

Neurath's social sciences: between positivism and pragmatism¹

As ciências sociais de Neurath: entre positivismo e pragmatismo

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Abstract: This paper presents some aspects of Otto Neurath's proposal for the foundations of the social sciences. Neurath's proposal is expounded in relation to the Vienna Circle's general aim of establishing unified science, a cooperative network of people who adopt the scientific world-conception. Such a point of view takes science to be an attitude that generates a collective effort for dealing with the world. This paper shows the scientific world-conception as a humanist, pluralist, and fallibilist approach to science, contrasting with the view adopted by Auguste Comte at the birth of the social sciences. From Neurath's point of view, Comte's stance is seen as absolutist and technocratic. In opposition to that, Neurath provides a picture of science that contributes to a free society by means of education. Finally this paper presents some connections between Neurath and John Dewey, indicating a more comprehensive way of understanding the social sciences.

Keywords: Neurath. Comte. Dewey. Philosophy of the social sciences.

Resumo: *Este artigo apresenta alguns aspectos da proposta de Otto Neurath para os fundamentos das ciências sociais. A proposta de Neurath é exposta em relação ao objetivo geral do Círculo de Viena, o de estabelecer a ciência unificada, uma rede cooperativa de pessoas que adotam a concepção de mundo científica. Tal ponto de vista toma a ciência como uma atitude que gera um esforço coletivo para lidar com o mundo. Este artigo mostra a concepção de mundo científica como uma abordagem humanista, pluralista e falibilista à ciência, em contraste com a visão adotada por Auguste Comte no nascimento das ciências sociais. A partir do ponto de vista de Neurath, a postura de Comte é vista como absolutista e tecnocrata. Em oposição a isso, Neurath oferece uma imagem da ciência que contribui para uma sociedade livre por meio da educação. Por fim, este artigo*

1 This article was written with the support of CNPq, the Brazilian National Council for Scientific and Technological Development, during a postdoctoral research stage at Universidade Federal de Santa Catarina (UFSC, Brazil, 2012-2014). The author would like to thank Professor Luiz Henrique Dutra (UFSC), for motivating the research presented in this paper, and also Jan Maximilian Robitzsch (University of Pennsylvania, USA) for important discussions.

apresenta algumas conexões entre Neurath e John Dewey, indicando uma maneira mais abrangente de entender as ciências sociais.

Palavras-chave: *Neurath. Comte. Dewey. Filosofia das ciências sociais.*

Introduction

Otto Neurath had a very interesting view on the foundations of the social sciences, that is, on how these sciences could be organized and related to other branches of science, and on how philosophy could account for the procedure of social scientists. Neurath was a member of the group known as Vienna Circle of logical positivists. Someone who is interested on the philosophy of the social sciences, although not familiar with the ideas of the Vienna Circle, may think this meant that Neurath advanced a new version of Auguste Comte's positivism. The positivist influence on the Vienna Circle, however, came from late nineteenth century thinkers such as Ernst Mach and Ludwig Boltzmann,² so that the Circle's proposals did not have much in common with the earlier, French positivism.³ Some comparison to Comte may nevertheless be helpful, since he, unlike Mach and Boltzmann, is classical in the social sciences.⁴ This paper presents Neurath's standpoint on the philosophy of the social sciences in contrast to some of Comte's views. Moreover it will be shown that Neurath's stance shares some common traits with John Dewey's positions.

Comte and the system of human knowledge

In the First Lesson of the *Cours de philosophie positive*, Comte identifies a gap in the development of human knowledge: while our understanding of the subject of the natural sciences, as in the fields of astronomy, physics, chemistry, and biology, had made considerable progress, our knowledge of social matters had not. (COMTE, [1830] 1972). Accordingly, the general aim of his course is to found what he called *social physics*, or sociology, in such a way that the progress of our knowledge of social phenomena is ascertained. Hence, Comte's course of positive philosophy, after two introductory sessions, presents basic courses on mathematics, astronomy, physics, chemistry, physiology, and finally, social physics. This paper is going to discuss only the first and the second lessons of that course, the introduction in which Comte advances his, as we call it, general philosophy of science.⁵

The poor progress of the social sciences, as Comte explains in the Second Lesson, is due to the fact that none of the thinkers before him had been able to set up a proper system of all human knowledge. He criticizes particularly Bacon

2 Cf. HAHN; NEURATH; CARNAP, [1929] 1979, p. 82-83.

3 The best name for the philosophy of the Vienna Circle is 'logical empiricism', but the positivist variant is also widely used.

4 Brief accounts on Neurath's reading of Comte may be found in CARTWRIGHT *et al.*, 1996, p. 72-76; 171-179.

5 Comte's ideas are presented in many different ways across his vast works; we are taking just his most popular text. For a more thorough account and discussion of Comte's philosophy, see SCHARFF, 1995.

and d'Alembert, saying that in their encyclopedic attempts the various branches of sciences were classified very loosely, according to the faculties predominantly used, resulting in an arbitrary system that kept together sciences that were in different stages of progress.⁶ Comte, by contrast, claims to be able to conceive the proper system, because he had discovered the law of the progressive march of human spirit. (COMTE, [1830] 1972).

The law of the three stages, or states, as he explains in the beginning of the First Lesson, describes the advance of the spirit. "This law states that each one of our main conceptions, each branch of our knowledge, passes successively by three different historical states: theological or fictitious state; metaphysical or abstract state; scientific or positive state" (COMTE, [1830] 1972, p. 84). The idea is that, in the beginning, scientific explanations are of a theological type, with recourse to first and final causes, to absolute knowledge, and to supernatural agents. Then, as our explanations reach the second stage, supernatural agents are replaced by abstract forces of a metaphysical kind. Ultimately, in the third stage, the human spirit is mature and realizes the impossibility of obtaining absolute notions, and of getting to know the intimate causes of phenomena; the human spirit in the positive state is, hence, concerned "uniquely in finding out, by means of the well combined use of reasoning and observation, effective laws [of phenomena], that is, their invariable relations of succession and similitude." (COMTE, [1830] 1972, p. 84-85).

Thus, some kinds of phenomena are relatively simple and their laws can be easily discovered. That is the case of astronomy: its phenomena depend on no other phenomena, so that the positive state was reached very early. Phenomena of terrestrial mechanics are a little more complex, for they depend on phenomena of celestial mechanics; therefore, it took some more time for the human spirit to attain the positive state in this domain. Chemical phenomena are yet more complicated, since they depend on terrestrial mechanics; physiological phenomena, as well, depend on mechanical and chemical phenomena, so that the positive state in biology had only recently been attained. Probably Comte has in mind the works of Newton, Lavoisier, and Bichat, which founded physics, chemistry, and biology respectively, while, much before, astronomy had already advanced considerably with Galileo, Kepler, and others. Finally, the phenomena of social physics depend on all the others, and, therefore, are the most complex—which makes it hard for the positive state to be reached in this science. In the time of Comte, it had not yet been reached.

Comte accounts for the aspect that all sciences are human, all knowledge is human; so, the progress attained by a particular science is the progress of the human spirit in that particular area of expertise. If phenomena in that area are simpler than in some other area, then it is likely that the human spirit marches faster, and it makes more progress in that particular area. However, if the study of the sciences is organized in a system of human knowledge such as that of d'Alembert, according to Comte's criticism, one will not be able to realize that some branches of science

6 The main classification of human knowledge in the French encyclopedia separates the different kinds of production according to the faculty mostly used in them: memory brings history, reason brings science, and imagination brings art (see D'ALEMBERT, [1751] 1986, p. 115-120).

might not be in the same stage of progress, since those systems do not account for this relation between the simplicity of phenomena and the progressive march of the human spirit.

In attacking the way d'Alembert systematized the sciences, Comte states that one must find the "only one truly rational order, among the considerable number of possible systems." (COMTE, [1830] 1972, p. 123). One might be tempted to say that Comte misunderstood d'Alembert, since the Encyclopedist had never wanted to find out the one true and correct order of the sciences. Indeed, in the *Discours préliminaire* to the French encyclopedia, d'Alembert points out that the encyclopedic order is arbitrary, that "we can (...) imagine as many different systems of human knowledge as there are world maps in different projections; and each of these systems might even have, to the exclusion of the others, some particular advantage." (D'ALEMBERT, [1751] 1986, p. 113). And facing such a variety of different possibilities, d'Alembert explains that the editors of the encyclopedia (himself, of course, included) "are too much convinced of the arbitrariness that shall reign in such a division to believe that their system will be the only, or even the best, one." (D'ALEMBERT, [1751] 1986, p. 114). But it is more likely that Comte did not misunderstand these passages of the *Discours préliminaire*. He denies that the multiplicity of possible classifications entails the impossibility of finding the best one. He also denies that one system will always be better than another system according to some criterion. And he claims that he found the one best and truly rational system of classification, because his system takes into account the law of the three states, which can be rationally and empirically demonstrated. (COMTE, [1830] 1972).

With all his knowledge of mathematics, as it turns out, d'Alembert knew that demonstrations always contain some conventions, some arbitrariness derived from the definitions. And he also knew that the same concept may be demonstrated in various ways, according to the intended aim, and to matters of personal decision, preferences regarding elegance etc. He prevented himself from the kind of pretension that Comte would show some years later: when discussing the many possible systems of human knowledge, d'Alembert says that such systems "are more adequate to flatter the imagination than to enlighten reason." (D'ALEMBERT, [1751] 1986, p.155). He was glad to notice that philosophy was giving up the strategy of elaborating systems, in favor of scientific methods. He points out that one may try to show "the usefulness of systems by means of a small number of discoveries that they brought" (D'ALEMBERT, [1751] 1986, p.155); this reasoning, d'Alembert ironically notices, may lead us to "advise our geometers to take on the study of the circle's quadrature, since the efforts of many mathematicians in trying to find it brought us some theorems." (D'ALEMBERT, [1751] 1986, p.155). Poor d'Alembert would despair if he knew that in the following century Comte would try to bring the systems back into fashion.

It may sound contradictory that Comte claims to have discovered a law that has such an absolute character, for we saw that in the positive stage, the human spirit gives up "absolute notions" and looks only for empirical laws. However, Scharff points out that the law of the three stages is a hypothesis, and its absolute character would be just a matter of rhetoric in the *Cours de philosophie positive*. This problem of expression shows, according to Scharff, that Comte had a problem that is not uncommon in philosophy of science, that of adopting a non-scientific

verbiage to describe science. (SCHARFF, 1995). Even though Comte took science to be empirical and non-absolutist, he was not keen on being so himself. Such problem, as we are going to see, was dealt with by Neurath and the Vienna Circle, since they sought to make philosophy of science more scientific by means of logic.

Neurath and the Encyclopedia

In their manifesto, *Wissenschaftliche Weltauffassung*, the Vienna Circle claims that there is a basic attitude, called the *scientific world-conception* (thus the title of the manifesto), which can be noticed in every branch of science. Science is not so much characterized by a body of knowledge or a method, but by this basic attitude, a way of conceiving the world, which shows up in points of view and directions of research.⁷ The aim of the Vienna Circle was, then, to enforce and stimulate such an attitude. This was to be done by establishing *unified science*, a network of collective efforts and individual achievements in the various branches of science. The Vienna Circle did not aim at creating a system of the whole of science, but at connecting the diverse parts of the scientific manifold. (HAHN; NEURATH; CARNAP, [1929] 1979).

The comprehensive network of the scientific world-conception would be set up by laying “emphasis on what can be grasped intersubjectively” (HAHN; NEURATH; CARNAP, [1929] 1979, p. 87), by searching for “a neutral system of formulae, for a symbolism freed from the debris of historical languages; and (...) for a total system of concepts”. (HAHN; NEURATH; CARNAP, [1929] 1979, p. 87). Their idea was to promote the conception that in science there are no “dark distances”, no “unsolvable riddles”, and no “unfathomable depths”, which means that every form of scientific knowledge is completely accessible. This establishes an opposition to mystical, religious, and metaphysical views that somehow assert that there are concepts that cannot be known, posing absolute limitations in principle to humankind; the Vienna Circle aimed at creating a society that believes that “everything is accessible to humans” and that “humans are the measure of all things” (HAHN; NEURATH; CARNAP, [1929] 1979, p. 87), in other words, an enlightened society that adheres to the scientific world-conception.

This opposition to metaphysics can be related to Comte's positivism. But the stance taken on by the Vienna Circle is different, since it is best conceived of as a struggle towards clarity in the sciences, and not as a belief in some order of progress, such as the law of the three stages, which turns out to be obscure. More importantly, the concept of science adopted is also quite different.

The Vienna Circle takes science to be an attitude, a way of conceiving the world as completely knowable, as void of insurmountable obstacles that are impossible to understand and that must be faithfully accepted. The Vienna Circle became well known for the work of most of its members, such as Rudolf Carnap, Moritz Schlick, and Philipp Frank, who strove for the construction of the universal language of science—that system of concepts which would allow the different branches of science to be comprehensively and intersubjectively connected. Neurath, on the other hand, had a different agenda; he was engaged in politics, and he sought to

7 I elaborated on this characterization of science in other papers, see CUNHA, 2013 and 2015.

unite all the people who adopt the scientific attitude in a collective effort. This union would constitute a political force that could prevent the persecution of scientific-minded people—something that was a harsh reality in Europe at the time.⁸ In the mid thirties, Neurath came up with the project of an encyclopedia—a way of bringing together all the people that work with the scientific world-conception in the production of texts to propagate such world-conception, alluring more people into adopting the scientific attitude. (NEURATH, [1937] 1983). It was important, nevertheless, to portray science appropriately in such encyclopedia, and thus the first two volumes would discuss the foundations of the unity of science, the way in which one can understand what science is. The project had many problems,⁹ and ultimately only those first two volumes, with nineteen numbers, were published between 1938 and 1970 in the USA. (NEURATH; CARNAP; MORRIS (orgs.), 1955 and 1970).

The opening number of the encyclopedia, *Encyclopedia and Unified Science*, a text that is comparable to the *Discours préliminaire* of d'Alembert, had six chapters, each written by a different author: Neurath, Niels Bohr, Bertrand Russell, Carnap, and the American pragmatists Charles Morris and John Dewey. In his chapter, the first of the work, Neurath states that the aim of this new encyclopedia is to “show how various scientific activities such as observation, experimentation, and reasoning can be synthesized, and how all these together help to evolve unified science.” (NEURATH, [1938] 1955, p. 2). However, such work is not much related to that of Comte, since, as Neurath continues, “these efforts to synthesize and systematize wherever possible are not directed at creating *the* system of science; this *Encyclopedia* continues the work of the famous French *Encyclopédie* in this and other respects.” (NEURATH, [1938] 1955, p. 2).¹⁰ Neurath then explains that the *Encyclopedia* is supposed to be a pluralist project, which will have not the form of a completely coherent all-embracing system, but that of a mosaic—something composed of small irregular uneven pieces, put together in place by a group of persons, forming a diffuse image when regarded as a whole. According to Neurath, the exemplary mosaicist attitude is precisely that of d'Alembert, who, in the *Discours préliminaire*, exalts the participation of Rousseau in the *Encyclopédie*, even though the latter had just vehemently attacked the scientific attitude espoused by d'Alembert and other encyclopedists. (NEURATH, [1938] 1955).¹¹

The encyclopedic project, as Neurath points out later in that text, is not going to propose a “super science” to legislate over the special sciences, nor a juxtaposition

8 For comments on Neurath's and the Circle's proposals as opposed to totalitarianism, see NEURATH, [1946] 1983, esp. p. 236-238.

9 Neurath, the Vienna Circle, and the encyclopedists were persecuted by the Nazi regime and for the most part emigrated to the UK and USA. Then, the war consumed resources, so that publishing was delayed. And in the cold war, Carnap, Frank and others were investigated by the FBI, due to a supposed communist conspiracy. See REISCH, 2005, and also SOULEZ, 2005.

10 Henceforth, the seventeenth century French enterprise will be referred to as *Encyclopédie*, and the twentieth century one as *Encyclopedia*, always in italics.

11 Also, see D'ALEMBERT, [1751] 1986, p. 161-162.

of philosophy and science, but “science itself is supplying its own integrating glue”. And such an endeavor, with those proprieties, is to be a picture of science, a representation of human knowledge; in Neurath's words, “an Encyclopedia (in contradistinction to an anticipated system or a system constructed a priori) can be regarded as the model of [human] knowledge.” (NEURATH, [1938] 1955, p. 20). Of course, as he states, an encyclopedic program faces many difficulties, but those are natural problems in an enterprise that involves collective work towards an aim that is not clear—since we do not know what the resulting picture of science is going to be. As Neurath points out, believing that such difficulties can ever be overcome “is to entertain a variation of Laplace's famous demon who was supposed to have a complete knowledge of present facts sufficient for making complete predictions of the future.” (NEURATH, [1938] 1955, p. 21). Neurath associates the pretense of complete knowledge with the presumption of creating the one truly correct system of knowledge: “such is the idea of *the system* in contrast to the idea of *an encyclopedia*; the anticipated completeness of *the system* is opposed to the stressed incompleteness of *an encyclopedia*.” (NEURATH, [1938] 1955, p. 21).

So, human knowledge forms no system in the *Encyclopedia*. It is an incomplete mosaic, composed of uneven and irregular pieces, continuously being put together, altered, and transformed by many people who do not (and cannot) have a clear picture of the resulting image. Our situation, in Neurath's most famous metaphor, is similar to that of sailors who must rebuild their ship in the open sea. In the version of such metaphor that appeared in a later number of the *Encyclopedia*, he says:

Imagine sailors who, far out at sea, transform the shape of their clumsy vessel from a more circular to a more fishlike one. They make use of some drifting timber, besides the timber of the old structure, to modify the skeleton and the hull of their vessel. But they cannot put the ship in dock in order to start from scratch. During their work they stay in the old structure and deal with heavy gales and thundering waves. In transforming their ship they take care that dangerous leakages do not occur. A new ship grows out of the old one, step by step—and while they are still building, the sailors may already be thinking of a new structure, and they will not always agree with one another. The whole business will go on in a way we cannot even anticipate today. That is our fate. (NEURATH, [1944] 1970, p. 47).

Neurath advances this fallibilist pluralist view of human knowledge in an ever-changing collective mosaic image. And for him, the special sciences also have this structure. Although some systematizations can be made in some particular fields, such as physics and mathematics, those systems cannot be extrapolated as to cover the whole of science—and perhaps not even the particular field systematized, since such fields are always changing. As Neurath points out, the axiomatization, or systematization, “of science seems to give an opportunity to make the use of fundamental terms more precise and to prepare the combination of different sciences; preliminary axiomatization has to be founded on a long

evolution of science. We cannot anticipate a ‘final axiomatization’.” (NEURATH, [1938] 1955, p. 38-39).

Neurath’s foundations of the social sciences

The above-quoted version of the ship metaphor appeared in *Foundations of the Social Sciences*, the first number of the *Encyclopedia’s* second volume. This book presents a way of conceiving the social sciences in the encyclopedic mosaic of unified science.

Neurath recognizes that the social sciences form a complicated field, with many interrelations among various disciplines and even different points of view inside the same discipline. And the social sciences relate even to non-social sciences, such as biology. Given this complexity, Neurath argues that it is important to fight the tendency of demarcating specific fields within the social sciences and of separating the social sciences from other sciences. He points out that in the nineteenth century there was a joke saying that the social sciences were mainly concerned with what the social sciences should do; even though that is not true anymore, Neurath says, “the number of lines in sociological books devoted to what are usually called ‘methodological questions’ and to demarcations between single disciplines is not small.” (NEURATH, [1944] 1970, p. 1-2). He regards such discussions as a sign of uneasiness in the scientific communities, and he believes that philosophy could be helpful in this regard. Consequently, he proposes a way of understanding the social sciences as a more uniform field—mosaic-like uniformity, as we are going to see.

Neurath proposes that we should consider the basic item in the social sciences to be *aggregates*,¹² complexes of many different elements, analyzable in diverse ways, from various points of view. He insists that he does not suggest to start from “simple basic assertions”, “atomic ideas”, or “sense data”; on the contrary, his suggestion is to start “with a full lump of irregularities and indistinctness, as our daily speech offers it. Afterward we may find some regularities in it and relate some items even to a calculus with all its exactness and its formulae. Each item of our start may be called a ‘clot’.” (NEURATH, [1944] 1970, p. 18). When one observes something, in daily life as well as in science, one sees many of those clots, overlapping complexes of phenomena from the most diverse origins, that can be taken as cultural, physical, biological, geological, climatologic, etc. Such clots are so complex, including even values, that it is impossible to tell them apart, and it is hard to distinguish precisely each field of research. Neurath holds this applies even to physics, being against analyses that bring forward clear-cut sense-data, but the situation in the social sciences is worse: he says it would “imply a kind of scientific suicide”, because “social scientists need this richness and indistinctness” in their studies, that seems to be the only way to cover complex and diverse phenomena. It is important, therefore, not to insist on looking for “social facts” or on isolating “human relations” to establish the basic item of social science; instead, the starting

12 Neurath suggests the term ‘aggregate’ or ‘clot’ as a translation of his original German term ‘*Ballung*’; the English translation comes from French ‘*agrégat*’ (NEURATH, [1944] 1970, p. 18). Neurath does not mention other common translations, such as ‘cluster’ and ‘agglomeration’, perhaps because of their usage in other scientific fields.

point has to be the situation as complete as possible, or as Neurath calls it, *synusia*, the relations between living beings and their environment. (NEURATH, [1944] 1970).

Neurath's central proposal, therefore, is to start from a situation composed of many clots of irregular and indistinct phenomena, such as the ones that we perceive in daily life. That is the basic experience in the social sciences. An example of *synusia* may be a heavy traffic situation on a bridge that connects two densely populated areas. There are many clots of phenomena in that situation: the geographical one, that is, the shape of the terrain; the geological one, the rock composition in the area that allows no efficient system of ferry boats; the economical one, in which people find it more profitable to live on one side of the bridge and work on the other side; many cultural ones, such as the habit of living by the water, the habit of commuting by car instead of taking public transportation, which comes along with a political one, that local government does not invest in public transportation because people prefer to drive their own cars; a physical one, the structure of the bridge that was preferred over other models; a sociological one, in which people do not cross the bridge on foot, because they are afraid of robbers on the side walk; also, due to the weather conditions and to the shape of the bridge structure, they feel cold when crossing; and so on.

Thus, an aggregate, which can be experienced in everyday life and described in everyday language, serves as a point of departure for many scientists from different areas or backgrounds, who might develop specialized research which may or may not overlap each other. There is even the study of the historical development of each of those clots, as well as of the history of the whole aggregation of clots, which provides important information for specialized research.

All this research will be part of the pluralist mosaic of science, the piece by piece collective construction with no definite resulting image. They all have in common the fact that they are carried through the scientific attitude of rejecting, in the words of the Vienna Circle Manifesto, "unfathomable depths", "dark distances", and "unsolvable riddles". Everything that has to do with science is clear and understandable, because it involves no unknowable concepts. Science begins in daily experience and however abstract theorizations may get they can be somehow related to intersubjective common experience. And such experience can be stated in terms of everyday language, "the language that is common to all [humans] in the world." (NEURATH, [1938] 1955, p. 23). This is the thesis of physicalism, central to Vienna Circle's and Neurath's thought. The idea that all science can be related to everyday experience, however, must not be taken too rigidly as if it was a requirement, but as an effort towards a univocal mode of expression, one that can be understood in any language, regardless of the technical instruction of the people involved – creating what Neurath called the Universal Jargon, a step in the direction of further penetration of science in society. Neurath believes that much of the methodological uneasiness in the social sciences would be overcome with a terminological agreement, something that must be built in broad cooperation among social scientists of different areas. Such agreement is of fundamental importance, in regard to the interdisciplinary character of the social sciences. (NEURATH, [1944] 1970).¹³

13 Also see CAT; CARTWRIGHT; CHANG, 1996, p. 362-369, and my discussions in CUNHA, 2013 and 2015.

Synusia are therefore very complex. They are unique, that is, one cannot find another situation in which all elements are the same—a small difference, that could perhaps be overlooked in the natural sciences, can produce an entirely different situation from the sociological point of view. Neurath calls aggregations *unstable*, when “even a small variation in the initial state may bring about a tremendous difference in the state of the whole aggregation in question.” (NEURATH, [1944] 1970, p. 28). In the case of our example, one may find another heavy traffic bridge somewhere else, but the cultural, geological, climatic, sociological aspects will most likely not be the same – for example a shorter distance between the banks would make the crossing less exhausting, and it would perhaps be easier to guarantee the safety of pedestrians. This makes it difficult to make predictions in the social sciences. And such difficulty is increased by the fact that the prediction itself may cause those small variations that may change the situation. (NEURATH, [1944] 1970). In our bridge example, the prediction of particularly heavy traffic could make people stay at home or take the bus, and so traffic volume would be as it usually is or even lighter.

Thus, any prediction and, therefore, any intervention social scientists want to make must take into consideration an intricate aggregate of complex and unique elements. But it must be made clear that this is not impossible. Neurath argues that social engineering (or social technology), the effort to intervene on social orders, must proceed by means of relatively large scale plans. He calls such projects “utopias”, in reference to the literary and scientific tradition of broadly imagining communities and social arrangements. (NEURATH, [1944] 1970). Utopias are usually regarded as impracticable ideals, but Neurath believes that they can be put in a scientific framework and dealt with seriously, in a pluralist, fallibilist, and democratic environment.¹⁴

The project of making science more broadly understandable in terms of everyday objects and in everyday language fits this perspective, since it makes it easier to bring the most diverse communities together, regardless of the degree of instruction of the people, in order to discuss social transformation. Hence, the most important aspect of social science and technology, according to Neurath, is education: pedagogy must be understood as a technology for social improvement, and it must be understood in the pluralist, fallibilist mosaic of science. Neurath says that education cannot “start with the assumption that our educational system is in principle a kind of well-built structure.” (NEURATH, [1944] 1970, p. 41). If we are like sailors who must rebuild their ship on the open sea, our education must be regarded as part of this ship, it must be directed towards an ever-changing world, in a process of ever being reconstructed.

Just like there is no one system of all human knowledge, there cannot be a one true correct way of analyzing situations, or one eternal set of instructions for social transformation, or one absolutely correct pedagogical scheme. The general scientific attitude, as Neurath points out, is never to aim at “eternal values”. If human society is constantly changing, so must be our values, ideas, science, engineering, education, philosophy. (NEURATH, [1944] 1970).

14 In *Foundations of the Social Sciences*, Neurath does not emphasize the description of scientific utopianism. For that, see NEURATH, [1919] 1979, and NEURATH, [1920-21] 2004. Also, see NEMETH, 1991. I discuss Neurath’s utopias in CUNHA, 2014.

Positivism and Pragmatism

We have laid out two of Neurath's proposals: (1) Neurath's general view on science, in co-authorship with the Vienna Circle, is clearly contrary to Comte's standpoint, since Neurath argues against the idea of a uniform system for all knowledge, and in doing so, he even retrieves d'Alembert's ideas, to which Comte opposed;¹⁵ (2) Neurath's view on the social sciences, even though it is in harmony with the general proposal, may be regarded as somewhat Comtean. That is because Comte saw his positivism as a way to provide an adequate view on science, which would appropriately found the social sciences, which, in turn, would promote a transformation in society by means of education.

However, Comte's understanding of science was quite different from Neurath's; and so was his idea of how society was to be transformed, since Comte says that the most important feature of positive philosophy is that "it can be considered the only solid basis for the social reorganization which shall bring to an end the state of crisis in which, for a long time, the most civilized nations find themselves." (COMTE, [1830] 1972, p. 106). Once again, Comte claims to be in possession of the one correct answer. More than that, Comte sees such political and moral crisis as the result of "intellectual anarchy", characterized as "our gravest evil", which is due to a "deep divergence (...) in relation to all the fundamental maxims, the fixity of which is the first condition for a true social order." (COMTE, [1830] 1972, p. 107). Comte would certainly use the expression *intellectual anarchy* to pejoratively qualify Neurath's pluralist, fallibilist mosaic of science that leads democratically to a society that is being constantly rebuilt in the open sea. And looking from this point of view, all of Neurath's elaborations on the foundations of the social sciences seem to be an attack on Comte's positivism—since all the standpoints he criticizes are present in Comte.¹⁶ It is possible to find an epicenter for Neurath's disagreement with Comte in his effort to establish social engineering as non-technocratic: Neurath is very cautious in stating that social science might be helpful in planning society, but it must be made clear that social scientists are not supposed to bring a ready-made answer to social problems—because science is a collectively-built mosaic; because social science starts from complex aggregates of culture-, theory-, and value-laden clots; because social phenomena are unstable and predictions are difficult; because society changes all the time, etc. Comte, on the other hand, embraces technocracy, as positive philosophy will provide the necessary order for the progress of science, which will elaborate all the pedagogical recipes that will guarantee the moral and political correctness of society.

Labeling Neurath as a positivist does not enlighten us at all: it seems to be much more a prejudice that misdirects our understanding of the Vienna Circle's political stance. Therefore, I propose to reconsider the connection between Neurath and John Dewey. As mentioned above, Dewey wrote one of the chapters of the

15 In spite of these divergences between Neurath and Comte, there are some similarities. On that matter, see BRENNER, 2005.

16 Neurath recognizes the similarity of project, and criticizes Comte's metaphysics in a brief passage (NEURATH, [1936] 1983, p. 157-158).

opening number of the *Encyclopedia*.¹⁷ Let us follow this lead to see how Dewey's pragmatism fits in Neurath's mosaic.

Dewey agrees on the scientific world-conception of the Vienna Circle, saying that science is to be regarded primarily as an attitude and method, but not entirely dissociated from the body of knowledge manifested by such attitude. He characterizes the scientific attitude negatively as "freedom from control by routine, prejudice, dogma, unexamined tradition, sheer self-interest," (DEWEY, [1938] 1955, p. 31), and positively as the "will to inquire, to examine, to discriminate, to draw conclusions only on the basis of evidence after taking pains to gather all available evidence." (DEWEY, [1938] 1955, p. 31). Science, Dewey continues, is "the experimental attitude which recognizes that while ideas are necessary to deal with facts, yet they are working hypotheses to be tested by the consequences they produce." (DEWEY, [1938] 1955, p. 31).

By considering science as an attitude, Dewey says, it will be recognized that science is not merely found in the specialized work of scientists, but also in the most intelligent ways of thinking and solving problems regarding the most diverse aspects of human life. In his words, science "is not confined to those who are called scientists," it is "the fruit of a method which is followed by the wider body of persons who deal intelligently and openly with the objects and energies of the common environment" (DEWEY, [1938] 1955, p. 29). And he sees a social problem in the problem of the unity of science, that is, the effort of unifying science must be regarded as dealing with a social issue, that of making society more intelligent. He notices that frequently individual efforts towards a more intelligent conduct of personal life-affairs

[...] are hampered, if not defeated, by obstructions due not only to ignorance but to active opposition to the scientific attitude on the part of those influenced by prejudice, dogma, class interest, external authority, nationalistic and racial sentiment, and similar powerful agencies. (DEWEY, [1938] 1955, p. 32-33).

Therefore, Dewey was agreed with Neurath's project of bringing scientific-minded people into cooperation with one another to establish a political force.

Dealing with the problem of making humankind more scientifically enlightened is a top priority in Dewey's philosophy. And the means adopted for doing so was education. Dewey says that the agencies of education are "the crucial point in any movement to bring about a greater and more progressive unity of the scientific spirit." (DEWEY, [1938] 1955, p. 36). The situation of science in education at the time was depressing, according to Dewey, since it was directed into instilling dogmas, so that schools were becoming organs of propaganda. Science was not at all found in elementary education, when children are most curious and interested in observation and new experiences; in middle education, the different scientific subjects were taught as non-related bodies of information, and even laboratory exercises aimed not at teaching the scientific attitude and method; and technical education, apart from research institutes and universities, did not teach the ability to use the scientific

17 He also wrote a whole number on axiology (DEWEY, [1939] 1970).

method, but only some narrow professional instruction. Finally, Dewey points out, "something called by the name of 'science' gets shut off in a segregated territory of its own. There are powerful special interests which strive in any case to keep science isolated so that the common life may be immune from its influence." (DEWEY, [1938] 1955, p. 37).

Dewey claims that his aim is not that every person is turned into a scientist, but that "all human beings become scientific in their attitudes: genuinely intelligent in their ways of thinking and acting". (DEWEY, [1938] 1955, p. 38). Such an aim is desirable, he says, "because this attitude forms the sole ultimate alternative to prejudice, dogma, authority, and coercive force exercised in behalf of some special interest." (DEWEY, [1938] 1955, p. 38). He concludes, then, by pointing out the relevance of the encyclopedic effort of bringing together all those who are interested in thinking about science, in studying science in a more technical way; Dewey says that those "should take the lead by co-operation with one another in bringing home to all the inherent universality of scientific method." (DEWEY, [1938] 1955, p. 38).

Hence, we see that the same convergence between Neurath and Comte's ideas, the strategy of reorganizing science and the scientifically oriented people in order to transform society by means of education, can also be observed in regard to Dewey. And while Neurath was in agreement with Dewey when it came to what 'science' meant and what an enlightened society was, both these authors notably differ from Comte on this point. Yet, there are, of course, also some important differences between Neurath and Dewey; for example, Neurath does not connect the scientific attitude to a method, as Dewey does; and furthermore, Dewey does not so clearly emphasize all the plurality in the scientific attitude that Neurath does.¹⁸

There is another salient similarity between Dewey and Neurath in their approach to the social sciences. In his masterpiece *Logic: Theory of Inquiry*, Dewey says that the starting point of every inquiry is a *situation*, which is not merely a juxtaposition of isolated objects and events, but a *contextual whole* in such a way that each situation is "an *individual* situation, indivisible and unduplicable." (DEWEY, [1938] 2008, p. 74). All the objects and events, processes and entities, of scientific or common sense inquiry are to be understood in a situation, in a context of multiple relations. When one faces an indeterminate situation, one experiences a doubtful condition, some sort of confusion, or irritation, which leads the person into inquiry, an effort towards a determinate situation. Dewey, then, describes a pattern of inquiry, a method, understood in a broad sense, of intelligent steps taken in the process of turning an indeterminate situation into a determinate one (DEWEY, [1938] 2008, chapter 6). The whole book is an inquiry about such a method, which is understood as the most intelligent (scientific) way of thinking, discovering, and solving problems ever developed by the human kind throughout evolution (DEWEY, [1938] 2008, p. 13-14).¹⁹ And in one of the final chapters of the book, Dewey points

18 In the mid-forties, Dewey had some divergences with the editors of the *Encyclopedia*, especially Carnap and Morris. I have argued in another paper that such divergences were mostly due to misunderstandings on Dewey's part (CUNHA, 2012).

19 It is important to remark that Dewey acknowledges the tentative character of the method he described: he says that when future methods of inquiry appear, the theory of inquiry will have to change (DEWEY, [1938] 2008, p. 22).

out that the social sciences are underdeveloped, and that such area can be viewed as a test for the efficacy of his considerations. One of the aspects in which he thinks his ideas can be applied is in the understanding of the complex situations from which inquiries start. He says that “one of the chief practical obstacles to the development of social inquiry is the existing division of social phenomena into a number of compartmentalized and supposedly independent non-interacting fields (...), for example economics, politics, jurisprudence, morals, anthropology, etc.” (DEWEY, [1938] 2008, p. 501). It is possible to relate this claim advanced by Dewey to that of Neurath, that the social sciences must take the situations, *synusia*, composed of aggregates from which many overlapping special inquiries may start.

Concluding remarks

We have seen some points in which Neurath’s view is close to Dewey’s, and in those very points both authors differ significantly from Comte. Of special importance for us here is the view that the starting point for inquiries in the social sciences is a complex situation, aggregate, or clot. This represents a deflection from a traditional epistemological standpoint that analyses knowledge into its *atomic* parts. Atomic analyses may be useful in dealing with many philosophical problems, but not with the problem of understanding the social sciences, as our conclusions indicate.

Many thinkers have proposed such a point of view for the social sciences. In a recent text, L.H. Dutra calls it a *molar perspective*, since it takes as a starting point something larger than atoms and also larger than molecules. As Dutra shows, besides Dewey and Neurath, also Karl Marx and Karl Popper proposed molar perspectives in their accounts of the social sciences. An important epistemological issue that can be dealt with by this kind of approach, as Dutra advances, is that of the calibration of models (Dutra, 2013, chapter 10). In the philosophy of the social sciences, such issues appears in the problem about how much of each scientific branch is needed in order to analyze or solve certain social problem or situation; in our bridge example, it has to do with how much economy, geography, psychology and sociology, for example, is needed to appropriately describe the complex situation, without giving too much importance to a less relevant factor. This is an epistemological problem that is of extreme concern to social scientists who aim at interdisciplinary approaches. And an atomic account, that reduces the social sciences to basic “social facts” is of no consequence in this case.²⁰

In regard to this contemporary problem, Comte’s stance does not help; the attempt to separate the sciences according to their degree of progress in the march of the human spirit would only contribute to an even larger isolation of the many social disciplines. While Comte considered that the problem of the “system” of knowledge advocated by d’Alembert was that it would mix areas that are in different stages or that are of different natures, now we take such a mixture to be a desirable aspect of many approaches. The merging of knowledge fields promotes the aggregations, and it also brings together a community, plural as it is, which we don’t want to be fractured. This seems to be a reasonable way to deal with the unique situations found in society.

20 Unless social facts are understood as complexes. See DUTRA, 2014.

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Data de envio: 23-09-14

Data de aprovação: 30-10-14

