

Neurath on context of discovery vs context of justification

RESUMO

A distinção entre contexto de justificação e contexto de descoberta é tida como uma das características mais marcantes do empirismo lógico. Nesse sentido, o pressuposto de que todos os empiristas lógicos concordavam quanto à validade irrestrita da distinção é amplamente sustentado na historiografia da filosofia. Ao nosso ver, contudo, esta pressuposição não é completamente correta. Como nós pretendemos demonstrar Otto Neurath, inquestionavelmente identificado como empirista lógico, não concordaria com diversas das formulações da distinção. Por fim nós procuramos demonstrar, seguindo a sugestão de Thomas Uebel, que muito embora Neurath rejeite versões mais estritas da distinção, ele não ofereceria objeções a algumas reformulações contemporâneas da mesma.

Palavras-chave: Neurath; Empirismo Lógico; Contexto de Descoberta; Contexto de Justificação; Hoyningen-Huene.

ABSTRACT

The distinction between context of justification and context of discovery is held by many as one of the most distinct characteristics of logical empiricism. In that sense, the presupposition that all logical empiricists agreed on the unrestricted validity of the distinction is broadly sustained in the historiography of philosophy. In our opinion, however, this presupposition is not entirely correct. As we intend to show Otto Neurath, unquestionably identified as a logical empiricist, would not agree with many of the formulations of the distinction. Lastly, following Thomas Uebel suggestion, we try to show that, even though Neurath rejects the strict version of the distinction, he would not object to some contemporaries reformulations of it.

Keywords: Neurath; Logical Empiricism; Context of Discovery; Context of Justification; Hoyningen-Huene.

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Introduction

The distinction between context of discovery and context of justification is, without any doubts, one of the most relevant and controversial themes in the recent history of philosophy of science. Especially in the second half of the XX century, under the light of the works of Hanson and Kuhn, the content and extension of the so-called *contexts distinction* went through constant criticism and revision. As a result of the intense dispute surrounding it, whose limits are far from being well delimited, the usefulness of the distinction was questioned or even throughout rejected.

Among those who criticize the context distinction, one can identify, even though only in a very vague sense, two main attitudes towards its adequacy. On one hand, there are those, briefly mentioned above, who completely reject the distinction, arguing that it would promote unnecessary and even dangerous restrictions upon the philosophical analysis of sciences. This alternative, which is often associated with the *strong program in the sociology of science* (BARNES, 1972; BLOOR, 1991), is especially popular among practitioners of a historically and sociologically informed philosophy of science. On the other hand, there are those who recognize that the criticism directed towards the context distinction draws attention to the need of revising it, but sustain that it is not totally useless (HOYNINGEN HUENE, 1987, 2006; NICKELS, 1980; STURM and GIGERENZER, 2006). For the supporters of this second alternative, therefore, one should not simply discard the *contexts distinction* - what is actually needed is a global reappraisal of it, trying to formulate a less strict version of the distinction that would gather only its essential aspects. A very interesting feature of some researchers engaged in the development of an new and refined *contexts distinction* concerns the attempt to clarify the debate, which is frequently very confuse, detailing the various versions of the distinction that were put forward during the dispute.

It is curious, however, that both of the camps just described consent in regarding logical empiricism as the main source of the problems related to the distinction. Although its historical origin is often disputed, it seems to be a consensus among the current participants of the debate that Reichenbach was the first to clearly state and defend the most strict and problematic version of the distinction, which, later on, would be held by every logical empiricist. In fact, the distinction is often regarded as an expression of the logical empiricist program of reducing philosophy to the logical analysis of language or, to put in precise terms, scientific claims. The strict version of the *contexts distinction* is taken to be so bounded to logical empiricism that the downfall of this philosophical movement in the 60's and 70's, would mark the beginning of the questioning of the distinction.

The linking of logical empiricism to the *contexts distinction* is not entirely improper, as most of its members did actually assume the unrestricted validity

of the strict version of the distinction. However, that is not the whole story. In fact we think that the generalization, which states that every member of logical empiricism was committed to the strict separation of discovery and justification, is based in a false presupposition, which nevertheless is very common in the standard historiography of philosophy. According to this presupposition, logical empiricism can be seen as a homogenous group of philosophers, whose disagreements were negligible if compared to the overall agreement regarding the fundamental issues of philosophy of science and epistemology.

As the current work of the recent scholarship of logical empiricism shows (STADLER, 2001; UEBEL 2007), although it is possible to verify a set of shared assumptions among its participants, most logical empiricists had deep and important philosophical divergences, especially if we take the Vienna Circle into account. In this scenario, the strict contexts distinction seems to have also been a controversial topic. In order to prove this last statement, from now on we will focus on the work of the former Vienna Circle member Otto Neurath, who, in our opinion, cannot be looked on as an adherent of the strict version of the *contexts distinction*¹, especially if we understand it as a demarcation criterion between philosophy of science on one hand, and history, sociology and psychology of science on the other hand. As far as we can see, Neurath advocates a sociologically and historically informed philosophy of science and acknowledge the relevancy of empirical research (history, sociology and psychology) in the justification of the decision between empirically equivalent theories and, in a more radical sense, in the acceptance of observational propositions or protocol sentences. Moreover, we argue that even though Neurath does not agree with the strong version of the *contexts distinction*, he would not go as far as completely denying its utility, such that his thinking is actually compatible with some of the contemporary reformulations of it, especially with the *lean distinction* proposed by Hoyningen-Huene.²

However, before we engage in the analysis of Neurath's arguments, we would like to give a more clear account of the content of the distinction between context of discovery and context of justification.

Context of discovery vs context of justification

In the current work we will heavily rely on Hoyningen-Huene's (HOYNINGEN-HUENE 1987, 2006) presentation of the quarrel surrounding

¹ Howard, 2006 convincingly argues that Reichenbach's main target, in stating the *contexts distinction* was Neurath.

² This interpretation is based on Thomas Uebel's appraisal of the topic. In our work, however, we give a more detailed explanation of Heunigen-Huene criteria and its relation to Neurath.

the *contexts distinction*. According to him, the first step one should take in approaching the topic is showing how ambiguous the distinction might be and the various forms in which it appears in the multiple texts that address its correctness. According to him, one can recognize five different versions of the *contexts distinction*:

- 1) The contexts distinction is a distinction between two different processes: the process of discovery and the process of justification. The main point here is that those processes would be temporally distinct, such that the discovery process would precede the justification process.
- 2) The *contexts distinction* separates the process of discovery on one side from methods of justification on the other side. The opposition here is between factual historical processes and methods, regardless how vague it sounds.
- 3) The distinction of contexts emphasizes the strictly empirical character of discovery on one hand and the strictly logical character of justification on the other hand.
- 4) The distinction would demarcate the limits between the domain of research of philosophy of science and that of history, sociology and psychology of science.
- 5) The contexts distinction is essentially a distinction between the perspectives according to which we pose questions about scientific claims and theories. In that sense, in the context of discovery we might ask: For any given p , how did someone come to accept p ? In the context of justification, in turn, the proper question would be: Is p justified?

Once Hoyningen-Huene identifies the various ways in which the *contexts distinction* might occur, he then argues that the commonly reject distinction (the strict one), which is the one associated with logical empiricism, is the one that results from the combination of the versions 1 to 4 above. In our work we will assume this characterization of the logical empiricist conception of the contexts distinction as paradigmatic and try to show that it cannot be applied to Neurath. However, instead of analyzing how Neurath would relate to each one of the versions presented above, we will focus in showing that Neurath's philosophy is actually incompatible with some hidden assumptions about justification that derives from the conflation of versions 1 to 4. As Hoyningen-Huene says, the combination of versions of the contexts distinction implies that the only methods of justification are the logical ones, which, in that sense, would also be the only ones of philosophical interest. If we relocate this claim to the context of the debates that took place in the Vienna Circle, the distinction implies that the only task of philosophy of science is the logical examination of the relations

between the protocol sentences and the theoretical statements, that is, the justification would be restricted to internal issues.

Let us now return to Neurath.

Neurath and the contexts distinction

First of all, we must remark that, even though we sustain that Neurath disagreed with the strict version of the *contexts distinction*, he has never explicitly addressed the topic. Thus, the task we set ourselves to accomplish is not an exposition of the Neurath's actual refutation of the distinction, but an attempt to reconstruct his possible arguments against it. In our opinion, in Neurath's writings, one can easily see that he wasn't in agreement with the strict version of the distinction, principally if one takes note of his description of theory choice and of the pragmatic conditions of the acceptance of protocol sentences.

Neurath constantly addresses the problem of theory choice. From his early writings (which displays a striking continuity with his mature philosophy), the Austrian philosopher continuously stress the need of choosing one among multiple empirically equivalent theories, when there is no logical way of determining the best one. In 1913, for instance, his argumentation runs as follows: Quoting the *Discourse on Method* Neurath says that Descartes was very much right in stressing the need to assume a set of provisional rules for practical purposes, given that from time to time one must choose between equivalent courses of action and, therefore, must act under insufficient insight. Regarding theoretical investigations, however, Neurath's opinion of Descartes is no longer so approving. According to him, Descartes is mistaken in assuming an in principle distinction between theory and practice, where there is only but a degree differentiation. This mistake leads the French philosopher to dismiss the set of provisional rules for theoretical endings, implying that theoretical questions should only be answered when one is in possession of complete insight:

It was a fundamental error of Descartes that he believed that only in the practical field could he not dispense with provisional rules. Thinking, too, needs preliminary rules in more than one respect. The limited span of life already urges us ahead. The wish that in a foreseeable time the picture of the world could be rounded off makes provisional rules a necessity. But there are fundamental objections to the Cartesian view. Whoever wants to create a world-view or a scientific system must operate with doubtful premises. Each attempt to create a world-picture by starting from a *tabula rasa* and making a series of statements which are recognized as definitively true, is necessarily full of trickeries. The phenomena that we encounter are so much interconnected that a one-dimensional chain of statements cannot describe them. The correctness of each statement is related to that of all the others. It is absolutely impossible to formulate a single statement about the world without making tacit use at the same

time of countless others. Also we cannot express any statement without applying all of our preceding concept formation. On the one hand we must state the connection of each statement dealing with the world with all the other statements that deal with it, and on the other hand we must state the connection of each train of thought with all our earlier trains of thought. We can vary the world of concepts present in us, but we cannot discard it. Each attempt to renew it from the bottom up is by its very nature a child of the concepts at hand. (NEURATH, 1983, p. 3).

As it is clear in the passage just quoted, contrary to Descartes, Neurath understands that thinking too necessarily makes use of provisional rules, which should guide the decision between equivalent theories. Later on the text, Neurath dubs those rules auxiliary motives, which, in fact, are motives that don't add up anything new to the question in terms of content, but that, nevertheless, helps the hesitant person. Underlying this reasoning is Neurath's radical antifoundationalism and his acceptance of the Duhem's³ holism and underdetermination thesis⁴.

However, there are more elements involved in Neurath's description of theory choice than the ones just mentioned. Besides the fact that he recognizes the necessity of making choices in science and the unavoidable need to operate with doubtful premises, Neurath's philosophy is also marked by the strong conviction of the "*irreducible contextuality of knowledge and justification*" (UEBEL, 2007, p.98). Contrary to the standard view on the Vienna Circle, Neurath has never doubted the existence of historical and sociological determinants of knowledge. In his Vienna Circle Days, he would loudly say that "our thinking is a tool, it depends on historical and social conditions [...] we owe our means of expression, our rich language and script". (NEURATH, 1983, p. 46).

If we now gather together the multiple features that integrate the neurathian description of theory choice in science, we have the following situation. On one hand, given holism and the underdetermination of theory by data, choices will always be needed in science. On the other hand, scientific knowledge, just like knowledge in general, does not enjoy any kind of social neutrality, *i. e.*, it is also subsumed to historical and social conditions. Now, in order to prove that Neurath rejected the strict version of the *contexts distinction*, we must also show that he would allow for sociological explanation of the acceptance or validation of scientific theories, such that the context of justification would have to cover more than just logical methods. But that seems to be precisely the case here:

³ Duhem's was a major influence on Neurath, who got into contact with the French conventionalists during his participation with Hahn and Frank on the so-called first Vienna Circle

⁴ In general terms, the underdetermination thesis states that theory is logically underdetermined by data, since for a given set of data whatsoever, there will always be more than one theory that can account for it.

Correct thinkers find that, besides the unscientific, the metaphysical, the normative and other ways of considering sociological matters there are also strictly scientific ones that may differ amongst themselves! But this applies also to the physicist who shares the same standpoint. It is conceivable for differences to emerge amongst scientific sociologists that turn on assumptions which one theorist considers just about acceptable whereas another rejects them! Already due to the insufficiency of our knowledge of the available data our predictions are multiply ambiguous! It is resolution that must decide! And this is often historically determined by traditional forms of cognitive cooperation. (NEURATH, 1981, p. 352)⁵

As Thomas UEBEL (Uebel, 2000, p. 144) rightly notices, Neurath here states loud and clear that the decisions between empirically equivalent scientific theories are frequently determined by historical and sociological factors, and, therefore, opens room for sociological and historical explanations of the validations and/or acceptance of scientific theories, that is, Neurath stresses the possibility of external influences to be relevant in the justification of theory choice⁶.

The point just made gets even stronger and interesting when we take into account that for Neurath the extension of the domain of underdetermination⁷ covers highly abstract scientific theories as well as the protocol sentences⁸, that is, according to Neurath even the most elementary statements of system of science are subject to being revised. In that sense, historically determined choices in science are often responsible not only for the selection between empirically equivalent theories, but also for the determination of the set of statements that composes the empirical basis of science.

Given all the arguments presented, we believe it is clear that Neurath would have rejected the strict version of the contexts distinctions, since he acknowledges other elements, besides the logical ones, as being important for the justification of theory choice. For him sociology and history of science and even cultural and political values are held to be valid means of justification of scientific claims. We now ask if the neurathian rejection of the strict version

⁵ The English translation of Neurath's original quoted above was extracted from Uebel, 2000, p.144.

⁶ As Howard 2006 correctly remarks, Neurath here allows for values to play a significant role on the determination of which theory prevails.

⁷ We take the expression "domain of underdetermination" from Don Howard (HOWARD, 2003, p 43 and HOWARD, 2006, p. 10). According to him it designates the ambit of application of the underdetermination thesis after logic and experience are allowed to do their work.

⁸ About the possibility of revision of protocol sentences Neurath says: "There is no way to establish fully secured, neat protocol statements as starting points of the sciences. There is no tabula rasa. We are like sailors who have to rebuild their ship on the open sea, without ever being able to dismantle it in drydock and reconstruct it from the best components. Only metaphysics can disappear without trace. Imprecise 'verbal clusters' ['Ballungen!'] are somehow always part of the ship. If imprecision is diminished at one place, it may well re-appear at another place to a stronger degree." (NEURATH, 1983, p. 92). For a consistent and convincing appreciation of Neurath's protocols (Cf. UEBEL 2007, chapter 11).

of the contexts distinctions implies the rejection of every other formulation of it. As we have already said, this does not seem right and Neurath's stand is compatible with a weaker version of the distinction.

Neurath and the lean distinction between context of discovery and context of justification

A version that is, in our opinion, compatible with the neurathian thinking is the one proposed by Hoyningen-Huene, which is called the *lean distinction*. This version includes both versions 2 and 5 presented above. The core of this distinction is the opposition between a factual and descriptive ambit of investigation on one hand, and an essentially normative and evaluative ambit of investigation on the other. According to this *lean* version, in the context of discovery we are concerned with facts and their description, what would also include the description of epistemic claims. The context of justification, in turn, refers to evaluation of singular claims in accordance with epistemic norms. The version is called *lean*, because it does not imply a demarcation criterion or a distinction between two temporally distinct contexts. Moreover, the simple distinction between the factual and the normative does not imply in any assumption regarding the nature of the facts described or of the epistemic norms.

In our opinion, Neurath would not object to this kind of formulation of the contexts distinction. The fact that he acknowledges non logical procedures as valid methods of justification does not mean that he rejects logical explanatory means of justification in the philosophy of science. Actually most of his Vienna Circle writings stress the benefits science gets from logical clarification of the scientific language and investigations of the logical relations between protocol sentences and more abstract statements. Neurath has never gone as far as denying the possibility of normative theories of epistemic justification. As far as we can see, he only argued that sociological and historical investigations in science could, in fact, inform norms of science.

Regarding his acceptance of the underdetermination thesis. The fact that Neurath recognize that under the *duhemian* thesis one can see external empirical explanations as contributing for justification issues, does not lead him to advocate that one would be, therefore, obliged see every justificatory explanation as external in character, such that the contexts overlaps. All that Neurath does is arguing in favor of the enlargement of the context of justification, in order to allow sociology and history in. In this sense, given that the *lean distinction* does not say anything about epistemic norms, nothing would prevent historical and sociological claims of being utilized as such. The same goes for the context of discovery, in which validation and acceptance of epistemic claims can be regarded as a historical fact.

This last emphasized feature of the *lean* distinction, it seems us, stand a good chance of capturing Neurath's thoughts on the topic. As long as we allow historical and sociological informed epistemic norms to play a part in the context of justification, he would never object to the possibility of distinguishing a normative domain of inquire and a descriptive domain of inquiry.

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