seeking to separate his discussion from the external questions Carnap talks about. Dewey does not aim at arguing against any metaphysical or epistemological theory such as idealism, realism, the objective or subjective. These questions

are to be overcome by Dewey's proposals – just like Carnap says that realism and idealism should be kept away from physics.

Dewey begins therefore with an analysis of overt behavior or the usage of the term 'value'. He identifies an extreme circumstance in which one can easily see that there are no values involved: the first sounds and cries of a baby. We cannot consider that there are values in such circumstance, because there is no culture in it; the first sounds a baby produces are the outcome of an organic, biological condition. Values are present when adults interpret a baby's sounds as indicative of certain symptoms, such as hunger, cold, or pain. Perceiving the adults' reactions the baby starts to use certain sounds to tell them that he/she needs something, i.e., the baby expects some other reactions from adults, such as feeding, healing, or dressing him/her. In other words, one can state that the sounds turn into a language form. The act of producing sounds becomes an intentional, cultural act, and can then be considered a focus of analysis for the study of values (Dewey, [1939] 1970, 387-90).

With this identification of the primitive fact of valuation, Dewey states two principles that can be useful to identify the objects of the science of values: the first is that the analyzed phenomena are social objects, i.e. they presuppose a relation between at least two persons. Understood from this point of view, value expressions can be viewed as about the behavior of certain persons in relation with other persons. This entails the second principle: the gestures, behaviors, and the words to be studied by a science of values are linguistic signs, involving communication contexts. With these principles, Dewey makes sure that his theory of valuation has an observable – and testable – part, and separates it from the fanciful and abstract proposals that he wants to overcome.

In addition, Dewey makes another fundamental point of his approach: that between the ends one wants to attain and the means one considers relevant to achieving such end (Dewey, [1939] 1970, pp. 390-3). Values are then attributed to the ends that are to be attained, according either to the value the end has in the relation to the context in which the wish appeared, or the effort which will be dispended in order to attain such end. In both cases Dewey is talking about a relation between one or more persons and the biological, social, and cultural environment in which the action occurs. There is no intrinsic value of an object; valuation is always relative to contexts (Dewey, [1939] 1970, pp. 431-7).

Theory of Valuation was published originally in the International Encyclopedia of Unified Science, a project proposed by Otto Neurath and carried through by Carnap and Charles Morris. By the time of the edition of the Encyclopedia, Carnap and Dewey had a short debate on some passages of Dewey's book which can be interpreted as an attack to logical positivism. Dewey explained in his letters to Carnap that his criticism was directed specifically to A. J. Ayer, although he did not mention the name in order to avoid personal controversy (Dewey to Carnap Correspondence, March 24, 1939).[5]

The fact is that Carnap hardly wrote about values during his life. The theme of values seems to be a subject-matter which Carnap preferred to avoid, even in his later years, when such debate started to grow in philosophy of science. But this is probably due to a personal choice, not by principle, since his philosophy allows value investigations to be done, conceded that it is made in a scientific, empirical way.

We notice that Dewey intends that a part of his science of values is to be observable or testable – the circumstances of communication and social relationship, observed in overt behavior. Dewey also proposes that value-situations are to be understood as a function of

[5] A good account on the correspondence among the editor and authors of the *International Encyclopedia of Unified Science* may be found in Reisch, 2005. Ayer's conception of values is in Ayer (1936).

these observable circumstances and contexts – in Carnapian parlance, a statement about values is confirmable, since the point is that scientists know how to use value statements in relation to their observations of overt behavior in communication contexts. Dewey does not intend to make any point about the reality of values, neither to determine which objects have intrinsic value – he only aims at indicating how one can scientifically study circumstances involving values. Put this way, according to Dewey, a science of valuation can be constituted, i.e. a researcher is able to analyze value-situations in possession of the tools offered by Dewey; and this activity would generate a body of statements that would represent no trouble for a Carnapian logician, it can be formalized as a semantic system.

Concluding Remarks

If the above comments on Dewey's theory of valuation are correct, then Dewey is not dealing with an external question in the Carnapian sense, as Richardson suggests. In addition, Carnap himself contends that his conception of value agrees with Dewey's formulations (cf. Carnap, 1963, p. 1009). If we understand the pragmatic character of the concept of confirmation adopted by Carnap by the end of the1930s and emphasized in the 1950 edition of "Testability and Meaning", along with the Principle of Tolerance, a different interpretation of Carnap's relation with American Pragmatism might arise.

Such new interpretation allows us to understand Carnap's logical enterprise with a semiotic concern; and so, it can be comprehended in the context of the reconstruction of knowledge Dewey intends to perform. But differently from Dewey, Carnap had no pretensions to reform philosophy. Carnap was concerned with problems stemming from the (strict sense) logical approach to science. As I tried to show in another paper, examining the works of Charles Morris, one can notice that the presuppositions and outcomes attained by Carnap do not disagree with the general proposals of American Pragmatism (cf. Cunha, 2009).

In the present paper I hope to have shown that Carnap's work can be understood as the elaboration of semantical tools which can be correlated with some of the instruments Dewey offers for pragmatic approaches. I present an image of Carnap as an author who, in Dewey's terminology, carries through inquiries in an abstract field and, by adopting the Principle of Tolerance, adequately considers the contexts in which his problems arise and the ends which his inquiry must have in view. The tolerant attitude in relation to logic, in the strict sense, is in full agreement with Dewey's recommendations in his project of reconstructing philosophy, when he demands that the traditional positions must be re-thought in terms of instrumentality.

The interpretation of a pragmatist Carnap presented here may fail to explain why Carnap did not work in full cooperation with Dewey and other important pragmatists of his time. But it is still a valid interpretation – as it does not overlook any of the most important elements of Carnap's later philosophy – and it may allow the improvement of the understanding of the relation between semantics and pragmatics in philosophy of science, as it establishes points of contact between the works of two major representatives of both fields. The understanding of such semiotic relation in philosophy of science is an important and fruitful topic of research.

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