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Research Paper

Public Awareness of Knowledge. Social Communication of Sciences, Mobile Sciences and Political Sciences.

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Abstract: This work aims to examine the triad that constitutes the social communication of science, mobile science and "politicized" science to find commonalities and differences and establish possible actions by researchers regarding the paradigms of scientific communication, mobile science and politicized science and their alternatives for social action linked to the construction and publication of scientific knowledge.
It also seeks to describe and examine the practice of these research groups in terms of cultures of informative, communicative and social knowledge related to the social communication of science, mobile science and politicized science.
On the one hand, the social communication of science has become a communicative specialization which promotes the dissemination and promotion of scientific work from research centers and universities towards society and, on the other hand, mobile science (knowledge mobilization) is defined as the relationship between research and practice and also reflects the actions envisaged to promote the use of research results and their usability by the groups or communities to which they are addressed. We understand the politicized social sciences as part of historically determined dialogue and contextualized problematization, and they seek to use the capacity of awareness and practice to examine agendas, methods, themes and priorities.
Keywords: Science, Communication, Mobile science, scientific dissemination, Researcher

Research objectives

We intend to know what they think is the role and social action of professor-researchers in the social communication of knowledge in the field of social sciences and humanities. Second, we will seek to describe how are the most

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common practices for the promotion and dissemination of scientific knowledge. Third, within the framework of the Faculty of Human Sciences UNSL over the period 2009-2019, based on the practices of promotion and dissemination of scientific knowledge, we wonder what links exist between what is called social communication of science and mobile science as part of the social and human sciences at UNSL.

This analysis is offered as part of the FCH of the National University of San Luis (Argentina) and aims to obtain information through a qualitative questionnaire sent to key informants.

INTRODUCTION:

In the context of Social and Human Sciences at the Faculty of Human Sciences of the National University of San Luis, Argentina, we intend to know what practices of dissemination and communication of scientific knowledge have different research groups, in the period 2009-2019. The purpose that guides this project is to find contextual action frameworks and possible roles and actions of researchers in the promotion and commitment to scientific knowledge and its communicative deployment.

We seek to know if the research groups, apart from making their contributions known to their own colleagues through scientific publications, are linked to publications or other actions with the community.

This project is formulated within the field of communication and within the framework of it, studies of scientific journalism and social communication of science (CSC), promoted at the National San Luis University through the incorporation of this training space in communication careers and the visit to San Luis, in 2000, by Dr. Manuel Calvo Hernando from Spain, promoter of scientific journalism and science communication worldwide. The instruments for data collection and evaluation are in full development, so we offer a theoretical and essay perspective of the possible alternatives.

In Argentina, the State Universities are public and free, are autonomous and self-sufficient, and the financing is provided by the state. Professional training in Argentina is shared by universities and Training Institutes, which is why the Argentine higher education system is known as a binary system.

The social and human sciences play a fundamental role in the social and cultural transformations of the countries from the link they can establish between scientific research, social and citizen dialogue and the formulation of policies that promote the exercise of fundamental human rights and the improvement of living conditions. The social, cultural, economic and political environment of production influences and influences the actions that can be taken, favoring or not the transformation of existing inequalities and the development of citizenship and culture. It is precisely the development of the social and human sciences, technological innovation and the social transformations that have taken place at a dizzying rate that have made us move from an industrial society to a knowledge society, progressively moving from analogue to digital life.

Wagner (2009) has stated in the first place, that as science became more professional, the scientific work was enclosed in the space of the laboratory and classrooms, and on the other hand, the results of the investigations were only at the mercy from the specialized public,

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from the scientific community or in the grip of access restrictions imposed by the few publishers that dominate the academic publications market. Even so, thanks to the development achieved by the Internet and the digitization processes in the social sciences, the number of specialized publications in the Argentine and Ibero-American context has grown in the last ten years. This process not only reached the magazines, but also with the development of interfaces (platforms) with new formats such as E-books, publications for tablets, etc.

Despite the explosion of academic publications due to digitization and low cost, "*there are additional problems such as the excessive number of published journals, their low quality and the lack of professionalization of their writing committees*" (Barrueco, 2010, p. 2). The creation and development of digital publications must be progressively accompanied by the support of universities and science and technology organizations in human, economic, technological resources, etc.

Beigel and Salatino (2015) have examined the development of magazines of social and human sciences in Argentina and affirm that although the international circulation of knowledge is materialized in networks, international projects, academic mobility and other forms of collaborative research, "*they are publication circuits the privileged spaces of academic consecration"* (Beigel and Salatino, 2015, p. 10).

The world is moving towards digitization and universities and research centers do not escape this process. Digitization has allowed, among other things, that academic journals appear online and can be read by more academics from different latitudes.

Social Communication, Social Commitment?

Speeches and Social Practices

Often, discourses and social practices are not manifested in parallel and in the same sense. Sometimes scientific discourses are not in line with the practices of men and women of science. Basically, scientists must skills to do science and skills and competencies to communicate science to different audiences.

One of the aspects that characterizes and defines the academic world is the construction of scientific communities whose members promote the production and circulation of knowledge, and in this process school education and language play a preponderant role. This universe of knowledge is shaped and transformed through science and disciplinary literacy, through the creation and use of particular discursive strategies.

One of the objectives of higher education institutions is to promote in students the generation of scientific knowledge from disciplinary, transdisciplinary and critical points of view, and the development of processes of production and reception of texts, which, oriented towards this goal, structure the discursive universe of the scientific and disciplinary scene.

The study of academic literacy in all its complexity implies the recognition and acceptance of the existing confrontation in a social practice in which disciplinary ideologies, thought schemes and varieties of language converge (Harvey, 2006).

In our society, knowledge in general, and scientific knowledge in particular, is valued, especially in crisis or pandemic contexts, which is why in many instances it is used as a basis for different decision-

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making processes or is used as a power tool .

Science is also a construction and a social practice. Practices can be defined as *"links of ways of saying and doing that have a certain spatial and temporal dispersion"* (Schatzki 1996, p. 89), which are made up of various components, practical skills, forms of meaning and material resources.

The approach to social practices according to Ariztía (2017) has two alternatives: the first from the theories of Giddens and Bourdieu and secondly with the contributions of Ethnomethodology.

The theories of Giddens and Bourdieu use the concept of practice to account for activity as a constitutive aspect of the social world and as a solution strategy to the tension between structure and agency. For Bourdieu, practice develops in direct relation to the concept of habitus and seeks to account for the relationship between structural determinants and the activities and bodies of the actors that mobilize the dispositions of habitus in everyday life. For his part, in the Structuring Theory, Giddens defines social practices and their recursive dimension as a constitutive aspect of social life on which social structures are generated and operate. Both Bourdieu and Giddens limit their use to a general societal theory in which practices are just one more component among other elements.

A second theoretical reference is the tradition of ethnomethodology and social theory of pragmatist orientation, with which it shares an understanding of the social focused mainly on attending to the empirical situations from which the social is produced. It attends to the processes and phenomena of a micro-social scale, whose focus is on the detailed description of situations and relationships. With the tradition of ethnomethodology developed by Garfinkel, shares an understanding of the social world as a practical result, which rests on the production and circulation of forms of situated knowledge, which cannot be reduced to societal structures or frames of general meaning, rather, they must be examined in their own nature (Ariztía, 2017).

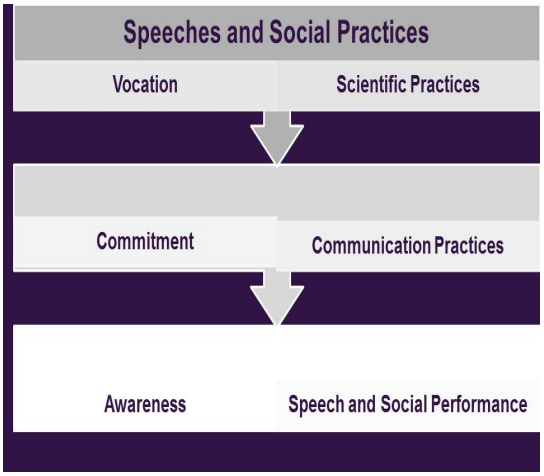

Figure N° 1 Speeches and Social Practices

This painting aims to illustrate some of the tensions between scientific discourse and scientific and communicational practices within the framework of the vocation, commitment and awareness of women and men of science.

Therefore, it would be interesting to know what degree of social commitment these groups have to link with society in different actions or common actions. To do this, we have thought of three paradigms that link the scientific knowledge produced in universities, with social action or its social deployment. They are 1) Social Communication of Science, 2) mobile science 3) Politicized science.

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Next, an idea that we can use is how the distribution of scientific knowledge is organized in society. On this path we have science organizations and universities with their research groups producing knowledge, we have the communication of that knowledge and our communities that hope to have a better quality of life.

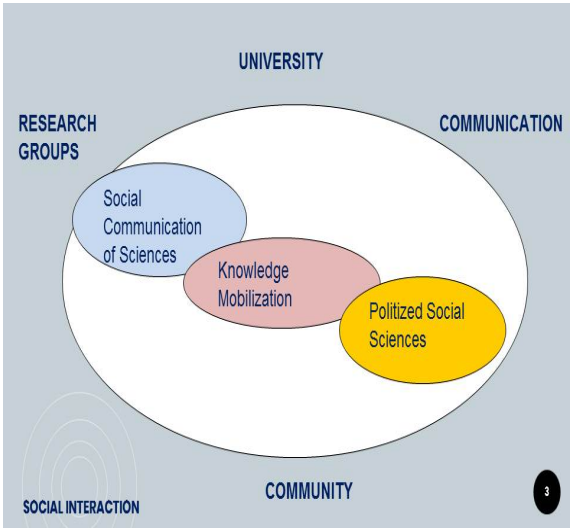

Figure N° 2 Social Interactions

Social Communication of Science

The social communication of science includes all the communicative processes that occur within the scientific community and between it and society. Its best known expressions of the science-society relationship are Scientific Journalism and the Dissemination of Science.

The CSC has become a communicative specialization that promotes the dissemination and promotion of the scientific ideas of research centers and universities towards society. The recent concerns of the social communication of science go through knowing who communicates science, what the disclosure ecosystem is like, how it is institutionalized, who are the recipients of the social communication of science, how new audiences are created, etc. The social communication of science should be an activity of increasing hierarchy in universities, since it would allow society to know what they are doing to create knowledge and how this knowledge can be useful for society to have a better quality of life.

Social communication of science can be understood as an essential tool to get people involved in science and technology processes by becoming a mediator between researchers and citizens and it is also an instrument facilitating spaces for interaction and participation By transmitting the knowledge generated by scientific and technological activity, citizens have greater possibilities of appropriating it and making it part of their daily lives.

However, in Latin American societies with almost permanent social and economic crises, these processes are more difficult. The need of proposing a new model of social communication of science, more contemplative with the special characteristics of this context is necessary. A model it able to describe the tension between science and local communities. This model under construction was called "citizen scientific culture", intended as a form of social communication of science understood as a process, a product and a culture that aims to promote the development of local societies, organize local actors, develop connections to democratize scientific knowledge, the exchange of communication and information flows, the division of works to facilitate work, institutional autonomy as a guarantee of democracy and good intervention, and the promotion of exogenous and endogenous

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energies to promote cognitive synergies (Quiroga, 2004).

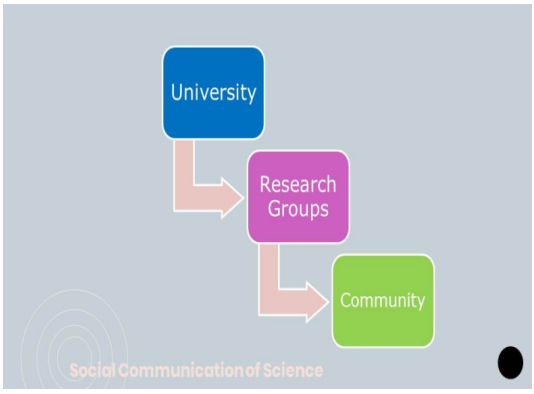

Figure N° 3 Social Communication of Sciences

In the Deficit model, the public is conceived as lacking certain scientific knowledge that it should possess. The determination of what the public needs to know is external, and the communication of science is conceived as the tool capable of filling the cognitive gaps in scientific issues

In the Validation model, scientific knowledge is considered as a product and the chosen topics and the way in which they are presented are shaped by the idea that the producers of said knowledge have of the wishes of the public.

This, then, has the function of validating and justifying the use of economic resources from the scientific industry. Public participation is valued.

In the Cultural model, it focuses on two issues: both the public image of science and how it affects scientific activity, the generation of knowledge and its dissemination. Additionally, the knowledge about nature that is generated in popular culture, called popular science, is taken into account.

In the participatory science model, the social dimensions of scientific production, techno-scientific factors, activists, non-governmental organizations and other social actors are taken into account. In this model the public is not seen as a passive audience, but as a fundamental member in the generation and propagation of scientific knowledge. The term public, which is associated with passivity, is replaced by citizenship. The science-citizenship interaction is the axis of interest of this model.

Fourez understands that ACT (Scientific and Technological Literacy) has three purposes: the autonomy of the individual, communication with others and a growing management of the environment (Fourez, 1997, p.61) The author develops the idea of opening black boxes constructing simple models for certain contexts and calls it an interdisciplinary island of rationality, that is, a theoretical representation appropriate to a particular context (Fourez, 1997) where theorization is carried out based on particular projects and not based on a defined truth.

Goodwin (2010) at the German level has examined scientific communication from the perspective of scientists at an individual level, from the perceptions, motives and environment of scientists to characterize their communicational behavior. Gooldwin (2010) asked non-minor questions such as what effects do the media have? What do researchers expect or fear from their colleagues? What influence does the public have? What are the communication styles of scientists? What is the perspective of researchers on scientific communication in their press releases, conferences and brochures? Based on these questions, she formulated a work that has served to qualify and quantify perceptions, motives, and the communication styles that researchers adopt.

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Researchers should know the communication resources and means available to make the fruit of their research aimed at the progress of society easily and easily known. It is about writing in clear and simple language the information about what they are investigating and what results they have. In this way, citizens would have more information on scientific work and perhaps knowing the actions of scientists, would demand more support and resources from the authorities for research institutes and universities.

Mobile Science or Knowledge Mobilization

One of these terms is what is known today as knowledge mobilization, proposed at the beginning of this century by the Research Council of the Social Sciences and Humanities in Canada (SSHRC) and conceived as a way of allowing the flow of researched knowledge, both within the academic world and between academic researchers and the community understood in a broad sense. Despite academic efforts, the term as such has been widely accepted in universities and academic institutes, not only in North America but also in the United Kingdom. There is not yet a single interpretation shared by different users, specifically regarding the meaning of the concept mobilization.

The concepts related to the mobilization of knowledge have been disseminated since 2000 by a group of authors such as Levesque (2009), Levin, (2011), Naidorf, (2014) and Fischman (2014). The authors speak of "science" in general and propose that it is necessary to have the production of a type of knowledge ready for action and establishes an additional role for the researcher when having to find ways that link the production of knowledge with the use of same by society. The previous diagrams have been made by the author.

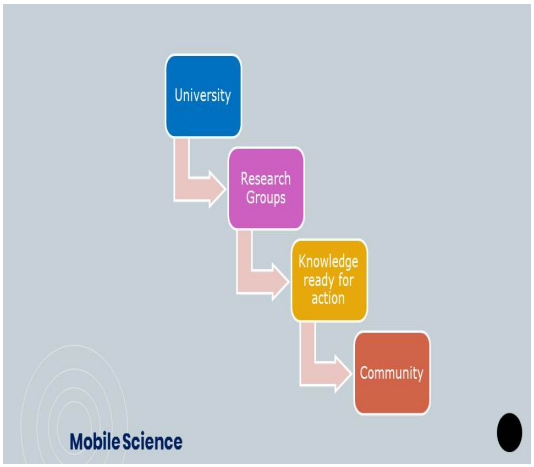

Figure N° 4 Mobile Science

Levin (2011) broadly defines knowledge mobilization as the relationship that exists between research and practice, justifying the use of the term mobilization given the multi-dimensional, long-term and often nature of the labor policy that is makes. The concept of knowledge mobilization also accounts for the actions planned towards promoting the use of research results and their usability by the groups or communities to which it is directed. These university practices are currently common in different Canadian universities.

Levin (2011) points out that there are still multiple barriers that prevent the best use in practice of the available knowledge, among them: difficulties in accessing the evidence, lack of confidence or interest in it, lack of skills to use the evidence profitably. evidence, lack of infrastructure to promote research results, in addition to all the pressures and tensions that arise between the different groups involved in the process.

The concept of knowledge mobilization also accounts for the actions planned

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towards promoting the use of research results and their usability by the groups or communities to which it is directed.

- ✔ It is a translation of the English term (knowledge mobilization), widely used in the context of research in the Social Sciences that is generated in Anglo-Saxon universities.
- ✔ It implies a very close relationship between research and practice, direct or mediated.
- ✔ It is a generic term and not yet very precise that is commonly used to express what happens from the moment that valuable knowledge is generated as a result of a formal investigation until that knowledge is made public and reaches the hands of those who do require (State, companies, communities, national and international agencies, etc.).
- ✔ It can be understood as a relationship or as a process. As a flow, a direct or mediated relationship or connection between research and practice, a generalized action, or a process with different phases and moments, the ultimate goal of this mobilization is the use of previously obtained knowledge for the benefit of society.

The concept of knowledge mobilization is attractive for its complex and comprehensive field of connections and its capacity for potential development in the social and human sciences. The mobilization

of knowledge is a concept that emerged in the year 2000, and is for Naidorf and Perrota (2015), an additional function of the researcher in the social sciences in the idea of finding alternatives that link the production of social knowledge with the use of that same knowledge produced. Naidorf and Perrota (2015) have also proposed to link and complicate the category of knowledge mobilization with the idea of a politicized social science.

Politicized Social Science

Politicized social science is a concept that has been developed in Argentina by Naidorf and Perrota (2015), who investigate the possible actions that researchers could find to link the production of knowledge with the various groups or communities that could know it and use it. They also seek to critically examine the conceptual triad made up of the social communication of science, mobile science, and politicized social science, and whether the category of politicized social science is appropriate and useful in the Argentine context. According to Naidorf (2014), the category of politicized social science is novel for the discussion on science policy, since the concept accounts for a science committed to social change with autonomous and emancipatory characteristics, especially in the social sciences.

The concepts of politicized science are taken by Naidorf (2001) who draws on the assumptions of Oscar Varsavsky's Latin American thought. Criticism pointed to Varsavsky called scientism, characterized as a way of doing science unrelated to politics and, ultimately, to society, and which leads him to define politicized science as that linked to social commitment and willing to methodologically review the parameters that are part of the scientific building based on social change. Research and the university have been two concepts that in the last forty years have become problematic and an object of interest not only for intellectuals but also for university students themselves.

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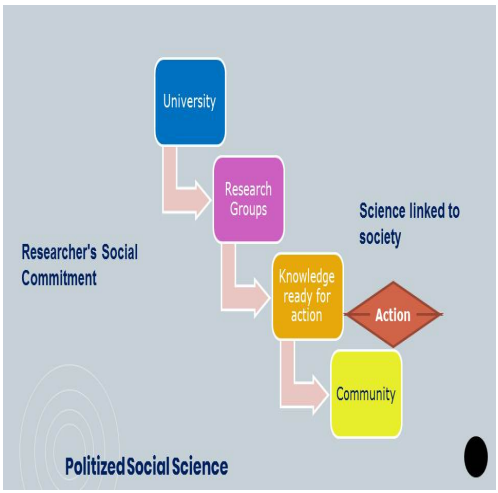

Figure N° 5 Politized Social Science

Judith Naidorf has formulated a metaphor where she considers the mobilization of knowledge as an action of raking the earth, throwing away the seeds, and trying to make those seeds flourish, and which can be broken down into three dimensions: agenda, evaluation and mobility. The mobilization of knowledge is for Naidorf and Perrota (2015), an additional function of the researcher in social sciences to find alternatives that link the production of social knowledge with the use of that same produced knowledge. Naidorf and Perrota (2015) have also proposed to link and complicate the category of knowledge mobilization towards the idea of a politicized social science.

CONCLUSIONS:

To know what knowledge dissemination practices have and the degree of intensity of connection with the community and the social commitment of the researchers. Some researchers only connect with other academics and their language is directed towards them. As social researchers we need the community to know what its scientists do and how their knowledge can help society. The community with the taxes finances Argentine public education and public research.

We recognize that the Argentine universities make little effort in favor of scientific media for the population, and in general, the research groups do not know the paradigm of knowledge mobilization. They produce papers to be consumed by academics, watched by a merit system of scientific organizations such as CONICET, in the Argentine case. Publications dedicated to the population are not evaluated by these organizations and the university's professor-researchers show little interest in these initiatives.

The National Research Council (CONICET) is the main organization dedicated to the promotion of science and technology in Argentina. Currently, more than 10,000 researchers, more than 10,000 doctoral and postdoctoral fellows, more than 2,700 technicians and research support professionals, and approximately 1,300 administrative staff currently work in the organization.

On the other hand, it should be noted that not all research and science produced in Argentina is carried out in universities, but there are also other organizations such as CONICET.

In the country, a university professor with an exclusive position works 40 hours of which 20 should be for teaching and 20 for research. As the professor-researcher advances in his university career it can happen (or sometimes happens) that he forms a team of research professors, sometimes with less dedication and younger, and yields a good part of the research on this group.

The professor-researchers who start university life generally have low salaries. The remuneration of the position of first assistant varies between 130-150 US dollars, depending on the currency

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exchange to the Argentine peso in a context of economic crisis and variability of the exchange rate.

Research projects at the university, except for special calls, do not receive sufficient funds to investigate. They are often low and symbolic.

In this context, scientific work is limited and restricted by the conditions of production and development. Should Argentine society ask its scientists for more? However, in our crisis contexts, we would need a science that interacts with the community, that makes known the concepts and results that researchers arrive at, since they are the beneficiaries of them.

Public awareness of science, public understanding of science, or more recently, public engagement with science and technology, are concepts related to the attitudes, behaviors, opinions and activities that comprise the relationships between the public or society, the scientific knowledge and its organization.

The organization and production of knowledge, Scientific Knowledge and Society establish multiple and complex interactions that obey social, economic, historical and political patterns. In each society, aspects such as public awareness of science or the public commitment of researchers to their societies stand out. For who is scientific knowledge produced? That's the question. For companies and their probable profits? For society or for both?

This has been a brief piece and focus for the gigantic task of exploring the multitude of relationships and links that science, technology and innovation have with society.

Scientists have a social and political commitment to provide knowledge for social progress and development to those who support them and to society. It should be an idea and a return, an endless feedback of public conscience between researchers, institutions and citizens.

We need scientific communities with great vocation, with skills and competencies in communicational practices and with awareness and commitment to citizenship.

I dedicated this presentation to the memory of Dr. Manuel Calvo Hernando, who visited the National University of San Luis twenty year ago.

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