

BJCT

Berlin Journal of Critical Theory

Volume 6, Number 1 (January, 2022)

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Towards a New Interpretation of Horkheimer's Notions of Science and Technique in the Context of his Critique to Positivism

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Abstract: This paper discusses scholarly interpretations according to which in 1937 a radical shift in Horkheimer's thought can be observed. This shift consists of a growing mistrust in science and technology, and a pessimistic view concerning the possibilities of social transformation. Our purpose is to refute this interpretation and to defend the hypothesis of absence of a negative perspective of the role of science and technology in that period. We aim to contrast the criticism of the position of positivism in relation to science and technology and the one defended by Horkheimer. For this purpose, we will examine a set of Horkheimer's texts from the forties. We focus on the topics related to his stance on science and its demarcation from metaphysics, the role of science and technology in capitalist society, and the possibility of scientific progress and social transformation. In relation to the last topic, we argue that even if Horkheimer has always been faithful to a social transformative goal, he does not defend this goal from a blindly optimistic perspective. We will also consider the role of technology in Horkheimer's thought regarding the social task of critical theory. In this sense, we will point out that Horkheimer's view of science should be interpreted as neither negativist nor hopeless but must be considered in light of a new position regarding the relationship between the human being and nature. The last part of the article intends to be a contribution upholding the thesis that the notion of reason emerging from Horkheimer's analysis is linked to a new idea of science based on a relation of non-domination of nature.

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1. Introduction

Scholarly works which focus on Horkheimer's texts from the thirties and forties³ usually assert that a radical shift in his thought can be observed. This shift consists of a growing mistrust in science and technology, and a pessimistic view concerning the possibilities of social transformation. This pessimism would also extend among other authors of the first generation of the *Institut*. The interpretation is usually approached without the consideration of other texts written by Horkheimer, particularly those written before 1937. The lack of a comprehensive approach to Horkheimer's writings from the early 1930s leads scholars to think that it is in 1937 – with the articles “The Latest Attack on Metaphysics”⁴ and “Traditional and Critical Theory”⁵ – that a radical change took place regarding what was expressed in “The Present Situation of Social Philosophy and the Tasks of an Institute for Social Research”⁶, in which Horkheimer appreciated the importance of empirical methods in social research.

In order to criticise the interpretation mentioned, our strategy will begin (part 2) with an analysis of Horkheimer's critique against positivism in his early texts (from 1931 to 1937). We will focus on the topics related to his stance on science and its demarcation from metaphysics, the role of science and technology in capitalist society, and the possibility of scientific progress and social transformation. Our purpose is to contrast the

3 For example, Postone in *Time, Labor and Social Domination* (Cambridge: Cambridge University Press, 1993) and Habermas in “Remarks on the Development of Horkheimer's Work” included in Seyla Benhabib, Wolfgang Bonss and John McCole (eds.) *On Max Horkheimer: New Perspectives* (MIT Press, 1993).

4 Max Horkheimer, “The Latest Attack on Metaphysics”, in *Critical Theory. Selected Essays*, Max Horkheimer. (New York: Continuum, 2002) 132–187.

5 Max Horkheimer, “Traditional and Critical Theory”, in *Critical Theory. Selected Essays*, Max Horkheimer. (New York: Continuum, 2002) pp. 188–243.

6 Max Horkheimer, “The Present Situation of Social Philosophy and the Tasks of an Institute for Social Research” in M. Horkheimer, *Between Philosophy and Social Sciences*. (Massachusetts: MIT Press), 1993, pp. 1–14.

criticism of the position of positivism in relation to science and technology and the position of Horkheimer himself.

For this purpose, we will examine (part 3) a set of Horkheimer's texts from the forties (from 1940 to 1947) to defend the hypothesis of absence of a pessimistic perspective of the role of science and technology in that period. We will thus disavow the assertion that a radical change towards these topics occurred in Horkheimer's thought after 1937.

We argue that even if Horkheimer has always been faithful to a social transformative goal, he does not defend this goal from a blindly optimistic perspective. Although he sees progress of knowledge as important and necessary for the purpose of social transformation (which in this aspect is not too different from the positivist conception), he understands that science alone cannot guide that change without a supplement of critical philosophy.

Linking science and social transformation (part 4) we will also consider the role of technology in Horkheimer's perspective regarding the social task of critical theory. In this sense, we will point out that Horkheimer's view of science should be interpreted as neither negativist nor hopeless but must be considered in light of a new position regarding the relationship between the human being and nature (in the sense that the concept also includes the human himself). This perspective enables us to reinterpret the particular role of technology regarding social transformation.

Finally, we will point out that, in opposition to the interpretation which evaluates Horkheimer's view on the role of science and technology as pessimistic, a historical revision of Horkheimer's stance towards science and its role in capitalist societies will reveal which aspects of that comprehension are actually new and can contribute to a contemporary approach to these themes. The last part of the present article intends to be a contribution upholding the thesis that the notion of reason emerging from Horkheimer's analysis is related to a new idea of science based on a relation of non-domination of nature. This perspective would be contrary to an interpretation of a completely negative view of the role of science and technology in what Horkheimer calls the "traditional" interpretation.

2. Horkheimer: the critique of positivism and the configuration of his own position towards science

2.1 *Positivism, empiricism and logicism.*

Horkheimer's interpretation and its implications

In "The present situation of social philosophy and the tasks of an institute for social research", the author holds the thesis that social investigation was characterised at that moment by a cleavage between philosophical and positivist methods of research. According to Horkheimer, positivism represented individualistic tendencies, distinctive of contemporary European capitalist societies which strove for a close collaboration between science, technology, and industrial production, in order to attain constant, unending progress.

In opposition to this positivist view, Horkheimer estimated that the recovered basis of the Hegelian system of thought could establish a new social philosophy, one which would enrich empirical investigations without setting aside the role of subjectivity in the process of constituting knowledge. Horkheimer thus claims that "social philosophy in particular, was ever more urgently called to carry out the new the exalted role ascribed to it by Hegel. And social philosophy heeded this call."⁷

According to his view, positivism proposes a fragmented inquiry which only approaches facts from a naturalistic perspective and is unable to transcend mere facticity. In opposition to this absolutisation of the given, Horkheimer estimates that philosophy considers facts in relation to "ideas, essences, totalities, independent spheres of objective spirit, unities of meaning, "national characters", etc., which it considers equally foundational indeed, "more authentic" elements of being."⁸ Horkheimer's proposal seeks to develop a theory which does not judge

7 Horkheimer, "The Present Situation of Social Philosophy and the Tasks of an Institute for Social Research", p.6.

8 Horkheimer, "The Present Situation of Social Philosophy and the Tasks of an Institute for Social Research", p.7.

these two perspectives as mutually contradictory but rather a theory that can profit from the progress of the sciences and integrate empirical research in view of the whole.

Horkheimer's texts from 1937 show some affinity regarding the critique of the empiricist model of 20th century positivism. Horkheimer traces the origins of present-day positivism to Humean sceptical empiricism on the one hand, and to Leibnizian rationalised logic on the other.⁹ He also states that "Insofar as this traditional conception of theory shows a tendency, it is towards a purely mathematical system of symbols."¹⁰

Furthermore, Horkheimer repeatedly points to empirical observation, a distinctive characteristic of the positivist conception, which is treated as the sole way to acquire and justify scientific knowledge. In "The Latest Attack on Metaphysics" he examines the empirical character of the positivist conception of science – and later in the same text, with respect to logicist or rationalist aspects of scientific research – establishing some similarities and differences with regard to modern empiricism. What is common to both positivism and empiricism is the idea that "all knowledge about objects derives from facts of sense experience."¹¹ But unlike Locke's and Hume's empiricism, Horkheimer states that contemporary positivism has the singularity of not acknowledging the relationship between facts and the knowing subject through sensorial impression, but through the statement of that impression, so that science and consequently scientific philosophy have therefore to deal with the given world only in the form of sentences about it. (...) He [the scientist] reckons solely with what has been duly recorded in a protocol.¹²

According to the *Institut's* director, although "their [Locke and Hume's] philosophy contains at least this dynamic element – the relation to a knowing subject,"¹³ in modern empiricism "the individual was

9 Horkheimer, "The Latest Attack on Metaphysics", p.138.

10 Horkheimer, "The Latest Attack on Metaphysics", p.190.

11 Horkheimer, "The Latest Attack on Metaphysics", p.141.

12 Horkheimer, "The Latest Attack on Metaphysics", p.142.

13 Horkheimer, "The Latest Attack on Metaphysics", p.142.

shown that physics and all the other sciences were nothing but the condensed expression, the purified form of his own everyday experiences."¹⁴ Without that dynamic dimension, the positivist conception of science operates solely on an abstract form of knowledge, detached from experience, from which it is extremely hard to determine the importance knowledge has for people's lives. In this sense, Horkheimer claims that theory should recover a more immediate connection with facts. Regarding this, Horkheimer takes into account what from a positivist conception appears to be a strategy for preserving theory from the persistence in an abstract conception detached from reality: "empiricism, it is true, untiringly avows its willingness to set aside any conviction if new evidence should prove it false."¹⁵ Nevertheless, Horkheimer considers that claim insufficient, because the sort of evidence positivism is willing to admit in order to question scientific hypotheses must itself satisfy positivist criteria of scientificity. The demand to solely take into account scientific criteria leads, according to Horkheimer, to a view in which "the structure of knowledge and consequently of reality – as far as the latter can be known – is as rigid for him as it is for any dogmatist."¹⁶ As he reconstructs the rationalist or logical root of contemporary positivism, Horkheimer reaches a conclusion similar to the one addressed above, although from another path. According to him, in order to gain universality and precision, positivism operates with concepts following the idea that there are actually pure forms, completely lacking content. Horkheimer goes against this conception of formal logic, considering it illusory that a radical separation could be made between form and content.¹⁷ He understands that such a separation is only possible on the basis of extra-logical considerations which, in the end, drive logic away from the formalism in which it believes it operates.¹⁸

14 Horkheimer, "The Latest Attack on Metaphysics", p.141.

15 Horkheimer, "The Latest Attack on Metaphysics", p.144.

16 Horkheimer, "The Latest Attack on Metaphysics", p.146.

17 Horkheimer, "The Latest Attack on Metaphysics", p.169.

18 Horkheimer, "The Latest Attack on Metaphysics", p.169.

But a mere rejection of science does not follow from Horkheimer's critical observations. What the philosopher sees as problematic about this view is that contemporary positivism proceeds as though it ignored that such a distinction requires extra-logical considerations, which in the end inevitably leads it to adopt a certain philosophical position. For example, Horkheimer accuses positivism of holding a naïve notion of logic, because it is not aware of the material significance the postulation of pure forms acquires, therefore keeping a distance from "the material logic of Aristotle and Hegel which it so bitterly attacks."¹⁹ Horkheimer regards Aristotelian and Hegelian logics as much more efficient than positivism in maintaining an anti-metaphysical point of view, as they do not ignore their dependence on extra-logical motives.

2.2 Positivism, objectivism, and value neutrality

According to Horkheimer, positivism stands for a model of scientific objectivity which hides the constitutive role of subjective and socio-historical factors regarding scientific knowledge. One of the aspects of the critique of the model characterised as "traditional theory" has to do with its understanding of the absolute objectivity of knowledge. According to this, the sensitive world appears to the researcher as a compendium of external facts which have to be organised without any mediation of interpretation or value judgments, since these are considered subjective elements. In opposition to this idea, Horkheimer conceives "Critical Theory" as an heir of the critical tradition inaugurated by Kant, according to which knowledge is inseparable from the active participation of the subject. Opposing the "idolatry of facts", the critical perspective sees events not just as simple given data, but also as a product of human activity. Following Hegel and Marx, Horkheimer observes that neither pure forms of perception nor that which is perceived is natural, but rather historical, constituted by human activity.²⁰

19 Horkheimer, "The Latest Attack on Metaphysics", p.172.

20 Leyva Gustavo and Miria Mesquita Sampaio de Madureir. "Teoría Crítica: el indisoluble vínculo entre la teoría social y la crítica normativa", in Gustavo Leyva and Enrique de la Garza Toledo (eds.) *Tratado de metodología de las*

Another aspect which Horkheimer addresses in his critique is that “the traditional idea of theory is based on scientific activity as carried on within the division of labour at a particular stage in the latter’s development”,²¹ but does not acknowledge its own socio-cultural background. Once again, we can see that Horkheimer does not disregard science in general, but questions what he considers a biased conception of scientific activity. In contrast to the positivist’s understanding of theory, the critique addresses the role of the researcher and its active unfolding:

the scholarly specialist ‘as’ scientist regards social reality and its products as extrinsic to him, and ‘as’ citizen exercises his interest in them through political articles, membership in political parties or social service organizations, and participation in elections.²²

Horkheimer’s statement continues as follows: “critical thinking, on the contrary, is motivated today by the effort really to transcend the tension.”²³

Addressing this purpose as the *telos* of the theory, the traditional scientist is seen as a contributor in the unending reproduction of the present form of society, since neither his descriptive and explanatory interest nor his acritical analysis of given categories could lead towards social change. Against these limitations, Horkheimer expresses the bound of critical theory to social transformation when he argues:

the concerns of critical thought, too, are those of most men, but they are not recognized to be such. The concepts which emerge under its influence are critical of the present. The Marxist categories of class, exploitation, surplus value, profit, pauperization, and breakdown are elements in a conceptual whole, and the meaning of this whole is to be sought not in the preservation of contemporary society but in its transformation into the right kind of society.²⁴

ciencias sociales: perspectivas actuales. (México: Fondo de cultura económica, 2012), p.37.

21 Horkheimer, “Traditional and Critical Theory “, p.197.

22 Horkheimer, “Traditional and Critical Theory “, p.209.

23 Horkheimer, “Traditional and Critical Theory “, p.210.

24 Horkheimer, “Traditional and Critical Theory “, p.218.

From Horkheimer's position, as 20th century positivism seeks to erase every subject-related element from theory, the link between knowledge and experience is lost. He also interprets this from that particular perspective

science is no more than a system for the arrangement and rearrangement of facts, and it matters not what facts are selected from the infinite number that present themselves. (...) This process, which was previously identified with the activity of the understanding, is unconnected with any activity which could react on it and thereby invest it with direction and meaning. (...) There is no mode of thought adapted to the methods and results of science and entwined with definite interests which may criticize the conceptual forms and structural pattern of science, although it is dependent on them.²⁵

Moving closer to an epistemological understanding of the distinction between materialism and positivism, in 1935 Horkheimer had already arrived at the reasoning, which he would further develop later in 1937, about the neutrality of values in scientific investigation: "the unconditional duty of science toward truth and its alleged freedom from values, which of course play an immense role in the positivism of the present age, are irreconcilable."²⁶

Horkheimer also takes distance from the positivist concept of truth. In "On the problem of truth", he states that this view determines that "the truth of theories is decided by what one accomplishes with them."²⁷ This understanding of truth "corresponds to limitless trust in the existing world".²⁸ For this reason, even if some supporters of the positivist understanding of science – such as Neurath – may intend to orient theory towards emancipatory ends, they cannot – as Horkheimer sees it – help falling into a contradiction caused by their adoption of a perspective which is

25 Horkheimer, "The Latest Attack on Metaphysics", p.145.

26 Max Horkheimer, "Remarks on Philosophical Anthropology" in Max Horkheimer, *Between Philosophy and Social Sciences*. (Massachusetts: MIT Press, 1993) p.158.

27 Horkheimer, "On the Problem of Truth", p.195.

28 Horkheimer, "On the Problem of Truth", p.196.

not per se revolutionary; if the revolutionary aims do not belong to theory itself, but should be added to it, as an interest coming from elsewhere, the possibility of actually accomplishing that end is dependent on mere luck.

2.3 Positivism. Scientific knowledge and metaphysics

Horkheimer (1931), claims that positivism intends to eradicate metaphysics from science; nevertheless, he says it is necessary for empirical sciences to undertake an investigation in which philosophy is involved.:

This conception according to which the individual researcher must view philosophy as a perhaps pleasant but scientifically fruitless enterprise (because not subject to experimental control), while philosophers, by contrast, are emancipated from the individual researcher because they think they cannot wait for the latter before announcing their wide-ranging conclusions is currently being supplanted by the idea of a continuous, dialectical penetration and development of philosophical theory and specialized scientific praxis.²⁹

The same idea appears in later articles. According to Horkheimer, the typical inflexibility of the positivist conception lies in that it believes itself to be sufficient to judge theories as metaphysical and objects as relevant or irrelevant for scientific analysis. Behaving this way, the positivist conception demarcates the field of validity of scientific investigation and decides to be indifferent to everything which cannot be studied by the usual methods. Horkheimer argues that the weakness of positivism lies in its inability to achieve a competent critique of what it considers archaic forms of thought:

not only logistic but every other theory lacks the ability to overthrow the old philosophy, no matter how thorough its acquaintance with the traditions combated. Idealistic philosophy or metaphysics cannot be 'shaken to its foundation' by mere theoretical rejection.³⁰

Horkheimer holds that, by rejecting every other form of reasoning

29 Horkheimer, "The Present Situation of Social Philosophy and the Tasks of an Institute for Social Research", p.9.

30 Horkheimer, "The Latest Attack on Metaphysics", p.178.

which does not coincide with scientific criteria, the positivists "are opposed to thought, whether it tend forward with reason, or backward with metaphysics."³¹ Although Horkheimer's position can be traced throughout his whole work, his rejection of metaphysics is especially clear in the last text cited, evidencing that, even though he stands against positivism, he is not willing to defend a metaphysical perspective. He also points out that logical empiricism and his own position can be coincident with respect to the negative valuation they both have of metaphysics, but he also critiques modern positivism as being far from the transformative goals of science shared by nineteenth-century positivists. Once again, the philosopher expresses his commitment towards a science that does not sacrifice the idea of social transformation. According to Horkheimer, positivism does not only – and justly – confront metaphysics, but it also unjustly characterises other theoretical points of view as "metaphysical" simply because they do not coincide with the positivist concept of science.

Horkheimer draws attention to the fact that positivist opposition to every other point of view betrays positivism's own emancipatory aims. Particularly, its critique of metaphysics does not allow positivism to elaborate a critical reflection through which to really understand and supersede it. By so doing, contemporary positivism allows metaphysics not only to stay untouched, but also to keep developing and gaining increasingly more power – most of all in those domains which are not of interest to a scientific approach, resulting in an important influence of metaphysics in political and social fields. This is the reason why Horkheimer refers to positivism as "the accredited science, the given structure and methods of which are reconciled to existing conditions,"³² through which knowledge participates "passively in the maintenance of universal injustice."³³ Horkheimer's insistence on what he conceives as the passiveness of positivism shows that he is not willing to relinquish science's emancipatory ends.

31 Horkheimer, "The Latest Attack on Metaphysics", p.186.

32 Horkheimer, "The Latest Attack on Metaphysics", p.144.

33 Horkheimer, "The Latest Attack on Metaphysics", p.151.

2.4 Becoming metaphysical through antimetaphysics

Horkheimer observes that the distinction between materialism and positivism lies firstly in the separation between essence and phenomenon, and secondly in the way they relate to the idea of essence: "Positivism as such, however, is proud of the fact that it is not concerned with the 'nature' of things but only with appearances and thus with what things actually offer to us of themselves."³⁴ To illustrate the positivist point of view, Horkheimer quotes Auguste Comte, Henri Poincaré and John Stuart Mill and arrives at the conclusion that positivism "reduces all possible knowledge to a collection of external data."³⁵

He accuses positivism of holding a metaphysical conception. For example, when he states that in the pretension of gaining knowledge of the essences, "nonpositivist metaphysics must exaggerate its own knowledge,"³⁶ he slips in the idea that there is another sort of metaphysics, namely, a positivist one. If positivism falls into a metaphysical position, even against its own ideals, it is due to its disregard for the fact that a contradiction with such a position underlies the positivist prudence of attaining solely to the study of phenomena, since it presupposes – metaphysically – that such thing as a difference between essence and phenomena exists, and also that it is possible to characterise reality solely as phenomena.³⁷

Many consequences follow from positivism's metaphysical position. One of them is that positivism tends to be "more impartial and more tolerant"³⁸ than other points of view towards the fact that there are certain things that cannot be known. Horkheimer thus indicates that "positivism

34 Max Horkheimer, "Materialism and Metaphysics" In Max Horkheimer, *Critical Theory Selected Essays* (Continuum: New York, 2002), p.37.

35 Horkheimer, "Materialism and Metaphysics", p.38.

36 Horkheimer, "Materialism and Metaphysics", p.38.

37 Horkheimer, "Materialism and Metaphysics", p.38.

38 Horkheimer, "Materialism and Metaphysics", p.39.

has knowingly made its peace with superstition,"³⁹ not just because it assumes a metaphysical position in pointing to essences as an inaccessible realm, but also because it concedes total freedom to metaphysical and religious thought to develop where science has no interest at all. Hence, a positivist notion of science allows metaphysics to grow stronger where science dares not enter, and finally allows scientists to adopt a religious or metaphysical belief about certain topics.

Another consequence of this positivism's undercover metaphysics is the belief in the existence of abstract conceptual entities. Under this construct, Horkheimer relates contemporary positivism to Bergson's intuitionist metaphysics.⁴⁰ He points out that, in regard to this belief, positivism differs from materialism:

positivism is really much closer to a metaphysics of intuition than to materialism, although it wrongly tries to couple the two. (...) positivism and metaphysics are simply two different phases of one philosophy which downgrades natural knowledge and hypostatizes abstract conceptual structures.⁴¹

3. Horkheimer: Science and social transformation

3.1 Anti-scientism, but not anti-science

It is important to point out that Horkheimer neither defends metaphysics, nor stands for a non-scientific perspective. This double rejection is articulated in the last passages of "The Latest Attack on Metaphysics". On the one hand, metaphysics appears as a source of vain hopes because it attempts to give certainty to a state of affairs which is scientifically unverifiable, while on the other hand, Horkheimer states that "it is also true that science becomes naïvely metaphysical when it takes itself to be the knowledge and the theory,"⁴² meaning that science makes an import-

39 Horkheimer, "Materialism and Metaphysics", p.39.

40 Horkheimer, "Materialism and Metaphysics", p.40.

41 Horkheimer, "Materialism and Metaphysics", p.40.

42 Horkheimer, "The Latest Attack on Metaphysics", p.183.

ant mistake when it disregards non-scientific forms of thought, including those which could adopt a critical attitude towards science.

The dependence of critical theory on scientific progress, which had been mentioned in the most programmatic texts Horkheimer wrote in the early 1930s, becomes evident once more when he affirms: “it is true that any position which is manifestly irreconcilable with definite scientific views must be considered false” and “even constructive thought”, which differs from “absolute metaphysical intuition” because it does not underestimate science, “must get much of its material from the special sciences.”⁴³ Critical theory articulates the results from various scientific disciplines in view of the totality in order to approach a particular issue, which – according to Horkheimer – enables a more positive connection with science than that achieved by positivist notions of science.

Before proceeding, we would like to stress that social change is a goal for critical theory as well as for many positivist philosophers. The key to grasping the big difference between these two traditions lies in the way in which each of them understands the nexus between science and social transformation. While positivism sees the sole increase of knowledge as favourable for the establishment of more equitable politics, Horkheimer seeks a transformation of both politics and science in order to change society. This last point will be the focus of the next section.

3.2 The transformative role of science. Limits of contemporary conceptions

As we have already observed, both of Horkheimer’s texts written in 1937 problematise the positivist demand for neutrality of values, from an analysis of the role of interests in social research: “there is likewise no theory of society, even that of the sociologists concerned with general laws, that does not contain political motivations.”⁴⁴ Insofar as no theory can develop in the absence of interests, Horkheimer urges the scientist to be aware of the value content and meaning of science, and to adopt a critical position with regard to it.

43 Horkheimer, “The Latest Attack on Metaphysics”, p.183.

44 Horkheimer, “Traditional and Critical Theory”, p.222.

Horkheimer reckons that positivism's motivation to defend the employment of empirical and logical methods lies in the relation it maintains with technological and scientific progress. But Horkheimer argues from his practical and political interest that the naïve optimism of positivist positions can only lead to the perpetuation of what is already given. According to Horkheimer, positivism "assigns supreme intellectual authority to the accredited science, the given structure and methods of which are reconciled to existing conditions."⁴⁵ The problem is that one of the more serious consequences that follow from positivist optimism is the lack of tools to distinguish the dangerous consequences that constant scientific progress can have in the context of capitalist society. According to Horkheimer, science is led by instrumental rationality and by bourgeois rationality, based on the idea of domination as the basic relation between subject and object.

Positivist optimism leads not only towards the perpetuation of the use of the current methods of domination, but also to the constant attempt to expand them in as many realms as possible. In this sense, Horkheimer questions the ideal of unified science, as well as he reckons that it claims to achieve unity through a language purified of all subjective and ideological aspects, guaranteeing science's empirical objectiveness. Here, Horkheimer's epistemological argument carries an ethical-political interest towards science's emancipatory possibilities: "the naïve harmonistic belief which underlies his ideal conception of the unity of science and, in the last analysis, the entire system of modern empiricism, belongs to the passing world of liberalism."⁴⁶ In Horkheimer's view, logical empiricism builds an interpretation of science and of its social role which contributes to the mere acceptance of the status quo, perpetuating existing social injustice:

If science as a whole follows the lead of empiricism and the intellect renounces its insistent and confident probing of the tangled brush of observations in order to unearth more about

45 Horkheimer, "The Latest Attack on Metaphysics", p.144.

46 Horkheimer, "The Latest Attack on Metaphysics", p.147.

the world than even our well-meaning daily press, it will be participating passively in the maintenance of universal injustice.⁴⁷

What follows from this argumentation is that Horkheimer evaluates that positivism cannot in and of itself become the motor of social transformation which will actually challenge oppression and social injustice. In contrast, in Horkheimer's thought it must acquire a transformative role.

3.3 Critical Theory and social transformation

As we have remarked, Horkheimer's interpretation of science and its nexus with social transformation differs radically from the way positivism understands it. Horkheimer observes that "the defense of science against theology by means of epistemological and logical argument was a progressive movement in the seventeenth century,"⁴⁸ but the current persistence of the very same attitude, as if the most substantial issue continued to be the struggle between science and metaphysics, is nowadays absurd. Horkheimer acknowledges that, as scientific progress was once tied to the promotion of the bourgeoisie as a ruling class, it performed an actual emancipatory function in the modern era. However, once the bourgeoisie succeeded in becoming a ruling social class, thus establishing a new social structure, its emancipatory function ended, and the settlement of scientific knowledge no longer focused on liberating those who suffered, but on maintaining the new power structures. In "Beginnings of the bourgeois philosophy of history" he affirms: "In its origins, bourgeois science is inextricably linked to the development of technology and industry, and cannot be understood apart from bourgeois society's domination of nature."⁴⁹ He argues that at the beginning of the bourgeois era, the direction taken towards a form of scientific investigation that was unrelated to social or religious subjects constituted a moment in the lib-

47 Horkheimer, "The Latest Attack on Metaphysics", p.149.

48 Horkheimer, "The Latest Attack on Metaphysics", p.186.

49 Max Horkheimer, "Beginnings of the Bourgeois Philosophy of History" in Max Horkheimer, *Between Philosophy and Social Sciences* (Massachusetts: MIT Press, 1993), pp. 316.

eration from earlier theological tutelage of thought. The transformation of the social structure made the rational relation to production – in every aspect of life, in science as well as in agriculture and industry – become retrogressive and reactionary. This abstraction and apparent independence of the scientific sphere developed into a mass of individual empirical research projects, detached from each other, which lacked conceptual and categorical theory and praxis.

If the detachment of scientific investigation from socially relevant affairs was – from Horkheimer's perspective – rational in the context of the bourgeois struggle against feudalism, it was because it made it possible to grasp the possibility of successful science that was not accountable to religious thought. But Horkheimer holds that this very same scientific attitude became conservative the moment theological tutelage of thought was overcome. Once the bourgeoisie has established itself as a ruling social class, the development of a scientific form of research which neglects its nexus to the social whole is no longer revolutionary.

Horkheimer claims that, as a consequence of the above, reason has become a mere instrument in contemporary society, and critical and reflexive thought that aims to transcend utility is therefore condemned as superstitious. Given that there is practically no more thought than that oriented towards usefulness, ideas are treated as if they were mere things or even machines, which makes them incapable of producing anything new, not governed by the dominant way of reasoning.

Horkheimer argues that the scientific requirement to uphold technical efficiency as the supreme value is the mechanism through which instrumental rationality pursues to perpetuate the established order, perpetuating a blind technical development towards social oppression and explosion. He considers that if science continues to develop in this sense, then technical progress cannot be an index for the progress of humanity, but rather of barbarism.

Apart from stating that "it is not technology or the motive of self-preservation that in itself accounts for the decline of the individual,"⁵⁰ but the way in which it develops in present society, Horkheimer also affirms

50 Max Horkheimer, *Eclipse of Reason*. (New York: Continuum, 2004), p.103.

we are the heirs, for better or worse, of the Enlightenment and technological progress. To oppose these by regressing to more primitive stages does not alleviate the permanent crisis they have brought about. (...) The sole way of assisting nature is to unshackle its seeming opposite, independent thought.⁵¹

We are now able to note the similarities to the arguments used in reference to positivism's critique of metaphysics. The philosopher understands that the broadening of knowledge, in the way it has occurred since the beginning of the modern era, cannot contribute in the present to anything other than the reinforcement of already existing oppressive societies. Nevertheless, total neglect of the positive role of science and its potential importance in a new and more just social configuration would likewise be inhuman. He also admits that while the support of metaphysics helped to maintain feudal society, the refusal to approach scientific and metaphysical perspectives does not contribute to altering archaic forms of knowledge.

If current social injustice is not caused by science and technology themselves, but by the way in which they are developed today, it is possible to foresee from Horkheimer's perspective that a transformation in the habitual form in which scientific research takes place in the context of capitalist society might contribute to ending social exploitation.

4. Science. The domination of nature and the domination of men by men

As stated above, in *Eclipse of Reason*, Horkheimer considers the problem of the exploitation of nature to be inseparable from the problem of the domination of nature, as it is exercised in the contemporary model of science. It was this particular idea that led Moishe Postone⁵² to observe a possible shift in Horkheimer's thought, from an interest in social oppression to a concern about the domination of nature. Following Postone, this shift might have been responsible for a distancing from the Marxism

51 Horkheimer, *Eclipse of Reason*, p.86.

52 Moishe Postone, cited above.

that had characterised Horkheimer's earlier work. Nonetheless, as many other authors have pointed out – for example, Marcuse⁵³ – the problem regarding the exploitation of nature is inseparable from that of social exploitation in the context of Horkheimer's thought. In its attempt to dominate nature, science needs to understand nature as something distinct from the human being – that is to say, as an object that differs from a subject. This ever-increasing differentiation between human beings and nature – which in the work written with Adorno⁵⁴ was conceptualised in terms of *disenchantment of the world* – implies a denaturalisation of what is human. This denaturalisation is “built not only on the repression of drives, but also on the repression of ‘inner nature’ – or human sensuousness – and ‘outer nature’ – or the natural world and all its infinitely varied sentient and insentient constituents.”⁵⁵ Furthermore, the expansion of scientific rationality, based on the domination of nature, not only results in degrading what is human through the domination of the self, it also tends to operate a transformation of the subject towards a leader:

The principle of domination, based originally on brute force, acquired in the course of time a more spiritual character. The inner voice took the place of the master in issuing commands. The history of Western Civilization could be written in terms of the growth of the ego (...). The ego within each subject became the embodiment of the leader.⁵⁶

Because nature is not just something that surrounds the human being, it also constitutes the human being itself; expanded domination of nature leads to human beings being dominated by other humans. This means that each subject becomes the object of oppression, while at the same time developing characteristics of leadership. As it arises unexpectedly

53 Herbert Marcuse, *One Dimensional Man* (London: Routledge, 2002).

54 Theodor Adorno and Max Horkheimer, *Dialectic of Enlightenment* (California: Stanford University Press, 2002).

55 Sapporah Weisberg, “Animal Repression: Specism as Pathology”, in John Sabonmatsu, *Critical Theory and Animal Liberation*. (New York: Rowman & Littlefield Publishers, 2011), p. 168.

56 Horkheimer, *Eclipse of Reason*, p.72.

from the increasing expansion of modern science, self-domination is a repressive, i.e., irrational, consequence that follows from the ever-expansive domination of nature. Nonetheless, the nexus that Horkheimer establishes between the domination of nature and the repressive domination of human beings should be not interpreted as an aversion to science in general or as a pessimistic view of emancipatory aims.

To achieve a better comprehension of this particular theme in Horkheimer's argument, it can be emphasised that the role of science is not essentialised, as it is defined by its place in the configuration of social relations at any specific time. As Helen Denham points out,

that he simultaneously objected to naturalizing socially created class relationships and that he acknowledged that even pure nature could not appropriately be called a 'suprahistorical eternal category', demonstrates his sensitivity to the existence of an ongoing and ever-changing relationship between humans and nature.⁵⁷

This becomes evident in Horkheimer's historical interpretation of the development of modern science: Although it performed a main function in the social emancipation led by the bourgeoisie, it was later unable to contribute to a rational way of life. On the contrary, it went in the direction of more oppressing forms of life. For this reason, Horkheimer is unwilling to affirm that social emancipation could arise either from the expansion of science or from the democratisation of scientific knowledge. However, this does not lead him to assume an anti-scientific point of view. The philosopher does not consider that science itself suffices to justify the degradation of social relations, but it is actually the reduction of science to a mere function of domination which produces the denounced conditions of exploitation. As William Leiss holds, Horkheimer argues that the ideological reflex of bourgeois society can be seen in the philosophical absolutisation of the methodology of the natural sciences, not in the sciences themselves.⁵⁸

57 Helen Denham, "The Cunning of Unreason and Nature's Revolt: Max Horkheimer and William Leiss on the Domination of Nature" *Environment and History*, 3, No. 2, (1997), 153-154, <http://www.jstor.org/stable/20723038>

58 William Leiss, *The Domination of Nature* (Montreal: McGill-Queen's Uni-

It is also important to observe that Horkheimer's optimism does not equal a blind faith towards the effective possibilities of achieving social transformation. On the contrary, he holds what could be dubbed a critical optimism in this sense. Regarding this, a tension between the constant longing for what he calls *a rational society* and the reiterated warning about the difficulties in achieving it can be found in Horkheimer's texts, even in those written after 1940. This tension should not be interpreted as an expression of a hopeless consideration of human destiny, but as the condition for this much desired transformation.

The absence of any unconditional optimism in Horkheimer's thought, which is considered by his critics as the expression of nothing more than pessimism about the possibility of social transformation, constitutes for the philosopher a characteristic that prevents critical theory from an idealist position regarding the philosophy of history. We would also like to emphasise that, according to Horkheimer, complete certainty about this possibility could only correspond to an idealist and fatalist philosophical conception, according to which history must necessarily go through pre-determined stages. This idea, already expressed in some of the author's early writings, is also evident in "The Authoritarian State"⁵⁹, where the philosopher points out that both Hegel and Marx share the view that history obeys a fixed law.⁶⁰ Horkheimer holds, that fatalism at that time was expressed in the idea that the required state of maturity to change society had not yet been reached: "present talk of inadequate conditions is a cover for the tolerance of oppression."⁶¹ The inconvenience Horkheimer sees in this idea has to do with the assumption that a necessary unfolding of stages must be given and that the transformation cannot therefore be realised until the middle stages have taken place. That fatalist idea "was at

versity Press, 1994), pp. 133-134.

59 Max Horkheimer, "The Authoritarian State", in Andrew Arato and Eike Gebhardt (eds.), *The Essential Frankfurt School Reader*. (New York: Erizen Books, 1978).

60 Horkheimer, "The Authoritarian State", p.105.

61 Horkheimer, "The Authoritarian State", p.106.

the time an inversion of theory and politically bankrupt.”⁶² Against this, Horkheimer affirms that “for the revolutionary, conditions have always been ripe. (...) A revolutionary is with the desperate people for whom everything is on the line, not with those who have time.”⁶³

Unlike fatalist theories which describe reality as if it were only a “historical painting to be gazed upon” or a “scientific formula for calculating future events”,⁶⁴ Horkheimer states that “critical theory is of a different kind. It rejects the kind of knowledge that one can bank on. It confronts history with that possibility which is always concretely visible within it.”⁶⁵ Consistent with his critical optimism, in “The Authoritarian State”, Horkheimer claims that “not only freedom, but also future forms of oppression are possible”,⁶⁶ meaning that the assertion about society already being mature enough for a rational transformation does not suffice to guarantee that such a transformation will definitely take place. What could hamper social change is the continuity of the reproduction of the given: “as long as world history follows its logical course, it fails to fulfil its human destiny.”⁶⁷ However, Horkheimer states that even the global expansion of authoritarianism – plainly evident in the dreadful Hitlerian model – would not suffice to obstruct resistance against it.⁶⁸ The idea that the logics of domination – expanded though they may be – has so far not been able to eliminate the still existing possibilities of transformation is also visible in “The End of Reason”⁶⁹ when Horkheimer states that, in spite of the decline of reason, its destiny cannot be reduced solely to “the persistence of that horror”.⁷⁰ On the contrary,

62 Horkheimer, “The Authoritarian State”, p.106.

63 Horkheimer, “The Authoritarian State”, p.106.

64 Horkheimer, “The Authoritarian State”, p.106.

65 Horkheimer, “The Authoritarian State”, p.106.

66 Horkheimer, “The Authoritarian State”, p.109.

67 Horkheimer, “The Authoritarian State”, p.117.

68 Horkheimer, “The Authoritarian State”, p.112.

69 Max Horkheimer, “End of Reason” in Max Horkheimer (ed.) *Zeitschrift für Sozialforschung*. (München, Deutscher Taschenbuch Verlag, 1980).

70 Horkheimer, “End of Reason”, p.387.

Reason has borne a true relation not only to one's own existence but to living as such; this function of transcending self-preservation is concomitant with self-preservation, with obeying and adapting to objective ends. Reason could recognize and denounce the forms of injustice and thus emancipate itself from them. (...) In the inferno to which triumphant reason has reduced the world it loses its illusions, but in doing so it becomes capable of facing this inferno and recognizing it for what it is. (...) Mutilated as men are in the duration of a brief moment they can become aware that in the world which has been thoroughly rationalized they can dispense with the interests of self-preservation which still set them one against the other.⁷¹

Besides taking into account that the expansion of rational domination has not managed to annul every single force confronting it, this quote evidences that Horkheimer sees liberation as a possibility that could not be realised in the absence of reason. What is necessary in this respect is for reason to change its social role and give up its eagerness to dominate while attempting to realise more solidary goals, preserving a relationship with "the living as such",⁷² namely, with those realms of nature that go beyond the human. Horkheimer notes that the end of social domination requires a limitation to the expansion of that reason oriented towards dominating nature.

Also, in *Dialectic of Enlightenment*, and in spite of the apocalyptic readings that have been made of the book, it is possible to find many traces of hope about the possibility of achieving a transformation, one that keeps up with the technical state of development according to its present time. Having stated in *The Authoritarian State* that "the improvement of the means of production may have improved not only the chances of oppression but also of the elimination of oppression"⁷³ the authors of *Dialectic of Enlightenment* make a similar statement when they affirm that "the thing-like quality of the means, which makes the means univer-

71 Horkheimer, "End of Reason", pp. 387-388.

72 Horkheimer, "End of Reason", p.387.

73 Horkheimer, "The Authoritarian State", p.106.

sally available, its 'objective validity' for everyone, itself implies a criticism of the domination from which thought has arisen as its means."⁷⁴ In other words, what Horkheimer and Adorno notice is that, although technology as an instrument for domination embodies the objectification of the progress made by reason, instruments do not perform a task solely by themselves, they require a subject to employ them. In the utilisation of objects conducted by subjects, it is possible to set aside the motive for which those instruments have initially been designed. The progress of civilisation in the context of capitalist society keeps enlarging "real suffering" proportionally to the "means of abolishing it".⁷⁵ That is to say, the more technical instruments – which could bring real suffering to an end – develop, the deeper exploitive situations become. This circumstance, which for the authors constitutes clear evidence of the decline of reason, cannot be stopped by any means alien to reason itself: "a true praxis capable of overturning the status quo depends on theory's refusal to yield to the oblivion in which society allows thought to ossify."⁷⁶ The authors, far from neglecting the possibility of a transformation towards a better social situation, or the relevance of technology in the process, do claim that the role assumed by theory and reason must be modified in order to break the one-sided orientation social progress has had for centuries.

Finally, we can point out that Horkheimer continues to foresee the possibility of social transformation in *Eclipse of Reason*, in many passages of which he observes the persistence of signs of resistance against oppression. As long as these signs differ from the characteristic logic of the given social form, they could contribute to orienting society in some other direction. In this sense, Horkheimer points out that "there are still some forces of resistance left within man",⁷⁷ and that "the masses, despite their pliability, have not capitulated completely to collectivization".⁷⁸ Also, it

74 Adorno and Horkheimer, *Dialectic of Enlightenment*, p.29.

75 Adorno and Horkheimer, *Dialectic of Enlightenment*, p.32.

76 Adorno and Horkheimer, *Dialectic of Enlightenment*, p.33.

77 Horkheimer, *Eclipse of Reason*, p.95.

78 Horkheimer, *Eclipse of Reason*, p.97.

is to be observed that “the profoundly human resistance to irrationality tends to be a resistance that is always the core of true individuality”.⁷⁹ This optimism, nevertheless, is still nuanced by the idea that there can be no conclusive guarantee that the desired transformation would take place anyway. Horkheimer states that, “although the unbearable pressure upon the individual is not inevitable”,⁸⁰ “nobody can predict with certainty that these destructive tendencies will be checked in the near future”.⁸¹ In this sense, towards the end of the last chapter of the referred article, he reminds us once again that the critical function of theory is to be at the service of an emancipatory goal: “the method of negation, the denunciation of everything that mutilates mankind and impedes its free development, rests on confidence in man. (...) denunciation of what is currently called reason is the greatest service reason can render.”⁸²

5. Final observations

We have analysed some aspects of Horkheimer's interpretation of positivism and pointed out that Horkheimer's stance on science and technology, and their role in social transformation, differs radically from the positivist point of view. Although some philosophers – such as, for example, Neurath – share Horkheimer's longing for social emancipation, the *Institut* director's position differs from theirs in that he does not consider scientific progress a secure path towards emancipation. We have shown that Horkheimer holds a broader idea of social transformation, in which scientific and technological progress play a role, but are not determining for that transformation.⁸³

79 Horkheimer, *Eclipse of Reason*, p.109.

80 Horkheimer, *Eclipse of Reason*, p.108.

81 Horkheimer, *Eclipse of Reason*, p.108.

82 Horkheimer, *Eclipse of Reason*, p.126.

83 It is worth noticing some parallels between Horkheimer's critique of positivism and his stance towards social progress with that of Habermas. Furthermore, Habermas's idea of progress involves the moral-practical dimension of communication and interaction. In this way, it becomes relevant to reconsider what Horkheimer and Adorno have referred to as the domination of

Furthermore, we have argued that Horkheimer's position does not lead to pessimism regarding science, technology and social transformation, but the philosopher is aware of the difficulties of a mere scientific and technological view, and he adopts another point of view which we have designated as *critical optimism*. At the same time, we have claimed that this position can be found throughout different periods of Horkheimer's work – although not always through the same arguments and conceptualisations. It is therefore not feasible to state that a shift of perspective has occurred since the texts from 1937. As we have shown through the central works of the author until 1947, it is possible to foresee that the interdisciplinary project Horkheimer proposed as the Institute's main task,⁸⁴ in which empirical research would converge with the philosophical basis of social research, was not left aside, in the same sense that the judgment on the relevance of science for social change was not abandoned.

Horkheimer reckons that positivism, encouraged by the usefulness of the results at which science arrives, is optimistic with respect to scientific and technological progress and seeks to enlarge them as a strategy towards social change. Against this view, Horkheimer states that positivism does not make it possible to acknowledge the context of exploitation and domination underlying social order, and that its optimism with regard to the role of science and technology in capitalist society contributes to the perpetuation of the present situation.

Horkheimer affirms that positivism fails in its way of achieving knowledge of the social reality. Although he admits that empiricism proved its capacity for developing useful methodological strategies, he holds that in most cases non positivist methods can go deeper in their understanding of reality. Horkheimer's concern is rooted in the fact that in the name

man by man, even when many differences may be observed between both generations of critical theorists. These themes of the philosophy of Jürgen Habermas are addressed in Craig Browne, "Social Practices and the Constitution of Knowledge: Critical Social Theory as a Philosophy of Praxis", *Berlin Journal of Critical Theory*, vol. 4, No. 1 (January, 2020), 37–156.

84 Horkheimer, "The Present Situation of Social Philosophy and the Tasks of an Institute for Social Research", pp.1–14.

of (useful) scientifically attained results, other forms of thought are usually underestimated, so that theory ends up losing sight of the conditions of social domination which are proper to the capitalist system. Positivist social investigation is therefore not able to account for the submission to which humans are submitted or for the oppressive mechanisms that operate in current society. Positivist theory is therefore unable to put an end to them.

Nevertheless, from Horkheimer's judgment of positivism, it is not feasible to conclude that he is pessimistic about the role of science and technology in the desired process of social change. What is important in this sense is to notice that he does not believe that science and technology alone can lead towards that possible social change. Instead, Horkheimer claims that the given form of scientific activity must be subject to critique in order to contribute to political practice.

Although Horkheimer is not pessimistic towards technology as such, he is unwilling to place hope on the hypostasis of a certain aspect of reason, namely, instrumentality, which has become the distinctive characteristic of the bourgeois model of science. The sort of technology developed upon that hypostasis establishes a one-sided relation to nature, solely based on domination. From this relation follows, on the one hand, the essentialization of nature as an object that has to be ruled by reason, and on the other, the totalitarian conception of reason as the only way to relate to both nature and society.

What we have argued about the role of science in historical social change aims not only to contextualise Horkheimer's understanding of science, but also to illustrate its absence of essentialisms, at least with regard to this subject. In this sense, we would like to state once more that Horkheimer did not subscribe to a pessimist conception of science, in which it is considered to be the source of the degradation of humanity. Although Horkheimer notices that science cannot nowadays perform the same revolutionary role it already did in the decline of feudalism, this is not sufficient to lead him to adopt an anti-scientific position or to give up critical theory's transformative aim.

Finally, Horkheimer's historical reconstruction of the configuration of instrumental rationality does not lead to a renouncement thereof. On the contrary, the desired form of society would allow for instrumental rationality. It is crucial to understand Horkheimer's idea of reason in order to grasp the possible transformation he foresees. His understanding of rationality is not limited to the idea of domination or limited to enlightened reason, which implies the idea of reason as a means to freedom through the autonomy of human beings and control over the self. On the contrary, it implies a new role for the subject, understood both as social and individual, not only as reason, but also as a natural being. At the same time, Horkheimer's idea of reason denotes a particular conception of nature. He claims a more reasonable relationship between reason and nature so as not to reduce it to mere domination. Finally, his position is oriented towards the configuration of a future social form: the rational society. Because of its broadness, this last issue will be thematised in future works.

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