



Article

# The time of dialogic sociology

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## Abstract

There is a wide and rich literature about how neoliberalism is promoting the budgetary cuts to science and universities, especially to the critical sectors, such as the social sciences. There is scarce literature on the analysis of the role of sociology in the internal processes and debates on the elaboration of the scientific programs of research. Focusing on the European programs of research, this article analyzes how sociology is leading the new requirements of social impact and co-creation. The result of this analysis shows the great opportunity for sociology to get an unprecedented acknowledgment and valorization from society and all sciences, including those which had not been previously interested in sociology.

## Keywords

Citizenship, co-creation, dialogue, science, social impact

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## Sociology before the current crisis of the scientific programs of research

In various parts of the world, science, in all its areas, has been threatened (American Association for the Advancement of Science, 2013; Harris, 2010). During the economic crisis that broke out in 2008, there were very important growing voices proposing the disappearance of the Social Sciences and Humanities (SSH) from the European scientific research programs (Flecha et al., 2015) and then questioning the very existence of these programs. With different nuances and processes, this questioning has occurred in other parts of the world and several Member States of the European Union (EU). The European Alliance for Social Sciences and Humanities (EASSH) acted in a very dialogic, joint, and effective way, promoting arguments that had a great impact (EASSH, 2016).

Scientific organizations and journals as relevant as *Nature* (Flecha et al., 2015) took a position in favor of the arguments presented by sociologists in favor of maintaining SSH within the scientific programs of research. This relevant support allowed the following year, 2016, the leadership of sociology in the reflections and meetings in favor of all sciences, maintaining the scientific programs. Some of these meetings led by sociologists included the participation of Nobel Laureates in physics, chemistry, or medicine, and with agencies such as Nature, PLOS, ORCID, Thomson Reuters, the Policy Institute at Kings' College London, the National Science Foundation, and the representation of the European Commission (EC; SIOR, 2016).

In this way, it has been possible to maintain the scientific research programs and even increase their budget, but only provisionally. They are on tenure track for a few years, during which it will be demonstrated whether this transformation has yielded positive results. The reaction of humanity to the very negative pandemic has had the positive effect of greater involvement and appreciation of science by citizens. Scientists and citizens have saved the scientific programs and the EC has increased the budget for research, but there will be no next European framework program if we do not select the projects properly (Poppy, 2015).

Transforming the scientific research programs was the only possible way to prevent their disappearance and, even more, to increase the resources allocated to them (EC, 2019). This transformation has focused on social impact and co-creation, achieving relevant results for science and society (Girbes et al., 2022). The new Horizon Europe program aims to achieve and demonstrate to citizens that investment in scientific evidence has a clear return on improving the living conditions of societies (Stier and Smit, 2021). In 2010, the EC organized a large conference titled 'Science against Poverty' (EC, 2012). The conclusion was that societies could not continue to finance the scientific research on poverty, when even the directors of such research could not provide evidence of their impact on the overcoming of poverty. The DG Research focused on finding Success Stories of scientific research from the Framework Programs that had provided successful actions that clearly improved the lives of citizens. The EC then published a list of 10 Successful stories, one of which was a SSH research (INCLUD-ED Consortium, 2011) directed from the area of sociology.

For over two centuries, sociology has made key contributions to improving societies. Like other social sciences, it is a descendant and a part of democracy (Berger and Kellner, 1981; Elster and Przeworski, 1998). When citizens decided to govern themselves, new sciences were created that allowed them to have a deeper knowledge of themselves so that they and their representatives could make informed decisions. Merton (1973), the creator of the Sociology of Science, contributed considerably to this transformation. Merton demonstrated that the evaluation of science depended on a system of rewards, and contributed with analyses and proposals to measure the quality of the scientific knowledge. The aim was to ensure that those rewards would improve the excellence of science, instead of lowering it. However, Merton, being at opposite ends from the ideas of communism, included communism as one of the main elements of the ethos of science. He understood that science should not be subordinated to technical criteria:

The substantive findings of science are a product of social collaboration and are assigned to the community . . . The communism of the scientific ethos is incompatible with the definition of technology as 'private property' in a capitalistic economy. (Merton, 1973: 273–275)

Weber (1978) undertook the deepest analysis to date of the tendency toward bureaucratization of the capitalist enterprise and the modern state. Moreover, he also reflected on how human action differs from the reactive behavior on the basis of the meaning it has for the acting individual, and on how social action is a human action in which that meaning is shared.

We shall speak of 'action' insofar as the acting individual attaches a subjective meaning to his behavior – be it overt or covert, omission or acquiescence. Action is 'social' insofar as its subjective meaning takes account of the behavior of others and is thereby oriented in its course. (Weber, 1978: 4)

The bureaucratization of scientific research programs has exacerbated the current crisis. This idea had also been subject to an excellent analysis by Merton (1973):

Conflict becomes accentuated whenever science extends its research to new areas toward which there are institutionalized attitudes or whenever other institutions extend their control over science. (p. 278)

The current sociology, with its diverse perspectives and methodologies, is grounded on contributions that can and are contributing to an analysis of those conflicts, thus promoting that citizenship and its representatives make informed decisions that allow them to improve those scientific research programs and their contribution to the improvement of society. Habermas is one of those authors. He has contributed, for instance, with his proposal of a Communicative Action (1984), in which the relevant hierarchical gap between the researcher and the research person disappears and both participate in a dialogue oriented to their understanding:

Our own ontological presuppositions are no longer more complex than those we ascribe to the actors themselves. (. . .) We lose our privileged position as an observer in relation to the object

domain. (. . . ) We find ourselves forced to participate (. . . ) in the process of reaching understanding. (Habermas, 1984: 118–119)

Weber (1978) defined sociology as ‘a science concerning itself with the interpretive understanding of social action’ (p. 4). We have extensive literature about how neoliberalism threatens academic freedom in science and universities (Edwards, 2022; Feldman and Sandoval, 2018; Morrish, 2020). This article presents an analysis of how the sociology participating in the internal processes and debates on the elaboration of scientific research programs has succeeded in developing a conception very different to neoliberalism.

In the last decades, many and diverse sociologists and other social scientists have made key dialogic contributions. The goal has been to improve our comprehension of the citizen social actions that are taking an increased dialogic orientation. Among others, Ulrich Beck and Elisabeth Beck-Gernsheim (2018) analyzed these dialogic dynamics in our personal relationships. Relevant feminists, such as Elisabeth Beck-Gernsheim et al. (2003), have developed this dialogic approach to feminism. These contributions have had the precedent of the publication of the Theory of Communicative Action by Habermas (1984).

Some of those authors were enthusiastic about this increasing dialogic orientation of sociology. However, sadly, they did not live long enough to participate in the reflections and debates being analyzed in this article. One of them was the excellent sociologist Ulrich Beck, from who we quote some of the words he included in the preface to the book *Contemporary Social Theory* (Flecha et al., 2003, sec. preface):

Therefore, this is a dialogical book in many ways that draws the readers out of their passivity, and invites them to actively collaborate and respond . . . without theoretical knowledge, practical problems are more difficult if not impossible to solve. This is the conviction the book reveals. . . . It combines rigorous research with facts, including the intention for a dialogical utopia . . . But this broad intention is presented in the book, joining theory with critique and empirical research with praxis, in such a charming way that it grabs its readers and captures them under its spell . . .

## Methodology

Based on the Communicative Methodology (CM) (Flecha and Soler, 2014; Soler and Gómez, 2020), seven in-depth interviews and two focus groups (FG) have been conducted. The seven interviews were conducted with seven sociologists who have made key interventions in the core of the conflicts and solutions in some current international scientific programs of research, thus fostering their development. The first FG has been made with the seven interviewed researchers before the writing of the article. The second FG has been conducted with the same seven interviewed researchers around the first draft of this article. This second FG is a criterion of the CM because, as Habermas and others say, both researchers and research subjects participate in a process of reaching understanding.

All participants were informed about the research objectives; this is to analyze how sociology is leading the new requirements of social impact and co-creation, as well as the

background of the proposal and the methodology of the study. It was clarified to them that participation was anonymous, voluntary, and altruistic, and that they could withdraw at any time from the research. Participants then signed an informed consent sheet. Once a draft of the study was ready, it was sent to the participants so that they could validate it.

Two researchers transcribed and analyzed the interviews and FGs line by line. In this process, five categories were identified. The first referred to the contributions from sociology to all sciences from a general standpoint, while the other four addressed particular contributions from sociology.

## Results and discussion

This section presents and discusses the main results gathered through the interviews and FG, regarding how sociology is leading the new requirements of social impact and co-creation.

### *Open floor for the valuation of sociology by all sciences and by society*

One of the threats to scientific programs came from powerful forces from the different ministries. As Gabrielle said, ‘The demand was for this scientific research program to disappear, so that the budget allocated to research on unemployment would be managed by the Ministry of Employment’. This Ministry would then be in charge of finding data (which they called evidence) about what was improving the population’s health, to base their policies on it.

In turn, Madison presented evidence of the sociological leadership:

Sociology has led the process that has allowed maintaining the scientific research program in the EU and elsewhere. At the worst moment of its questioning, the DG Research of the European Commission (EC) decided to select, among hundreds of candidates from all scientific disciplines, a group of experts formed by 17 members who unanimously elected the only sociologist as their chair. Some members had many more scientific citations and were from disciplines that had never valued sociology in two centuries. However, they understood that for this work, they needed the direction of someone who specialized in analyzing society.

In the study of Muñoz et al. (2012), only 20% of citizens surveyed were in favor of public funding for science, with the remaining 80% not being detractors or supporters. More recently, the data contributed by the Eurobarometer (EC, 2021) show that 86% of EU Citizens identify a positive influence of science and technology in their lives. However, more than half of the respondents (57%) believed that such scientific advancements mostly benefit the already privileged citizens. In a similar trend, women’s movements are demanding more resources for science, while requesting for those resources not to go to scientific research programs, but to their own entities or to parallel processes that are left out of these programs. Just as an example, for 12 years, the Gender Research Program in Spain was part of the National R&D Research Plan. In 2008, the Government decided to remove it from the National R&D Plan. Although that meant that the Gender Research Program lost recognition as scientific (even disappearing from scientific scales), many authors and feminist movements understood that this is how the research

carried out would better match the social needs in this area. However, today, most see that this transfer meant a loss of recognition and scientific value, and they participate in research on gender issues in the National R&D Research Plan.

Various feminists have clarified (Madrid et al., 2020; Valls et al., 2016; Vidu, 2019) that the operation had a clear antifeminist motivation, among others. Lucy shared,

From 2005 to 2008, feminists who broke the silence on Gender Violence in Spanish universities had carried out the first scientific research on the subject within the National R&D Plan. The Conference of Rectors of the Spanish Universities (CRUE) was against recognizing the existence of this serious problem and taking measures to face it.

These feminists found that instead of their voices being heard, they were harshly attacked, suffering Isolating Gender Violence (Vidu et al., 2021), especially by the university where most of them worked and whose rector was also the vice-president of the CRUE. This rector was promoted to head of the National R&D Plan of the Spanish Government. One of his first decisions was to exclude from the National R&D Plan the Research Plan that was developed in collaboration with the Women's Institute.

The Group of Experts appointed by the EC to address the relevance and monitoring of research suggested that even if citizens questioned the scientific research program, it was not because they wanted it to disappear, but for it to become more democratic, transparent, and useful. In addition to its contributions to society and all sciences, dialogic sociology has thus opened a vast and diverse field, so that the different sociological schools can have, if they want to, more relevance and recognition than they have ever had before. They have reoriented themselves toward the dialogical science and practice that today are already a requirement of citizens for their national and international scientific research programs. New approaches and instruments are already being created in an interdisciplinary way. In these, sociology is playing an essential role in co-direction. In this article, we present four of them: The Monitoring of Social Impact (Key Impact Pathways; KIP), Social Media Analytics (SMA), Social Impact Platforms, and the Inclusive Communication of Science.

### *Monitoring social impact – KIPs*

The EC published two documents that gathered the work of the Group of Experts. The first addressed the relevance of research, intending to democratize the decision on research priorities (Valta et al., 2017). Until then, public consultations were answered mainly by researchers interested in participating in the calls. The expert group made the process much more dialogic by increasing and diversifying citizen voices. Sociology provided one of these ways: the new methodology of SMA. This allowed researchers to consider the voices of a large and growing part of the citizenry that has mostly never participated in these decision processes, but is active in social media.

The second document developed the impact criteria (Van den Besselaar et al., 2018). The sections presenting the scientific and economic impact collected very well the contributions made over several decades. At the time, the debates were primarily focused on

the so-called societal impact that shaped the social impact, together with the economic one. That was the part that was most directly led by sociology.

From these reflections, debates, and work emerged the co-creation of concepts much celebrated by all those voices of the highest international scientific level. One of them was the RESI (Research Enabling Social Impact), which clarified the great contribution of Social Impact toward basic research, including that which went down paths whose hypotheses were refuted. The RESI is the cumulative impact of a good deal of research that has contributed to further research which, in turn, has achieved social impact (Soler-Gallart, 2017). To find a solution to a topic of concern, many research projects and teams are exploring different avenues. They have all been necessary to find the solution, facing both failures and successes on the way.

The Nobel Prize in Medicine Harald zur Hausen provided us with an excellent example in one of the dialogues we had with him about RESI:

In the late 1960s Herpes simplex type 2 (HSV-2) emerged as the prime suspect based on some seroepidemiological observations. I had asked my colleague Heinrich Schulte-Holthausen to use the same technique to search for HSV-2 sequences in cervical cancer biopsies. All attempts, however, failed. Up to 20% of sera from human adults also revealed neutralising antibodies to this virus. Our attempts to isolate a human correlate, however, failed. I have devoted my scientific life to the question to what extent infectious agents contribute to human cancer, trusting that this will contribute to novel modes of cancer prevention, diagnosis and hopefully later on also to cancer therapy. I am of course pleased to see that at least part of this program has been successful.

The document *Monitoring the Impact of EU Framework Programmes* clarified the widespread confusion between the concepts of dissemination, transference, and social impact (Aiello et al., 2021). The social impact of science refers to when we have scientific evidence of social improvements derived from the transfer of knowledge yielded by scientific research. Therefore, achieving this desired social impact requires a series of previous steps that guide its scope. In the first place, it is necessary to disseminate, to make the knowledge resulting from research aimed at social impact known. In this sense, we must ensure that these results are known by colleagues in our fields and society. However, knowing this scientific evidence does not mean it is used; in other words, dissemination does not always generate transference. Thus, second, the transference of this knowledge must be promoted, that is, the means must be established so companies, politicians, and Civil Society Organizations (CSOs) use this knowledge to make their products, for example, to create new companies or improve existing ones in the line of sustainability, or to develop policies based on scientific evidence. However, transference does not always ensure social impact; the use of these products does not ensure that they improve the lives of people and societies. It is only when that improvement occurs that we have the social impact of science.

This dialogical turn of society in which EC's scientific research program (and other national and international research programs) took part led to orienting the social impact of research toward global objectives, the Sustainable Development Goals (SDGs). With this, European research contributed to the improvement of the international society. Such transformation contributes to addressing the need to align global priorities with the

research strategy (De Silva et al., 2021), orienting it to the social impact. This is something that can be seen reflected in the different calls of the European Framework Program for Research (EC, 2022), where the topics chosen, the objectives set, and the expected impacts are directly oriented to obtaining research outputs that help to provide solutions to the identified global priorities, which in turn respond to global social needs, under the framework of the SDGs.

Therefore, the purpose of the document *Monitoring* is to establish the KIPs that allow the evaluation in the short, medium, and long term of the steps that scientific research is taking toward its social impact. This dialogical turn taken by the EC and driven by sociology responds to citizen demands. Public research programs are financed through taxpayers' taxes. If citizens do not perceive that the research they are subsidizing is bringing an improvement to their lives, they will stop supporting their funding (Poppy, 2015).

The societal impact part of *Monitoring* includes four KIPs (1. Addressing Global Challenges, 2. Achieving R&I Missions, 3. Engaging EU Citizens, and 4. Supporting Policy-making) to quantitatively and qualitatively evaluate the social impact of scientific research in the short, medium, and long term. The first KIP was very clear from the beginning, given the choice already made to orient the research framework program toward the SDG. The second KIP was oriented toward specifically European objectives, the realization of which is made in Europe, and it is adapted to the needs of each moment, as it has been done in the face of the situation of the pandemic and Ukraine. The third KIP was an innovation that emerged during the process, aimed at providing a scientific response to the EC's concern to ensure that the creation of knowledge and its social impact was made as much as possible in co-creation with citizens. That is why this pathway focuses on the participation of citizens from the beginning of the research process. The fourth KIP addresses political impact, a particular form of transference directly oriented to social impact. The political impact of science is a form of transference, use, and application of scientific knowledge in the policy actions considered by each policymaker.

In a democracy, decisions are made by the citizens and their democratically elected representatives. It would be undemocratic for researchers to want to decide where society should go or what policies should be made. Our role as scientists is to provide the scientific knowledge on which these policies must be based to have the best social impact. The scientists who have discovered the COVID vaccines do not decide the health policies of each country, for example, if there is more investment in public or private health. However, they do provide the vaccines that should be used in any of these policies.

### *Social Media Analytics (SMA)*

It was significant that most scientists were unaware of Article 27 of the Universal Declaration of Human Rights (United Nations General Assembly, 1948) on the right of everyone to participate in scientific progress and its benefits. It is positive that researchers, when talking about science, consider the incentives they will obtain with their dedication, especially considering that any footballer, without standing out, especially in their national first league team, has more income than a Nobel Prize. However, it is not



positive for society or science that some researchers do not consider whether they are improving science and society with that dedication. In this vein, Sue explained,

The evaluation carried out from sociology of the projects of the European scientific research programs found some directors who in the interviews declared that they did not know of any social impact yielded by the millions of euros they had received. Some of them even refused to answer the interviews, because their project financing did not include remuneration for being interviewed.

The search for new methodologies for this new situation led to the creation of SMA and Social Impact in Social Media (SISM). SMA is a methodology for analyzing the relevance that social actors attribute to different research challenges (Cabr -Oliv  et al., 2017). With SMA, results found during the most challenging moments of the pandemic were useful for people, policymakers, and citizens. In addition, the articles publishing such evidence obtained several citations on Web of Science (WoS), not usual in Social Sciences. One of these (Pulido et al., 2020) already has 155 citations in WoS and the other (Pulido Rodr guez et al., 2020) 47.

SISM is a modality of SMA aimed at evaluating the social impact *ex ante*, *in itinere*, and *ex post* of scientific research in all areas of knowledge (Pulido et al., 2018). Social media already have 4.65 billion active users worldwide in April 2022 (Global Social Media Statistics, n.d.), which will be more when you read this article. It is common to find debates on different topics, circulation of information, and diverse thoughts on social networks. In this sense, they offer sociologists an environment from which to observe both what is in the interest of citizens, and the impact that specific actions and products, including the results of research, are having on improving people's lives. Aaron explains the extent of this contribution:

This methodology is already allowing in different parts of the world for sociology to take the lead of other sciences that require sociologists to carry out this task, including those areas that had never been interested in sociology before. In the following paragraphs, some social impacts of research of different science found in social networks are presented.

Regarding SDG 13 Climate Action, messages on social networks were analyzed, including a tweet with 17 retweets and 5 likes. The unit of analysis was the entire tweet content, including the external link, which needed to be examined to determine if there was evidence of the social impact of the European scientific research being discussed. The external link presented evidence of the exact amount of CO<sub>2</sub> emissions that are avoided by replacing the diet of 1% of the total chicken consumed in Europe with the diet recommended by that particular research included in the Tweet.

Regarding SDG 4 Quality Education, one of the tweets analyzed, was linked to a report containing quantitative evidence of the social impact of successful educational actions identified in the SSH research that was included in the EC's list of 10 successful scientific investigations. The citizen who posted the tweet that includes this quantitative report explains her children's experience when participating in these successful educational actions. In fact, citizens increasingly claim for this kind of actions. Thea said, 'Since then, it was clear that the only solution to maintain the scientific research

program was to provide these successful actions based on scientific evidence of social impact’.

In relation to SDG 3 Good Health and Wellbeing, messages on Reddit were analyzed, such as one sent by a young person. This post received more than 5000 positive votes and explained how, at the beginning of the pandemic, his mother was distrusting science and resorted to pseudosciences. Thanks to the scientific evidence that her son presented to her, she changed her mind.

The methodologies of SMA (Pulido Rodriguez et al., 2021) and SISM, as well as the Communicative Content Analysis on which they are based (Pulido et al., 2020), rely on a twofold strategy. On one hand, the ‘top-down’ strategy, in which researchers define in a dialogical way a series of keywords, pages, and hashtags on which to conduct research. The inclusion criteria consider aspects such as the notoriety of the selected words, the interaction received by the identified messages, or the geographical presence, among other aspects. On the other hand, in the ‘bottom-up’ strategy, searches are made from the most used keywords in the messages of citizens on social networks, about the topic under consideration.

Communicative Content Analysis applies the principles of CM to SMA and SISM. In this sense, in the analysis of the social media messages, not only the words of the posts are considered, something that an algorithm could do, but also, all the elements that intervene in communication, together with the interaction around those tweets. Images, videos, links, the messages’ tone, or the context in which they have been shared are considered as a whole in analyzing these messages. Thus, this methodology allows the contribution of results that go beyond the mere description of reality, providing evidence that focuses on the social impact of the research.

### *Social impact platforms*

Undoubtedly, if the construction of scientific knowledge has to be done from the beginning in dialogue with the public, the evaluation and promotion of its social impact have to be done in co-creation too (Soler-Gallart and Flecha, 2022). Even researchers who consider that citizens do not have the training to participate in their construction of scientific knowledge recognize that they do have experiences of the social impact of the application in their lives of that knowledge. Therefore, scientific research programs already include this participation of citizens, for example, in the third area already mentioned of societal impact.

Sociology has co-led a scientific approach that overcomes the attempts of some private agencies to substitute the concept of ‘scientific evidence’ for that of ‘evidence’, with the latter being based on what they and the studies they fund say is evidence. This approach is clearly dialogic and includes citizens in the co-creation of the evaluation of social impact and its promotion (Soler-Gallart and Flecha, 2022). It is very difficult for scientists and citizens to accept as neutral and objective the studies funded by those entities.

European scientific programs strive to avoid their conditioning by private interests and have the participation of citizens as one of their main objectives. The controversy of science being far away from social needs and citizen participation is also being

overcome. The solution relies on having both ministries agree on the priorities and processes of this area to be included in the scientific research program, with the program continuing with its unity within the Ministry of Science.

These new research approaches are already generating innovative instruments, some of them co-led by sociology. Indeed, sociology has developed one of these examples: the scientific platforms of social impact Sappho – gender (Social Impact Science, 2020b) and Adhyayana – education (Social Impact Science, 2020a), open to all citizens, both to contribute and to consult. In these platforms, those statements that citizens find in their daily lives are collected, to provide citizens with a tool that allows them to elucidate which of these statements are based on scientific evidence and which are hoaxes. To do this, the different users can provide scientific evidence that supports this statement and, therefore, allows endorsing it or, on the contrary, that it refutes it, thus contributing to clarifying that it is a hoax. In addition, users of the platforms can also share their personal experiences concerning the topics discussed. In turn, this reflects the impact of this scientific evidence in practice and contributes to developing new avenues of research, while improving existing ones. From its launch in October 2020 until the writing of this article in June 2022, the platforms accumulate more than 248,186 visits, 48,599 visitors, 219 posts, and 597 comments.

Participation in the platforms is a success story of the co-creation of scientific knowledge, and its dissemination, transference, and social impact. A scientist participated in the platform presenting published scientific evidence claiming it was a hoax to state that children of abusers tend to be future abusers and that it was very harmful to revictimize a victim from an early age (Roca, 2020). Citizens using the platform supported the importance of clarifying this. Then, another relevant scientist made explicit his disagreement with the evidence presented, by adding a long list of scientific publications in support of this statement. A third relevant scientist in these issues replied, stating that she had not seen in any publication of that list evidence that supported that claim, and asking the scientist in which such evidence in support of the statement could be found. In this way, it could be seen that this statement was not only a hoax, but that it had devastating human consequences. The platform remains permanently open to new voices, and if evidence demonstrating it is not a hoax is provided, the categorization in the platform will be rectified.

As for co-creation, it is important to note that the dialogues that are generated on the platforms are based on what Habermas (1984) called validity claims and other authors (Searle and Soler, 2005) called dialogic relations. The categorization of a statement as scientific evidence, hoax, or controversy is not based on power interactions (e.g. depending on the academic status of the person who says it), but on dialogic interactions in an egalitarian dialogue, that is, based on the arguments and scientific evidence that are provided, and not on power relations. Thus, the dialogue that takes place on the platforms allows citizens to gather the consensuses that exist in terms of gender relations and education and to uncover the hoaxes in these areas. Moreover, it allows the identification of those issues of relevance for citizens for which more research is still needed, either because there is controversy around the subject or because there is not yet enough scientific evidence available.

### *Inclusive communication of science*

So far, most scientific communication has been based on a top-down model: scientists created knowledge outside the citizenry considered ignorant in the subject, and scientific communication took that knowledge, duly simplified, to the society at large, or to specific priority sectors. This pyramidal approach does not fit into the current democratic revolution of science. The criteria of the new research programs require a new scientific communication carried out in co-creation and closely linked to the achievement of social impact and its continuous evaluation and improvement. If citizens can participate in the co-creation of scientific knowledge, the more they can co-participate in the communication of that knowledge to their peers. If there are excellent scientists who cannot communicate their knowledge to all social sectors, it is not that they should develop superpowers. Rather, they should collaborate with those who work in those contexts that they are not able to reach.

Different societies and governments, as well as some scientific societies and citizen organizations, are beginning to develop a more egalitarian, democratic, and effective scientific communication that also includes the social sectors that until now had been most excluded from science. The White Paper on the Inclusive Communication of Science (FECYT, 2022), commissioned and published by the Spanish Ministry of Science, elaborates and develops this new approach.

With SMA, we see that citizens involved in a problem communicate scientific knowledge to other people also involved in it, almost always emphasizing its social impact, in the improvement that such knowledge has made possible for the person. Social sectors such as people with disabilities, women, LGBTI+ (lesbian, gay, bisexual, transgender, queer, and intersex) people, and certain migrant groups develop very active participation in social media, communicating to others the improvements in their lives achieved with the application of new scientific knowledge. This communication between equals is much more effective to optimize the social impact of knowledge, and also to propose new forms of research, and to improve the existing ones.

The project of the European framework programs of scientific research that was a precursor of co-creation, achieving the unanimous approval of its main result by the European Parliament, was not presented in the parliamentary headquarters by a scientist. The person responsible for delivering this speech presented herself as a great-grandmother and as an illiterate person. However, she participated very actively with her oral communication throughout the research process, from the beginning to its end. Emma presented an example:

Many and very diverse people of her cultural group (Roma) made excellent scientific communication for their peers, which we scientists would not have known how to improve. Among these people, there were leaders of Roma associations and pastors, but also people who worked at the flea market.

Some professionals in scientific communication initially saw their task threatened by the greater efficiency achieved by those who were not professionals in this field. However, it was soon evident that everyone was needed, but also that the role of those professionals should also change. Within the top-down model, it was understood that

they were intermediaries between scientists and common people, capable of explaining in a language understandable by the citizens what the scientists explained in a language that most did not understand. They thus carried out a very positive work, initiating and opening the way to this very important field of scientific communication. But the current revolution of knowledge requires a transformation of its work that far from diminishing it, enhances it.

In the current scientific revolution, the role of communication professionals is not to give citizens the fish, but to teach them how to fish. First, they have to teach scientists how to dialogue directly with citizens. That dialogue has to be two-way. Citizens should be able to learn the scientific knowledge that is most useful for their social impact. At the same time, scientists should delve in the usefulness of their knowledge and on how they can improve their impact on societies and their scientific excellence. Second, they have to make the existing instruments available to citizens, so that they can access knowledge and participate in its co-creation. An excellent and current example of this is to make the two scientific platforms we have previously analyzed (Sappho and Adhyayana) available to citizens. Third, they must contribute elements of these dialogues to elaborate the priorities of scientific research and how it is carried out and communicated.

That inclusive communication, with that egalitarian dialogue, can create confusion of roles when the different profiles of people involved are not clear about what they have to do. The concepts of exclusivity and responsibility help to clarify the situation. From now on, no one has the exclusivity, even a citizen without studies can present an experience hitherto not studied in the corresponding scientific publications and that perhaps refutes what has already been published. When the concept of miscegenation dominated in the scientific community, it was accepted that a person could be 50% French and 50% Roma, a concept that was being explained in the research mentioned above in the project of the framework program by a scientist very recognized worldwide. Then, a person without studies said that she felt 100% French and 100% Roma; neither half nor less French than other women, nor did she feel half or less Roma than other women. The excellent scientist replied by saying that this relationship forced the scientific community to rethink the concept of miscegenation. However, this situation of non-exclusivity does not mean there is no liability. In these dialogues, anyone can contribute experiences and scientific evidence, but scientists are responsible for providing the scientific evidence available.

## Conclusion

During the second decade of this century, there was an intensification of the questioning of the sciences. This led to the disappearance of scientific research programs and ministries of science. Different voices proposed reallocating their resources among the rest of the ministries so that each of them would be in charge of gathering evidence on which to base their policies. Scientific and social organizations managed to maintain the programs while recognizing some of the problems raised by the questioning. This included the need for a greater impact of research results on the improvement of society and a greater dialogue between scientists and citizens. The two main solutions proposed were social impact and co-creation, which have since become priorities of national and international

research programs in all sciences. However, these scientific programs are on the tenure track, and their continuity in the future depends to a great extent on our ability to meet these two criteria.

Sociology has had a leading role in answering questions and providing solutions. That role has been played by dialogic sociology, which has been in continuous dialogue with all the sciences, different governments, and very diverse social sectors. Sociology has a rich diversity of perspectives and methodologies; it is possible to conduct dialogic sociology from all of them, which immediately increases the recognition of sociology by society and all the sciences, including those that had never been interested in it. Scientists in health, biochemistry, neuroscience, and other fields, having to meet the requirements of social impact and co-creation with citizens, seek the collaboration of scientists specialized in analyzing society and citizenship. Their first choice is almost always sociology. The unprecedented increase in recognition occurs when we develop a dialogic sociology that provides key analyses to ensure that the research of the different sciences is democratized with a continuous dialogue with citizens and generates social improvements in reality.

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### Resumen

Existe una amplia y rica literatura sobre cómo el neoliberalismo está impulsando los recortes presupuestarios a la ciencia y las universidades, especialmente a los sectores críticos, como las ciencias sociales. Existe escasa literatura sobre el análisis del papel de la sociología en los procesos y debates internos sobre la elaboración de los programas científicos de investigación. Centrándose en los programas europeos de investigación, este artículo analiza cómo la sociología está liderando los nuevos requisitos de impacto social y co-creación. El resultado de este

análisis muestra la gran oportunidad que tiene la sociología de obtener un reconocimiento y una valorización sin precedentes por parte de la sociedad y de todas las ciencias, incluidas aquellas que no se habían interesado previamente por la sociología.

**Palabras clave**

ciencia, ciudadanía, co-creación, impacto social, diálogo

**Résumé**

Il existe une littérature abondante et riche sur la manière dont le néolibéralisme encourage les restrictions budgétaires dans la science et les universités, en particulier dans les secteurs critiques, tels que les sciences sociales. Il existe peu de littérature sur l'analyse du rôle de la sociologie dans les processus internes et les débats sur l'élaboration des programmes scientifiques de recherche. Centré sur les programmes de recherche européens, cet article analyse comment la sociologie conduit les nouvelles exigences d'impact social et de co-création. Le résultat de cette analyse montre la grande opportunité pour la sociologie d'obtenir une reconnaissance et une valorisation sans précédent de la part de la société et de toutes les sciences, y compris celles qui ne s'étaient pas intéressées auparavant à la sociologie.

**Mots clés**

science, citoyenneté, co-création, impact social, dialogue