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The Interaction between Social Imaginary and Descriptive Imaginary*

Abstract : The role of imagination in the process of establishing a scientific system of knowledge has been a controversial issue for a quite long time. It is only recently that the long tradition of western scepticism in this regard seems to be overdone. As far as we are concerned, the interaction between social imaginary and scientific imaginary is a process that deserves to be investigated carefully and that could reveal important clues about future cultural evolutions in contemporary society.

Keywords: scientific imaginary, social imaginary, scientific representation, postmodernism, information society.

Our intention in the present work is to discuss the interaction between social imaginary and scientific imaginary throughout a quite long period of time in which modern science became more and more socially and culturally influent and, in order to do that, it is necessary to clarify first the role of imaginary in science. Such a task could seem to be a little odd, since imaginary things are usually those that do not have a real existence, whereas science usually intends to describe as accurate as possible the real world (Wunemburger 2003, 12). Hence, from an epistemological point of view, the very use of the term "imaginary", when analyzing the structure of scientific discourse needs to be justified.

Starting from the age of ancient Greek observational science, the use of the imaginative faculty has been considered quite important for any person who intended to understand the real causes of natural phenomena, building this way a specific knowledge about the world, capable to surpass the mythological manner of explaining the structure of the universe. The problem is that not all the specialists were ready to admit that in Antiquity, but also in Medieval, Renaissance or Modern times. As a matter of fact, there is a quite rich tradition of scepticism in Western culture regarding the positive contribution of imagination to the effort of developing scientific knowledge. One of the most important causes for such reluctancy is the Plato attitude regarding the visible.

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(Vedrine 1990, 10-15) Since mythological explanations regarding the natural phenomena are full of imaginary creatures (gods, dragons, centaurs etc.), since science and philosophy are trying to produce rational, rigorous explanations able to help people go beyond the apparent image of the world, beyond visual illusions first of all, it is quite understandable that the role of imagination in generating abstract concepts has been ignored, neglected or even misunderstood.

Another important cause of such reluctancy is represented by the process of intense censorship of Renaissance scientific imaginary that was seen as a pre-condition for the emergence of Modern science. Because of it any excess of imagination, the faculty that was the very source of the majority of scientific but also pseudo-scientific concepts (Funkenstein 1986, 54-62), was regarded as dangerous. Perhaps in the same period of time the criterion of conceptual parsimony in creating a scientific theory became an important one, only the strictly necessary descriptive fictions becoming acceptable as components of a rigorous scientific theory.

However, after a long period of hesitations, the role of imagination in scientific activity was regarded with more objectivity, recent researches (Fauconnier and Turner 2002, 4) succeeded in showing that simple sensations represent the very basic component of many abstract concepts. To provide only two examples, Euclidean Geomentry and Modern Physics benefited from the use of imagination, taking into consideration the obvious visual component of their discourse. Still, the competition between the faculty of abstract mathematical intuition and the faculty of imagination as major faculties involved in scientific activity remained a difficult issue (Stewart 1995, 32-41).

With the birth of the experimental scenario, imagination became a mandatory tool for the scientist, not only necessary to reflect or reproduce essential details of natural processes, but also capable of creating exploratory experimental scenarios built on observation and selective representation. The schematic and incomplete descriptive analogies played an increasingly important part, preserving at the same time their representational selectiveness.

As a consequence, the imaginative component of scientific discourse became more and more evident in the same time with the historical evolution of science from Antiquity to Modernity (Koyré 1956, 22-30). Renaissance is really spectacular in this respect, as a transient period of time in which rational and mystical explanations of natural phenomena coexisted (Culianu 1984, 32-38).

Also, there are two aspects of the imaginative component of scientific discourse that deserve our attention. On one hand, we have the ontological justification of the fictional component of scientific discourse. Scientists are forced to invent new scientific concepts as part of their descriptive effort towards natural phenomena and to treat these creations of their minds “as if” they were perfect suitable tools for describing the physical world (Vaihinger 2001, 39-44).

Thus, the new scientific concepts become an indispensable part of scientific theories, being coherently embodied in them just before any process of

confirmation could take place. And there is a strong reason for that, since otherwise the theories themselves have little chance to be developed to a certain degree of precision in order to become viable sources of experimentally verifiable predictions.

On the other hand, the very first condition for any experiment, since the time of Galileo Galilei, is the theoretical background that makes it possible to build a defined position in terms of descriptive options, in terms of a conscious assumed arbitrary strategy for approximating the natural phenomenon through discourse. Not all the aspects related to the described phenomenon have the same relevance, the same importance in the description. Starting from the fact that any scientific theory can only be confirmed indirectly, by confronting its predictions in particular cases with experimental measurements, the description within it is intentionally oriented, ignoring what is supposed to be irrelevant.

After confirmation, the authority of such fictional components of scientific discourse becomes justified, but at the beginning, without the "as if"moment, scientists would be unable to finish the theory that makes the experimental scenario possible, which is also intentionally descriptive-oriented.

Of course, there are numerous cases when the primary descriptive hypothesis of what is relevant and what is not relevant is not confirmed. And after the experiment, the course of the first descriptive selection of relevant elements embodied in the theory is changed. Those descriptive representations that underline real characteristics of the studied natural processes gain a new level of epistemic authority, whereas the others decay to the status of pure and unnecessary fictions.

Usually, scientists are inclined to accept much easier the fictional character of those obsolete concepts that failed to prove their usefulness in the relation of the scientific discourse with the experience. They hesitate to accept the fictional nature or the fictional origin of the other descriptive representations that fulfilled the truth-correspondence criterion. Nonetheless, in our opinion, the origin of such concepts is also a fictional one, or at least their origin has a fictional component, because they are in the first stage pure creations of the human mind without any direct correspondent in the real world. But the hypothetical veracity they were invested with is remarkably useful as part of the whole process of developing a scientific theory, and this fact is especially visible in contemporary theoretical physics.

Even though such descriptive representations do not have from the beginning, especially for theoretical physicists, an autonomous existence in the real world, as parts of the scientific discourse, they are treated as if they would have actually such a correspondence with the real world that allows them to contribute in setting up an assigning strategy for reflecting this real world into the scientific discourse, which can be seen as a coherent, intentional and selective-oriented manner of designating things, of attributing the sense to some specific features of the physical real (Hutten 1967, 25-40).

Such a situation reveals the hypothetical character of the descriptive effort that characterizes the birth of a new scientific theory, bun some of the aforementioned concepts, until their experimental confirmation as useful designative conventions regarding the reflection of the physical world in the scientific language, remain for years with this provisory character. Because of the need for a coherent development of the scientific discourse, such concepts, like strings or quarks, are invested with provisory epistemic authority. (Gribbin 1999, 26-32)

Even for confirmed scientific concepts, we can still hold that they are invented by the human mind and represent only one possible manner of signifying the features of natural phenomena. Let us take temperature, for example. Does temperature exists as a phenomenon, or the concept of temperature as statistic function is our own creation and the genuine phenomenon could also be described differently, maybe in another culture, with another history of descriptions? (Hasok 2004, 61-68)

Picking some examples from the history of science, one can easily see the importance of these two fictional components of the scientific discourse. The ontological component that influences the fictional character of the genealogy of scientific concepts, and the assigning component that influences the selective attribution of importance of different features of the real phenomena in the strategy of signifying them more and more efficient and detailed in the scientific descriptions.

In our paper we intend to analyze the dynamics of such descriptive fictions, the rise and the fall of their epistemic descriptive authority within theories and the rules that justify the introduction or the keeping of such concepts inside a scientific theory. Moreover, we are interested in the rules of coherence with other components of the scientific discourse that individualize their dynamics in comparison with genuine mythological or generally cultural originated fictions.

Given the fact that descriptive fictions are put in common, are negotiated and evolve in accordance with the opinion of the most influent members of a scientific community (Cushing 1998, 52-70), given the fact that they have a private part and a public part that allows them to evolve at the level of individual consciousness, but also at the level of scientific community, we consider suitable to talk about scientific imaginary (Durand 1994, 25-39) instead of scientific imagination.

1. The dynamics of social imaginary in postmodernity

Up to this moment, we have been interested in the evolution of scientific concepts and we tried to emphasize the specific dynamics of scientific imaginary. Among other characteristics that individualize it, descriptive imaginary in its evolution obeys some restrictive rules that concern the so-called “concatenation criterion”, meaning the capacity of descriptive representations to

be coherently combined inside of a scientific theory that produces descriptions of the real world. Thus, in contrast with other types of imaginary, the descriptive imaginary benefits from a pragmatic selectiveness regarding what can and what cannot be integrated in the conceptual structure of an evolving scientific theory.

Another important characteristic refers to the mathematical component of scientific discourse that often justifies and determines the evolution of descriptive imaginary. Let us just remember, for example, how the idea of an expantionist Universe, one of the most popular in today's astronomy, emerged from the Schwartzschield solution of the gravitational field equations developed by Einstein (Hawking 1997, 12-19).

Now we are interested in describing the interaction between scientific imaginary and social imaginary in contemporary society, including the cultural influence of scientific imaginary nowadays. We must specify that we will refer to Western culture mainly, given the fact that Western knowledge and Western culture has spread all over the world in the last few decades and had enormous contributions in what regards the increasing prestige of scientific discourse all over the world.

One can easily observe that nowadays the influences between social imaginary and scientific imaginary are multiple and mutual. Actually, it is precisely this aspect that inspired the title of the present work. A lot of scientific concepts became part of the language used by common people to describe the world. A lot of mysterious subjects of contemporary folklore became subject for investigation with scientific tools and methods, even some of the religious mysteries have been investigated and several scientific explanations have been proposed with more or less success. Such phenomena were not common in the past and their increasing occurrence needs to be explained.

There are several causes for this state of affairs and the first of them regards the translation from modernity to post-modernity in Western society. As some specialists emphasized, during the transition from Renaissance to the Modern period a stern censorship of imaginary took place. The tremendous diversity of pre-scientific descriptive representations that populated various fields of investigation from magics (Alexandrian 1983, 12-19) to alchemy (Hutin 1992, 52-60) used and combined with mnemotechnics and early psychological training methods by masters such as Marsilio Ficino or Giordano Bruno (Culianu 1984, 55-120) were severely selected and filtrated following the principles of scientific method initiated by Descartes, Bacon, Hume and others. Furthermore, the positivist movement contributed to the maturation of modern spirit in Western society, a trend that was essentially monoparadigmatic from a cultural point of view. Thus, modernity meant not only the very high confidence in science for understanding the world and building an accurate image of it, but also meant some sort of addiction to the mainstream knowledge paradigm that led to a usually rigid attitude to other possible culturally motivated approaches to reality. Basically, the influence of scientific imaginary on social imaginary was

unidirectional, representing a struggle of selecting severely the terms in which reality was described.

Even though there are several elements that unify modernity with post-modernity, they are quite distinct in what regards the attitude towards paradigm changes, especially those of them that are culturally motivated. And the main cause for this is the new attitude towards paradigmatic diversity that characterizes postmodernity. In contrast with modernity, for which the faculty of reason and its main application - science – constituted the fundamental components of any valuable knowledge about the world, postmodernity does not avoid the comparison and the dialogue among different manners of arriving at a true piece of knowledge that allows human being to define more precisely its ontological condition from an epistemological, but also an ethical point of view. (Grenz 1996, 15-24)

This is a natural consequence of the fact that postmodernity is usually pessimistic towards the capacity of science to solve the most important problems of humanity. Moreover, the reason, as fundamental faculty used in establishing scientific knowledge, is regarded by the postmodern with some circumspection, since the main product of its use, the scientific knowledge that made possible the contemporary technology, contributed in such unfortunate manner to the destruction capacity of modern warfare. Thus, instead of blaming the faculty of reason for failing in producing philosophical reflection powerful enough from an axiological point of view to determine the avoiding of military conflicts, postmodernity blamed the faculty of reason and science generally for making possible atomic disasters and other terrifying events.

One of the most important consequences of such a pessimism towards pure analytic reasoning and towards science is the arisal of a considerably more open attitude towards cultural diversity that could represent, from an anthropological point of view, a rich source for discovering other methods of developing different types of knowledge about the world. These new types of knowledge could be not so rigorous in the rationalistic sense but, paradoxically, they could be more efficient in an axiological sense, offering human beings a greater degree of equilibrium in the relation with external world, equilibrium that Western thinking, with its positivistic manner of censoring descriptive representations, failed to deliver. This way, Western postmodern society surpassed the complex of superiority that characterized Western cultural anthropology at the beginning of the XX-th century.

On one hand, the new attitude towards other cultures, combined with intense circulation of values, also enabled an important change of attitude regarding cultural diversity, and became an important cause for the social imaginary effervescence. Thus, scientific methodology was applied to a diversity of pseudo-scientific problems and scientific scenarios entered in direct competition with other types of widely spread explanations.

2. The interaction between social imaginary and scientific imaginary in postmodernity

We can talk now about the important and surprising influence of the social imaginary on the scientific one. On the other hand, the influence takes place also in the opposite direction, mainly because contemporary society is dominated by mass-media, which puts in circulation different scientific concepts and connects them to the popular explanatory scenarios. As a consequence, the mixture between scientific and pseudoscientific representations is stimulated, the mixture between the possible and the impossible. And it is necessary, from time to time to put in order all this mélange, to clarify what claims are scientifically sustainable in terms of scientific approach (Kaku 2009, 16-32).

One has to take into consideration the fact that the transformations occurred in late Renaissance implied a profound selection of scientific imaginary, but the descriptive imaginary did not disappear from science. On the contrary, its role became more substantive in a methodological sense, if we think about the experimental scenario, which was from the beginning, in times of Galileo Galilei, an imaginary one. (Stengers 1995, 76-83) It is just that the dominating criteria present in the evolution of descriptive representations changed. Descriptive imaginary evolved more and more on pragmatic criteria of selection. Among these criteria, the most important one we consider to be the concatenation criterion, whereas the second is the criterion of strict necessity, anti-inflationist in what concerns the number of descriptive fictions used to depict the world and invested with descriptive epistemic authority in this regard.

Nonetheless, in information society (Castells 1996, 48-50) scientific knowledge and information networks are intrinsically linked (Himanen 2001, 81-90), so the structuring of a reality as image of the real world is more than ever a problem that highly depends on negotiation process responsible for the maturation of certain concepts inside of a scientific community.

So the influence between social imaginary and scientific imaginary is mutual and this reciprocity became obvious in many fields such as science-fiction literature and filmography, alternative medicine (Drouot 1998, 9-14). The prestige of the scientific discourse is beyond any doubt, founded on outstanding technological improvements (Hottois 2004, 18-25), but in the same time, the public space is dominated by mass-media, which promotes a mixed type of discourse, combining scientific information with different cultural, popular perspectives upon the physical real. Thus the construction of reality in public space is in the same time culturally and scientifically dependent. On one hand, mass-media transfers some pragmatic criteria, that are specific for science, into public space and encourages the selection of descriptive representations. On the other hand, it brings many pseudo-scientific considerations regarding the world in front of different types of audience. The future is widely open towards more complex interferences between social imaginary and scientific imaginary, globalization being one of the main causes of such intense superposition

amongst different types of realities with complex cultural functions, religion, science and culture being only the primary ingredients of those mixtures that have the main goal to make the Universe meaningful for contemporary human beings.

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