

## **SCIENCE AS A "REALITY SHOW": THE MINDSET OF ACADEMIC RESEARCH**

### **LA CIENCIA COMO "REALITY SHOW": LA MENTALIDAD DE LA INVESTIGACION ACADÉMICA**

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#### **ABSTRACT**

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This article presents the results from a qualitative research oriented towards analyzing the way the concept of science is understood in universities and how such understanding defines the development of academic research in this area. The results of the research, done under the tenets of the Grounded Theory to university professors, concludes that there has been a transformation in the way research is understood and promote which causes a certain number of tensions and dynamics in the academic environment of social sciences and universities.

Keywords: science, scientific knowledge, research, university

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#### **RESUMEN**

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El artículo presenta los resultados de una investigación cualitativa orientada a analizar la forma en que es aprehendido el concepto de ciencia en el escenario universitario y cómo dicha comprensión determina el desarrollo de la investigación académica en ese ámbito. Los resultados de la investigación, realizada bajo los postulados de la teoría fundada, permitieron comprender que se ha producido una transformación en la manera de entender y promover la investigación científica, lo cual causa un determinado número de tensiones y dinámicas en los espacios académicos de las ciencias sociales y las universidades.

Palabras claves: ciencia, conocimiento científico, investigación, universidad

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Recepción artículo: 25.04.2018

Aprobado:06.06.2018

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## **I. Introduction**

Neoliberalization of the education has brought significant changes in the way universities work today. Within this historical frame, standardized methods, transnational organizations and a fixation for measuring the results of research activities, altogether in one logic, have become principles for scholars around the world. This new type of imposed "practical sense" (Bourdieu) has intensified the instrumental rationality for the academic world, classically understood as a place for the incubation of critical thinking and liberal practices.

The impositions of neoliberal standards have left behind the idea depicted by Álvarez, García, Gil, Rodríguez, Valverde & Serradó (2001) that universities, as an object of study, is an overlooked issue. In contrast to that, daily practices at undergraduate and graduate schools are key places to understand rules of interaction and hegemonic practices of production. It is in this place where we locate the argument of this paper: throughout its classical social role, university have ascribed to a paradigm of science that narrows its scope of contribution to the society and weakened the active-reflexive mission researchers must have.

In accordance to that, one of the highest demands required for universities is the contribution to scientific production. This urge is steered by the means of research that, accordingly, is driven by the dominant ideas and common knowledge of science and how to research. Science has always been achieved through research, so that, the transformation of universities in both teaching and research institutions is a reality due to the symbolic compelling of the standards and measurements lead by the organizations mentioned above. But the debate about the understanding of what the university has about science, indoors, where professors and researcher actually develop their activities, altogether, with the changing definition of the concept, not always well-defined but institutionally and personally used under the needs of publishing scientific results; have been researched very little. Hence, this paper aims to show the resulting process of an inquiry of these problems based upon what researchers from Universidad de Medellín (Colombia) ponder in their research practices.

By the means of an interpretative interest, this paper presents the results of a research intended to reflect the way universities have been affected during the last thirty years by neoliberal impositions such as mentioned. To do so, we aim to stablish a link between the increasingly research activity under the premises of a certain type of scientific paradigm and the discourses of standardization, measurement and the promotion of this logics by international

institutions of certification. The method selected was the Grounded Theory. This method was developed in Sociology by Glaser and Strauss (1967) and it aims to reveal what really happens in reality to be researched and generate theory on it. The purpose of the research study was to build a descriptive-explicative theory of the conceptions about science that university professors have and its impact on the university research dynamics.

As mentioned, the setting of this study was made up of four faculties and two departments at the University of Medellin (Colombia): The Faculty of Engineering, the Faculty of Communication, the Faculty of Economic and Accounting Sciences, the Faculty of Law; the Department of Basic Sciences, and the Department of Social and Human Sciences. The number of interviewees (sampling) was determined according to the saturation postulates of the Grounded Theory. Thirty-eight interviews were carried out the information was saturated with 6-7 interviews in each scenario of study. The following matrix with categorical data was employed for the questions of the interview and the analysis of the data.

## **II. The setting of a new mindset of research.**

Universities have signed in the agenda of research, and, the discourse of science in support of efficient research practices has been strengthened. Certain types of research practices have been established by some transnational “superpowers” since 1945 (Adams, 2012; Beigel, 2006 and 2013). Consequently, this appropriation of science discourses has entrenched the idea that research is the most important practice for universities and has prompted the consciousness that the rankings are a decisive factor of quality. Organizations as the Academic Ranking of World Universities (2014) of the University of Jiao Tong in Shanghai (China); the Ranking Webometrics (2016), of the CINDOC Internet Laboratory (CSIC); Which MSA? (2015); The Economist; and the Scimago Team and Global University Rankings elaborate classifications and rankings in order to judge university research practices and classify their value by the number of products they offer to the academic world. In the Ibero-American Institutions, these rankings facilitate the elaboration of various classifications of research such as The Times, University Ranking by Academic Performance, QS World University Rankings and MIDE (2015) for the case of Colombia.

Certainly, the “need for researching”, as a means to acquire relevance for universities, implies a specific concept of science upon which those practices are grounded. Universities ascribed to that context transforming their internal functioning, their conceptions of sciences and research as Oregioni (2014) and Alganaraz & Castillo

(2018) have said. Attending to this context we carried out a previous research trying to establish which is this concept of science that professors and researchers in universities have and what kind of dynamics this mindset generate. This question is worth asking since the different definitions articulated in theories developed in the 20<sup>th</sup> century and the following change of epistemological "status" for science (Nagel, 1961; Popper, 1966; Habermas, 2007; Adorno, 2004). This sort of shift and its consequences has also happened Latin America as Field, A. & Kreimer, P. (2008, 2012,2015) have informed.

The concept of science and the evolution of scientific results in universities have been transformed and have generated a state of the art that demonstrates that there has been scientific research, but the type of the applied one; that is the typical one used in medical, engineering and natural sciences, among others (Vega, 2010; Asencio, 2014); Camacho, 2013). However, the concept of science as such, did not seem to be something clear. Therefore, by the means of the research question we intend to offer an idea about how university professors understand the concept of science.

In the last 50 years has transformed "artisanal science" (where productions lay in the books), into an "impact" science (set of demonstrable products which corresponds to research based upon the scientific or explanatory methods of nature). Clearly, this conception implies an idea in which Social Sciences is placed in disadvantage and affects the research in this field. According to Archambault, Vignola-Gagné & Gingras (2005) and Lux & Perez (2017), there is a difference in the norms leading to the production and diffusion of knowledge in Social and Natural Sciences and in the mechanisms required for publication.

The old debate about the inequity in the coverage of publications for Social Sciences in the ISI Thompson Reuters databases is still in force. Applying the logic of *scientometrics*, which permits the unbridled movement of products in the form of scientific research articles and their publication in indexed journals, such as *Web of Science* or *Scopus*. This very same logic makes it difficult to publish scientific products on comprehensive research (Hicks, 1999 and 2004; Van Raan, 2003), "... and, particularly, to compete against the impact factor (number of citations). This is an almost impossible mission for our journals" (Ruiz-Corbella, Galán & Diestro, 2014, p. 1).

As UNESCO stated in 2007, Latin American universities have been undergoing progressive transformation to meet the new requirements concerning the construction of knowledge and they have been positioning as research centers and; therefore, as mobilizers and producers of science and scientific knowledge; so, the production of

knowledge is getting an ongoing reality and parameterized, as stated by Sarthou (2016); Taborga, López, Oregioni & Abba (2013).

In this logic (Iribarren, 2006), in his dissertation, besides explaining what is understood by science, he states that science growth is consolidated thanks to the research activity. Accordingly, in his study he dedicates to review how universities are valued, or better, how they are evaluated with reference to science and he detects that they are viewed from the perspective of scientific production. Additionally, in his study, Iribarren accepts that in the complexity of the scientific system, different types of actions are generated. They respond to the principal dimensions of the research activity, from which three of them coincide with the scientific production subjected to a reviewing by the community; one aims at the formative action and at the contribution to the industrial economic sector, and the other two focus on the social dimension of research, that is, on the development in function of social needs and on the publication and the transmission of knowledge (Kreimer, 2015; Beigel, 2016; Mora, 2015; Asencio, 2014; Alganaraz & Castillo, 2018).

Based upon the above considerations, it follows that the assessment of scientific and technological activities tends to be a habitual practice in most countries. This evidences that the main importance of the research activity is given to scientific publications. This is done by means of an anonymous review process, especially if said process is provided with an Impact Factor that occupies a relevant position in the thematic lists of the *ISI Citation Reports Journal*. The publication of monographs in renowned publishing houses, the number of international patents in operation, the research projects obtained in competitive public calls, and even the presentations in important congresses are also a matter of importance and attention (Ruiz-Corbella, Galán & Diestro, 2014; Beigel, 2013).

### **III. Science and scientific productions**

Given the changes in the dynamics of universities, as a result of the new scientific policies and the importance given to research productions and processes, professors researchers at the University of Medellín were required to explain how the conceptions about science and research as well as the dynamics of knowledge production had been transformed in themselves and in the university setting. When asking them what they considered as science, it was possible to determine that their comprehension about it remains located in the logic of the *scientific method*. Most of interviewees understand science as a systematic construction of knowledge. This understanding can be evidenced in the arising secondary categories: *systematic knowledge*

and *method*, where the validity of knowledge is given by the possibility of quantifying and measuring it. To achieve the latter –following the results- it is necessary to use rules, which at the same time allow a generalization of knowledge.

Some of the definitions about science within the university are the following: "Science, I would say that it is that field of quantifiable knowledge resulting from natural phenomena. I would say it is to predict, to verify laws, concepts and fundamentals" (as stated by a professor at the Faculty of Engineering, November 11, 2013). The set of theoretical knowledge that can be mathematized, that is, transformed into mathematical formulas; thus, making them mathematical; or a set of theories concerning human labor and its interpretation (as stated by a professor at the Faculty of Economic Sciences, October 30, 2013).

Concerning science, the above statements have a common aspect referring to the fact that to be able to think about knowledge as scientific, it must deal with the possibility of verification and with a systematic order; concepts resulting from the proposal of science based upon the rules with which Natural Sciences are observed.

Another professor's answer on what he understands as science was: "it is the search for knowledge through a procedure, a methodology, and some rules that facilitate the repetition or verification, or also the distortion of that knowledge, that makes that what today is considered scientific, it is what is essentially methodological" (as stated by a professor at the Department of Social Sciences, October 29, 2013).

In the same vein, it could be stated that the concept of science is strongly anchored to the understandings developed from Descartes and linked to the scientific method. Also, according to the answers provided by many professors, science moves away from any knowledge which has not required -for its practice- a specific method enabling not only the verification, measurement and generalization, but also the deepening in a phenomenon. From this conceptual paradigm from the majority of professors – especially from those from the Faculties of Engineering, Economics, Administrative and Accounting Sciences; from the Department of Basic sciences and from some professors of the Faculty of Communication – the concept of science that is in vogue serves to highlight the *explicative and rational character that science involves*.

When going inside the answers given by the professors at the university concerning the idea of research, it is observed that it continues to be in the explicative paradigm and that a great percentage of the research that has been carried out, in the 28 research groups at

the university, corresponds to this position. What is most striking in the information received is the understanding of research as a generator of demonstrable and publishable products. This is a judgment that is reached by means of the dynamics that COLCIENCIA<sup>4</sup> has implemented all over the country to resist the blows of what is being understood as the scientific community in the world and the pressure and dynamics that this understanding generates among the professors in the university.

Among the answers given by the professors about how the dynamics of research within the University of Medellín has been transformed are the following:

...I think scientific policies have had researchers and research groups waste time in the development of artifacts and knowledge in favor of the society due to the demands and requirements concerning how to write to have the possibility to enter the most famous database journals. If it were not so, we could not run for COLCIENCIAS and other institutions that subsidize research projects; moreover, it is not even sure that we can conserve our jobs (as stated by a female professor at the Department of Social Sciences, October 30, 2013).

Then, it appears to be that science in the so-called knowledge era is profiled as the "star" of scientific publications at the University. This is driven by the external research dynamics, where only those products that can be publicized in high impact journals have a scientific trait.

The main factor is determined by the number of quotations. What is meant is that the importance of knowledge production is tied to the possibility of publication and verification of the database standards where the publication is being made. This situation leads to "quality" assessments not being done from the contributions to the society, but from the products developed through real research, and also from the number of articles appearing in the corresponding indexed journals, be it Scopus or ISI< or because of the number of quotes they display.

The dynamics assumed by scientific communities all over the world where science is seen as the source of strategic opportunities leaves behind the paradigm of science as a problem solution and a source of knowledge, as described by Velho (2011) "This is absolutely consistent with what has been called "the positivist paradigm"".

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<sup>4</sup> COLCIENCIAS is the office of the government in charge of promoting science, knowledge and technology.

Arguably, according to the interviewees' answers, it is the barbaric exacerbation of positivism and of instrumental reasoning.

#### **IV. The impact of the revival of what is generalizable in Social Sciences**

A change in the mindset of the university is evident. It permits the university to assert that in certain study areas, there is a specific dynamic going on, especially in the activities of research about unpredictable phenomena, such as the social and human ones. Under the scope and premises of our analysis, we present the following conclusions about this specific situation of social sciences within what we have called the new scientific mindset.

Consequently, social research displays two variables in our study. The first lies on the rationality chaired by modern science by means of what has been called social physics. Therefore, the advancement is towards the construction of a global model of scientific rationality, "although with some omens in the XVIII century, it has been just in the XX century when this rationality model began to extend to the emerging Social Sciences" (Santos, 2012, p. 21).

The above confines the human and social aspects in the measurement and the valuation of the prioritized method and denies the scientific character of other forms of knowledge that are not marked, or do not accept the predominant epistemological and methodological model. This negation generates what some authors have considered the crisis of the predominant paradigm and what the professors at the University point to either directly or indirectly when they recognize that there are other forms of knowing and generating knowledge. "The mechanistic determinism is the precise horizon of a form of knowledge which appears to be utilitarian and functional, less recognized by the capacity to understand deeply what is real than for the capacity to control it and transform it" (Santos, 2012, p. 26).

The second variable takes place with the irruption of the hypothesis which states that because of the dynamicity of the phenomenon, the formats of the scientific method fall short of the ability to be apprehended, understood and explained. Therefore, other approaches emerge in the panorama of science construction aiming at apprehending such phenomena which carry new methodological proposals to construct and produce knowledge. This is based more on comprehension than on explanation.

It is from this point where Social Sciences claim to have their own methodological framework. For many professors of Social Sciences, the social science is at stake, for others it is clear and



evident. In other words, it has different forms of being and it allows researchers to approach science in different forms.

In the university setting, a new paradigm of scientific comprehension emerges, in some faculties it is not only enunciated but also recognized. This allows us to observe other approaches that deal with worldviews and different ways of appreciating science.

In science, we must seek other forms of existing, we must invent ways of doing, as Feyerabend stated in his book *Against the method*; arguments that have been retaken by Ballester and Colob (2012): "there are no limits for man, so we must not restrict their expressive capacities. Man's work is a clamor for human freedom, and so it requires science to be the way to freedom and creativity" (p. 93). That is, these authors state that, in essence, everything contributes to the development of knowledge.

Nevertheless, the recognition of Social Sciences in the academic setting, as science, fades when we ask about the dynamic transformation of research in the last years and we compare the level of publications of research groups in the field of Social Sciences versus Applied Sciences. The Social Sciences researchers use several factors that put them at a disadvantage with reference to the new research approaches promoted by scientific policies.

The first approach deals with the phenomena or realities that are researched in Social Sciences when they are tied to the particularities of contexts, to the cultures and to the ways of seeing the phenomenon. The criticisms about the poor scientificity when it is impossible to generalize its results appears quickly. This fact has an impact on the poor interest expressed by the indexed journals to publish such works, because the quote level is not going to be relevant. This is the case of Genetic Engineering, which is a subject with multiple hearings, a situation which affects the impact factor of journals.

The second approach deals with the logic itself of comprehensive research, which is younger than applied research. Therefore, the agreements of the academic community about the methodological designs are incipient; there are important debates in the scientific community about the existence of a consensus about the way to do social research, as the social phenomena transform themselves according to the space and the time and acquire specific nuances according to contexts, interests and realities.

The third approach deals with the inequality in the percentage of the number of journals in Scopus and in the Web Science which publish articles concerning applied sciences, which is contrary to the amount

calling for the publication of articles in Social Sciences, and also besides the constraints to publish in other languages like Spanish. As one of the professors interviewed states:

Scientific knowledge taken into specialism in depth is creating a new barbarian, specialization in depth without parallel philosophic knowledge is a new barbarism, it is the new irruption of barbarians, the specialist who every time knows more of much less, who does not have a universal view of the world. And the university professor, hence the name of university, the university is called university because of that, because the first thing it must promote rather than specialization is the knowledge about the world, that is, of the universe (as stated by a professor at the Faculty of Law, December 16, 2013).

All in all, a debate about research in social sciences is pending regarding the contemporary context academic activities. Separate ways than those established by the hegemonic logics seem to be proscribed. From the data collected, it is evident how the creation of knowledge in universities are oriented towards a paradigm of *production* that has narrowed the objective of research programs. Research activities are valued with an external rationality attending to pressures of publishing in mass. It results in a disqualification of many works because of a lack of *scientificity* representing a vague idea of what is good and not, since what matters is *where* a work is published and not *what* is published.

In conclusion, the dynamics assumed by scientific communities today leaves behind the paradigm of science as source of solutions for the society and certainly a logic of a disorienting instrumental rationality has colonized the academic field.

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