

REFLECTIONS ABOUT THE SCIENCES

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ABSTRACT

It is reflected about the Sciences. First of all, it is examined what would be constitution of a theory, getting together theory and practice in a way to reflect about the process of scientific production. It is defended that as any knowledge the Sciences are necessarily linked to some epistemology, methodology and ideology. It is necessary to know the relations of power and its clash inside the Sciences, to know how they are produced, guiding and defining until the thought of their own professionals and scientists.

Keywords: Sciences; Epistemology; Methodology; Ideologies; Power Relations; Scientific Production.

1 ABOUT SOME THEORETICAL ASPECTS

In first instance it is necessary to argue that the Sciences are one among a myriad of speeches around the reality that surround us. It is dealt here with the Modern Sciences, a knowledge which parts of the experience acquired by the senses, of the private facts, organized, selected and systematized experimentally, which gradually by the common characteristics which it detains and similar correlations of cause and effect among themselves, indicate universal principles:

So, what is the science? I explained it on the precedent paragraph: it is, first of all, a classification, a way to approach facts which the appearances separated, despite of being linked by any natural and hidden kinship. The science, among other terms, is system of relations (POICARÉ, 1995, p.167).

It is discussed and questioned the concept that the Sciences are based in the facts and on their relations. Although all the existing speeches do not create the material world, concrete, they give all the meanings and senses that it has:

There is no way to get rid of diversity. The ethics is not literary critic nor history, biology, physics or psychology – and any of these is the same activity than any of the others. It is to be expected the pluralism because there are so many good kinds of descriptions of things as the proposal to describe them (BLACKBURN, 1998, p.4).

The mistaken object of the Sciences is the fact, the scientific information is in another category than the fact, or rather, in category of words which refer to the facts, but are not the facts themselves.

Information and facts are distinct things. The fact and the information are not connected among themselves in an absolute and unique manner, it is meant, and in a way that it would exist only one information for a determined fact and with a unique meaning. The fact and the information exist freed from each other; they are very far in time and space; because the same object of knowledge may be “read” of many different ways. The discursive and narrative practices about the concrete reality of musicians, economists, sociologists, historians and others are contextualized by space and time. In terms of fact and the information, specifically in the area of Sciences, it is realized, given the technological advance – fact – and the evolution of theory – information.

The matter of distinction between fact and information makes it easy to understand the Sciences as theory. But what would be the effective differences between fact and information?

The Sciences deal with the interpretations about the information and not about the fact. It is understood of fact something which occurred independent of being captured by some interpretation contained in scientific information registered. This, on its turn, is the interpretation which comes from the human.

The fact's already gone and emerges in the information registered such as books, articles and documents, and it is not happening necessarily at the moment of the registration. The information is that what the human can make out of the fact, which is many times past. The information registered is literally contained in support

material and may be found in different shapes: printed, electronic or digital, and in any type of storage: database, bookstores, libraries, video and CD libraries, etc., it where it is searched when information is wanted.

To know about the facts it is not necessary to stand before them when they appear, but to obtain information generated by it. We can go anywhere where there is large concentration of information, aiming to satisfy our need for information about something. Anywhere we research it is always found interpretation about a fact, or, the fact when changed into information which was learned and interpreted. The object of the Sciences is not only in the language, printed in any support material, but it is also between the lines, in the man interpretation.

When we read a new author of the Sciences area, we should not say we do not learn more about the Sciences, but about that author, after wall it is learned how he sees his Science and not the Science on itself.

Many things are not learned from the fact when changed into information: the example of this is the withdrawal of women from the past of humankind. Now they try to fix this situation, but what would happen if other groups which do not domain the production, the consumption, the distribution of scientific information took them into their power?

In any fact liable to receive information, there is not on itself any production of information, derivation that starts on it, the concept does not come out of the rock, of the material, but this does not avoid that fact be interpreted by several scientific speeches or not, by many kinds of information. Sociologists, economists, historians and geologists, all of them from their methods, read a diverse fact: “[...] that the same object of investigation is liable of different interpretations by different speeches; and that, even in the scope of each one of these speeches there are interpretations which vary and differ in the space and time” (JEWKINS, 2001, p.27).

There is not any information that is inherent or intrinsic to any fact, but it brings on itself the categories and the meanings which give sense to the facts and, due to it, really seem to be where the facts are. Analytical instruments, descriptions, methodologies, are the means which applied to the fact as input generate the speech of scientific knowledge: “Methodology, act of driving the spirit in the research of truth,

methods discussion” (GALVÃO, 1994, p.22). The world is an “opened book”, able, with its events, to stimulate the search for the human truth, in which it is used several and infinite speeches to understand it. The own interpretation of the fact appears as a fact on itself for us. Such interpretations are never definitive and absolute, besides changing over time they change simultaneously in the same place, because different people have different interpretations about the fact, and this among the greatest experts of each scientific speech.

All scientific speech starts in a point of human history, a long after the facts have occurred; even the experts of each area interpret, distinctly, the knowledge of the area. The own speech needs to be interpreted, what makes it target of the criticism of the own experts who make use of these mutable and theoretical speeches to understand the reality and the man.

It is understood that the Sciences as speech, is not mistaken with research to generate knowledge about facts, because they are in a different category, but a research to generate knowledge about information. But there is a second point besides this, if fact and information are separated mutually so how to make them to take part one of another, be united? This will depend on the expert who uses the information, how he understands this information, besides the claim that with it we get to a safe knowledge. But all knowledge is limited by the information it receives, what means, it can never obtain from the fact all that there is on it, but always part of what exists on it.

The Epistemologies deal with the study of the Theories of Scientific Knowledge, it is another type of knowledge which is aimed to be understood, among other things, because it is possible to know scientifically the essence of the Science, its source and grounding:

Epistemology (also named Theory of Science) is a part of the Philosophy of Science which concerns to the nature of scientific knowledge and its great problems: how and in what conditions is it possible to know? Is there absolute certainty? If so, how and in what conditions? What are the characteristics of the knowledge of these Natural Sciences, the Human Sciences and the Formal Sciences?” (CENTRO..., [200-], p.32).

This way, the Philosophy holds the Sciences, because it helps to know the elements inherent to the scientific information. As we cannot know everything about the scientific information registered, to retrieve all the information about it, the knowledge becomes circumstantial, produced by human hand, the one which is always in confront with others scientific interpretations. Who produces the fact does not necessarily pass through the same confront, on the contrary, this makes no difference for people in general.

There is always someone who wants to boast his knowledge about the universal and absolute truth, make of his individual knowledge the unique truth, but this is obviously impossible: “What there is to be defended is that, for example, there is no *priori*, or any normative epistemology, or any reduction from a speech to another, or any identification of properties of a level with the ones of another” (BLACKBURN, 1997, p.15).

It is necessary to install the doubts about the Sciences, because only this way it is possible to reach what they are and can be. When it is accepted the fact that the Sciences are what they are expected to be, and not something in itself, it is possible to analyze it from some epistemological, methodological, ideological points of view, with the aim to discover why they were produced in a determined way and not another.

The power is restricted to the possibility to know and to how to know. If we could know completely the scientific information there would not be more sense to the existence of debate among scientists. The Sciences would cease to produce new theories or theoretical supplements.

The fragility of the facts makes it possible different interpretations about them, besides no one can deplete all the information about a fact, because it's content is infinitely unlimited, it is possible to say a lot about something, but never all, what in practice is a great loss. The interpretation never effectively corresponds exactly to the fact in itself, because we will never have the completeness of the fact before us, and what remains from it was a corruptible registration, the one which would be impossible to be done covering the unlimited semantic content of the fact.

In second place, the fact can never be retrieved the way it happened concretely, because it was event, happening, situation and not information. When the fact does not exist but it can only be debated in opposition to other reports, other information. There is not any information that is an absolute reference, from what the other information should be guided or submitted, but only interpretative variations about the fact.

The historic state of our culture as a whole and our personal way to interpret the world form the habits and the categories with the ones the facts are interpreted. The study of facts is a study of the information which interprets them, therefore, the information is not an appendix of the Sciences, but the content of the own Science:

I do not want to say with this that we simply invent histories about the world or about the past (I mean, that we got knowledge from the world and the past and then invented narratives about it), but that the affirmation is much stronger; that the world or the past always get to us as narratives and that we cannot get out of these narratives to check if they correspond to the real world or past, because they correspond to the “reality” (JEWKINS, 2001, p.28).

In third place, the information is always sentenced to be a human and subjective construction. It puts itself intermediate between us and the fact. When it is demanded the information to be written, certain liberty is taken out from the emitter, because it usually permits access to their sources. However, the idiosyncrasy of the one who detains the information, his preferences and perspectives, shape the information, and our subjectivity determines what interpretation we will assign. The fact is conditioned by the information what is possessed about it more recent. It is product of the facts, but also the information about them is our product.

No one gets to disengage of their own knowledge and of the assumptions they use. The information goes beyond the own fact in hypotheses, and now it is not possible anymore to be a participant of the fact that does not occur anymore, at last, the fact obeys to the interpretation which is given to it.

At the same on which the sources restrict the imagination about the fact, there are no limits for the generation of new interpretations. The sources restrict the possibility to say anything about the facts, but they do not demand to be followed only one interpretation about it.

The Sciences do not capture the fact completely and the scientific information registered, because the full fact and the information always escape, remaining only interpretations of them, from where other information will rise. However as there are new instruments to work with the information available, it is get to know more about the facts than those who simply witness it, it is not only rescued what happened, but it is also reconstituted revealing aspects that not even remotely were part of interest of the participants from the fact. In this process it is changed and emphasized the aspects in the facts, given them a new feature. The aspects are crunched, selected and pointed out, not to distort the deliberate way, but to give them a meaning.

When a zoologist dissects an animal, certainly he “changes it”. Yes, at dissecting it, it is sentenced to never know all about it. But not dissecting it, it would be sentenced to never know anything and therefore, never say anything (POINCARÉ, 1995, p.138-139).

The information confers to the fact a shape in time and space. It is not only about an empty speech which gives sequence to their constitutive elements, but to an underlying logic which attribute significances. As information generates synthetic links, summarized of cause and effect among the facts, it seems wider and perceptive than the fact itself should have been.

The Sciences are a speech in changing since they were created, built by its theorists, and full of interpretations about facts common to all: move the point of view and they will appear new interpretations. It cannot be forgotten the influence of the methods and ideologies used. In the Sciences it is know that the real is being investigated, but this real will never be recuperated completely. The work of research and reconstruction of the real searching for the truth never finishes, but this does not invalidates and makes useless this effort.

The knowledge in the Sciences advances, although it does not always exist empirical or experimental evidence of this knowledge. The fragilities of the Sciences may reside not only on its ideological character, but also on the scarcity and reliability of the available sources, what would make the expert to be obliged to use his power of interpretation. Therefore, they are necessary objective and firm methodological rules, with the purpose to guide the expert interpretation. It is not because the truths

of the Sciences are not immortal that this relieves the methodological rigor. The legitimacy of knowledge of Sciences comes from the methods and procedures they use, the ones which limit the interpretation of scientists: “Method, set of available means conveniently to get to a result that is wanted; how to proceed” (GALVÃO, 1994, p.22).

However it is understood that what restricts and determines the interpretation are not the methods and neither the facts, but the ideologies. Face to so many methodological possibilities which one should be followed? Which method is truer? All method wishes to be systematic and logical, but inside its own frame of references, these are characteristics that all methods also have. There is not any consensual criterion which says that a method is better than other, nevertheless methods are not safe ways to the truth. Besides this, there is not agreement between the different methodological chains, even about foundations and epistemological and scientific principles to the Sciences.

However there are common concepts used by scientists. These concepts which apparently are consensual actually fluctuate in time and space, it is necessary to historicize about the Sciences, to realize that its groundings are not universal bases, but local and singular manifestations.

Such concepts have their origins in the ideologies, and not and the applied methods:

On this meaning, the term ideology is taken more on its sense of “world view” and of “system or constellation of beliefs and attitudes” than on its sense properly Marxist, to the one ideology is the complex of ideas which sustain the ruling class in the power (COELHO, 2004, p.204).

Certain ideology guide us to a scientific or politic practice, determining the motivations of this politic, what is expressed or understood by Sciences, what roles are attributed to the scientist and to the consumers of Sciences, how it is organized the production of the Sciences and what should be its place in the structure of the society. On this interim the way of producing Sciences and its Public Politic may be libertarian, authoritarian, totalitarian, interventionist, liberal or even democratic.

What would happen if instead of using natural evolution it was used environmental adaptation? If instead of talking about profit we talked about expropriation of labor?

When talking about the ideologies, there is no science which escapes of its effect, not even the exact sciences. On this sense, there is not any theory or method inside the Sciences that is not full of ideologies, so that arguing that a determined theory cannot be exposed in benefit of other impartial and legitimate is ideological and does not make sense. All the information about the facts are not contained beforehand on them, they always come from outside and are produced to make other see them always intended for someone.

The speech of the dominant groups despite being prevalent needs to be changed continuously. The Sciences should be “re-worked” and ordered by those affected by the relations of power which they establish, because as dominated as dominant have their own versions to justify their practices, and the subversive versions of the dominated should be repulsed and excluded of the official speech:

The similarity among the fields makes that the fights for what is at stake, specifically in the autonomous field produce automatically euphemized ways of the economical and political fights among the classes: it is in the correspondence of structure to structure that it is accomplished the function properly ideological of the dominating speech, through structured and structuring with tendency to impose the apprehension of the orders established as natural (orthodoxy) through the masked imposition (however unknown like this) of systems of classification and mental structures objectively adjusted to the social structures (BORDIEU, 1973, p.4).

As the dominated react to the official dominant speech, these controversies generate reorganizations to solve these conflicts and maintain the domain over the Sciences of the dominating speech. The Sciences are formed on this implicit conflict, veiled:

The survivors of the Darwinist fight are proud of their ability of adaptation and the scientific or intellectual survivors of its Darwinist fight, in which the theories are designed and or die or survive, are proud of their rationality (BLACKBURN, 1997, p.3).

It is observed they are a speech in constant dispute and confrontation, with different meanings to different groups. It may be aimed from the Sciences that they

are aseptic and impartial, without any fight for the power, which generate passivity in the dominated, promote the individualism, available tactics or strategies to the revolution, or provide the subsidies to the own counter-revolution. For a revolutionary the Sciences are very different than to a conservative, being the uses of Sciences the most varied possible, what makes it an impractical and inconsistent Science common and accepted by all.

It is believed that the occurred facts legitimate the attitudes inside the Sciences. Moreover, on them there is a search to understand the present and the projections made about the future, and a demonstration of strength and of desire to expose them, in which each group constructs for itself and for the others its own identity:

The symbolical systems distinguish themselves, fundamentally, as they are produced and at the same time appropriated by the set of a group or, on the contrary, are produced by a body of *experts* and, more precisely, by a field of production and of circulation relatively autonomous: the history of transformation of myth into religious (ideology) is not separated of the history of the constitution of a body of producers specialized in the speech and the religious rites, it is as to talk about the progress of the *religious work division* – being itself a dimension of the progress of the social work division, therefore, of the class division – which conducts among other consequences to *deprive* the lays of the instruments of the symbolic production (BORDIEU, 1973, p.3).

Almost always there is not awareness of all these elements, but for all the groups which aim to sustain as preponderant or supplant other in the domain of the Sciences the ideological jargon the “Science as knowledge” becomes necessary:

The science as any other activity which involves social collaboration is subject to changes of fortune. For difficult that this simple idea seems to be to the people raised in a culture which gives the science a prominent place, if not of predominance, in the order of things, it is evident that the science is not immune to attacks, to the restriction and to the oppression (MERTON *apud* DEUS, 1979, p.37).

Epistemologies, Methodologies and Ideologies determine the Sciences. The first shows that the fact may never be widely embraced by the interpretation given by the scientific information, that as fact as information have a considerable distance among themselves, and that it is not gotten to eradicate this distance. The second wishes to limit the imagination of the scientist and to give more rigor and universality

to its discoveries by means of methods seen as safe, assuming that a base of skills, concepts, routines and procedures would produce objectivity. However, there is almost an infinity of methods and conceptual bases, the ones which are always partial and some recent, considering that the Sciences are a speech in dispute, in which groups and classes produce information about the facts to quench their interests and please themselves.

There is no Science out of this process of fight. The consensus only exists temporarily, as the predominant voice drowns the others or integrates them to its speech. Harry Collins shows clearly as the scientific truths in the practice are results of negotiations among the pairs, what is always a stable agreement in the power hierarchy:

One of its goals is to show the infinite flexibility of interpretations which the authors propose, the fact that the consensus which emerge disguise multiple and heterogeneous considerations, which the practical conclusions about the ones, finally, the agreements are made are always widely contingent (COLLINS *apud* DOMINIQUE, 1996, p.9).

The Sciences are theoretical, but ideological, namely, dipped into material and power interests. This involves all the Sciences, even the most common and daily practices in the Universities and Institutions of research.

2 ABOUT SOME ASPECTS OF THE SCIENTIFIC PRACTICE

In different spaces and for different reasons it will be produced scientific information, besides existing the official Sciences, designed as professional, what means, that pay salary to their scientists and are in the universities, there will exist who organizes the information of different manners: in the poor and rich countries, in different scientific communities.

It is necessary to get out of stereotypes and prejudice to advance in the Sciences, the alternative solutions should be always considerate, because they make a positive counterpoint in relation to the predominant and established doctrine:

We get close to an unprecedented change in the knowledge: this is each time less done to be reflected and discussed by the human minds, each time more done to be registered in informational memories manipulated by anonymous forces, in first place the States (MORIN, 2006, p.12).

It may be thought about breaking the hegemony of the dominant ideologies starting from education, but it is precisely at school and at the university that these ideologies are instituted, being important to realize how they are put, what means, how the scientists who believe to do something impartial, behave to the maintenance of these ideologies:

An important line of work consists in the organization of spaces of consensus development: the system which governs us generalized the philosophy of competition in substitution to the solidarity, of the rivalry in detriment of cooperation (DOWBOR, 1995, p.17).

Interests and pressures involve the debate about the Sciences, which is also generated from the academic disputes in universities and institutions where they are given.

The scientists take to work their values, points of view, ideological positions. Besides this, they take many times unconsciously, their epistemological presupposed, they have certain idea for sure of how to produce knowledge. They make use of some categories, concepts inside these categories, besides believing in determined regularity of the human behavior. They will arise from these preconditions hypothesis, abstractions and organizations of the sources they have.

The building of a technical vocabulary influences not only what the scientists see but also how they see. These vocabularies are in constant change, but without them it gets impossible to the communication among the scientists, neither understanding what they themselves are doing would be possible, neither agree nor disagree one of each other.

Origin, factor of impact, authenticity and reliability are aspects of the sources filtered by the scientists, it deals with trying to establish a customary proceeding, which many times is accomplished with severity and rigor. The techniques of filtering these aspects vary much from scientist to scientist, but it is through this ability that they can “invent” or produce the Sciences.

Documents, registrations, abstracts, work of other experts, all these materials are consulted by the scientist on his productive effort of work, besides people with work not published.

New indications with old evidences should be conciliated all the time, inserted in circumstances, contexts and different situations, always in the aim to refute or prove his thesis. Change the indications into thoughts, in speeches about the scientific information. Reproduce the old into new categories. Changes the intellectual human adventure registered in the Sciences.

After the work is over, registered effectively, the scientist needs to promote it to the others. In this context, they return the epistemological, methodological and ideological questions foisted in the practice of publication.

The reading of a text is never repeated, this is, the interpretation and the context also change, not existing two identical readings. At this sense, the authors usually do not have how to pass their intentions and interpretations to the readers, and neither the readers get to understand all the authors want to pass. Besides, the same text inserted in a different context generates different readings and interpretations, if it is in a reality of differences: “what we cannot forget, actually, is the first condition of the language: the one to always be incompleteness. Neither the subjects nor the speeches and senses are ready and finished” (PIOVESAN, 2006, p.3).

It seems to be in a chaotic interpretative flow, but actually “it is read” the texts in a predictable manner. What makes similar the readings is not the absolute identity, but a sort of general consensus. However this is result of the relations of power fought between the groups and individuals do not accomplish anything more than the role of the ideologies. They may say that certain texts are closer to others, that some are less sortable, others are less useful to people, etc. They are found recommended bibliographies and decimal classifications – Dewey – but such parameters or references, in last instance, are arbitrary and dogmatic, they only satisfy the needs of groups and dominant classes:

The “conditioning” power [from the persuasion] shows itself fundamental in the modern societies, where values such as liberty

and democracy are appreciated, although it is not realized that the absence (or little presence) of coercive or “compensatory” instruments [power by reward or punishment] explicit means only that the power is exercised in another way – through the dominating thought, of a set of values and principles accepted as “natural” (SILVEIRA, 2000, p.7).

But if the Sciences are produced by infinite interpretations from what it may not be affirmed whether they are right, how can Science be made? Is it not fallen in an apolitical relativism?

This manner of thinking has some merits: it is freed of the old universal certainties and it is understood that while everything is historic everything is relative. It is necessary to destroy to construct, finally, to construct your point of view in the science it is necessary to annihilate other points of view, always remembering that it will be intended to someone, it will not be limited to itself. All the speeches and interpretations are relative and partial, but some predominate and impose themselves and others stay at the periphery, to the edge. It passes through evaluative hierarchies in the world, despite these hierarchies are unfounded, unsustainable.

The scientific knowledge is intrinsically related to the power: “Science and man power coincide, once that, being the ignored cause, the effect is frustrated. Because the nature doesn’t win itself if not when it obeys itself. And what to the contemplation is presented as cause is the rule in the practice” (BACON, 1997, p.33). The ones who detain the power produce and distribute the knowledge they want, finally, those who legitimate their *status*: In the XIX century, Benjamin D’Israeli, who directed the politic of the queen Victoria from England, reviewed the question in a very simple way: “*He who controls information, controls reality*” (DOWBOR, 2001, p.47).

Not escaping the relativism is to comprehend how this power is processed concretely. The relativism is not a dead end, but the first step to understand how the things really work.

3 SOME FINAL CONSIDERATIONS ABOUT THE SCIENCES

The Sciences are that which the scientists of the area make. It is not far from the truth, but this is too obvious. It would be easy to describe the profession of these scientists, the problem is not this, but how this occupation is inserted in the relations of power fought in any society in which it is born:

The “denounced” that the scientific activity would be so connected to the power and to the interests of the commonplace politic as any other social practices, it seems to have hurt a belief that not even the radical criticisms of the science as technoscience or the feminism could reach (PIVA, 2004, p.163).

What are the Sciences for different classes, groups and people? How can they use the Sciences? What do the Sciences depend on? For whom are the Sciences? It is answered: The Sciences are a mutable and questionable speech, with the pretension to understand an object named fact, through information produced by many professionals, the ones who recognize themselves mutually in epistemological, methodological, ideological and practical terms, whose results, once published and released, are used in the most varied possible ways, but that actually are linked to a set of power relationsⁱ in a time and space determined, the ones which produce, structure and distribute the meanings produced by the Sciences.

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ⁱ The dispute by power is a property of the Sciences and not an essential predicate that makes part of its substance, what means, it always follows all the Sciences, but if taken out it does not eliminate it, because it is not a quality without the which the Sciences would not exist, it is only a way of being of the Sciences, this concept of property is by Aristotle (ARISTOTELES, 1978, p.20).

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