The time of dialogic sociology

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

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

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 (*FY 2013 Appropriations: Nearly $10 Billion in R&D Cuts*, 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 different parts of the world and in several Member States of the European Union. 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, such as that most of the priorities expressed by European citizens in the surveys have a purely social character and, therefore, these specialties could not be left aside within the European scientific research programs (European Alliance for SSH, 2016).

For over two centuries, sociology has made key contributions to the improvement of societies. As other social sciences, it is a descendant and a part of the democracy (Berger et al., 1981; Elster & Przeworski, 1998). When citizens decided to self-govern, new sciences were created that allowed them to have a deeper knowledge of themselves so that they and their representatives could make informed decisions. The creator of the sociology of sciences, Merton (1973), made more relevant contributions to all sciences. Merton demonstrated that the evaluation of science depended on a system of rewards, and contributed 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, pp. 273–275):

Weber (1978) undertook the deepest analysis to date of the tendency towards 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, p. 4)

The current crisis has been worsened by a bureaucratization of the scientific research programs, that brings along a loss of meaning in which conflicts are intensified. This idea had also been subject to an excellent analysis by Merton:

"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." (Merton, 1973, p. 278)

The current sociology, with its diverse perspectives and methodologies, is grounded on contributions that can contribute and are contributing to an analysis of those conflicts,

promoting in this way 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 and 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, pp. 118–119)

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

Methodology

Based on the Communicative Methodology (CM) (Flecha & Soler, 2014; Soler & Gómez, 2020) has made 7 in-depth interviews and two Focus Groups (FG). The 7 interviews conducted with 7

sociologists that have had a key intervention in the core of the conflicts and solutions to the development of some current international scientific programs of research. The first FG has been made with the 7 interviewed researchers before the writing of the article. The second FG has been conducted with the same 7 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 objectives of the research, 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 they could validate it.

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 health of the population, 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 the aforementioned questioning, 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 in two centuries had never valued sociology. However, they understood that for this work they needed the direction of someone who specialized in the analysis of society."

Transforming the scientific research program was the only possible way to prevent its disappearance, and even to increase the resources allocated to it (European Commission, 2019). This transformation has focused on social impact and co-creation, and it is achieving relevant results both 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 & Smit, 2021). In 2010, the EC organized a large conference entitled "Science against Poverty" (European Commission, 2012), which greatly accelerated the questioning. It was highlighted that almost all researchers had presented diagnoses based on their ideologies; only a few presented successful actions in the solution of that problem. The conclusion was that societies could not continue to finance scientific research on poverty, especially when even the directors of such research were able to provide evidence, so those living in poverty could improve their condition more than if the funding had directly been allocated to the poor. 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." 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 and one of them was a SSH research (INCLUD-ED Consortium, 2011) directed from the area of sociology.

In the study of Muñoz and colleagues (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 (European Commission, 2021) shows 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 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 in which the majority 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, and 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 suggested that even if citizens questioned the scientific program of research, 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 wide 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, reorienting themselves towards 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 important role in co-direction. In this paper, we present four of them: The Monitoring of Social Impact (Key Impact Pathways), Social Media Analytics, Social Impact Platforms, and the Inclusive Communication of Science

Monitoring Social Impact. Key Impact Pathways

The work of the Group of Experts was published by the EC in two documents. The first addressed the relevance of research, intending to democratize the decision on research priorities (Valta et al., 2017). Until then, the public consultation were mostly attended by the 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 Social Media Analytics. 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 that is active in social media.

The second document developed the impact criteria (Van den Besselaar et al., 2018). The sections presenting the scientific impact 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, together with the economic one, shaped the social impact. That was the part which was most directly led by sociology. This process included reflections and meetings with 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 EC (SIOR, 2016).

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 towards basic research, including that which went down paths whose hypotheses were refuted. Research Enabling Social Impact (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 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 obtained are known by colleagues in our fields and by society. However, the fact that this scientific evidence is known does not mean that they are used; in other terms, dissemination does not always generate transference. Thus, secondly, the transference of this knowledge must be promoted, that is, the means must be established so companies, politicians, and Civil Society Organizations (CSO) 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. Only when that improvement occurs do 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 towards global objectives, the Development Sustainable Goals. With this, European research contributed to the improvement of 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 (European Commission, 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 Key Impact Pathways (KIP) that allow the evaluation in the short, medium, and long term of the steps that scientific research is taking towards 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 KIP (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 towards the SDG. The second KIP was oriented towards 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, which is a special 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 if they are 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, but they do provide the vaccines that should be used in any of these policies.

Social Media Analytics

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 the benefits derived therefrom. It is positive that researchers, when talking about science, take into account the incentives they will obtain with their dedication, especially taking into account 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 take into account whether with that dedication they are improving science and society. 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 the financing of their project did not include remuneration for being interviewed."

The search for new methodologies for this new situation led to the creation of Social Media Analytics (SMA) and Social Impact in Social Media (SISM). SMA is a methodology for analyzing the relevance that social actors attribute to different research challenges (Cabré-Olivé et al., 2017). With SMA, results found during the hardest moments of the pandemic were useful for people, policymakers, and also for citizens. In addition, the articles publishing such evidence obtained a number of citations in 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 Rodríguez 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. On social networks, it is common to find debates on different topics, circulation of information, and diverse thoughts. In this sense, they offer sociologists an environment from which to observe both what is in the interest of citizens, and the impact that certain 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".

About SDG 13 Climate Action, messages on social networks were analyzed, including a tweet with 17 RT and 5 likes. The unit of analysis was the entire content of the tweet, including the external link, which needed to be examined to find out 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_2 emissions that are avoided by replacing the diet of 1% of the total chicken consumed in Europe with the diet recommended by the research.

Regarding SDG 4 Quality Education, we analyzed, among others, a tweet that linked to a report that contained 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 the experience of her children when participating in these successful educational actions.

In relation to SDG 3 Good Health and Wellbeing, messages on Reddit were analyzed, as one sent by a young person. This post received more than 5,000 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 the 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 Communicative Methodology to SMA and SISM. In this sense, in the analysis of the social media messages, not only the words of the

posts are taken into account, something that an algorithm could do, but all the elements that intervene in communication, as well as the interaction around them. Images, videos, links, the tone of the messages, or the context in which they have been shared are considered as a whole in the analysis of 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 & 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.

However, in the short term, this dimension has caught most scientists and public and private research funding agencies on the back foot. This gap has left room for entities that now present themselves as experts in social impact and in the evidence that leads to that impact. In some cases, they are in favor of science and scientific evidence, but they propose a process of evaluation and promotion of social impact in which the voices of citizens are not present. In

their place, a task of experts who often are not scientists. In other cases, they go further by saying that they are the ones who know how to find the evidence that leads to social impact, evidence that opposes the scientific evidence, which they consider far from reality and useless.

Sociology has co-led a scientific approach that overcomes these questions. This approach is clearly dialogic and includes citizens in the co-creation of the evaluation of social impact and its promotion (Soler-Gallart & Flecha, 2022). It is very difficult for entities that receive their funding from a specific ministry not to condition their activity with the specific policies of whoever is currently governing, thus breaking with one of the most important characteristics of science. It is also very difficult for top scientists to agree to subordinate themselves to these entities in exchange for funding for studies that do not go through the selection and evaluation criteria of the scientific community. It is very difficult as well for citizens to accept as neutral and objective the studies thus commissioned, especially that part of the citizenry that is politically different from the one that governs at that time.

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.

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. We have saved the scientific programs and the CE 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).

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) and Adhyayana (education), open to all citizens, both to contribute and to consult. In it, 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 & Soler, 2005) called dialogic relations. The categorization of a statement as scientific evidence, hoax, or controversy is not based on power interactions (for example, 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

Most scientific communication has so far 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 certain 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, so more can they 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 Book on the Inclusive Communication of Science (FECYT, 2022),

commissioned and published by the Spanish Ministry of Science, elaborates and develops this new approach.

With Social Media Analytics 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+ 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 framework programs of European 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, but who had 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 the 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. Firstly, they have to teach scientists how to dialogue directly with citizens. That dialogue has to be two-way so that citizens learn the scientific knowledge that is most useful for their social impact, but also for scientists to discover up close the usefulness of their knowledge and how they can improve not only their impact on societies but also their scientific excellence. Secondly, they have to make available to citizens the existing instruments so that they can not only access knowledge but also participate in its co-creation; an excellent and current example is to make available to citizens the two scientific platforms that we have previously analyzed (Sappho and Adhyayana). Thirdly, they must contribute elements of these dialogues to the elaboration of the priorities of scientific research and to 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 aforementioned research 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; she felt 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 that there is no liability. In these dialogues, anyone can contribute experiences and scientific evidence, but scientists have the responsibility to provide the scientific evidence available.

Conclusion

During the second decade of this century, there was an intensification of the questioning of sciences, which even 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 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, such as 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, with different governments, and with 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 the analysis of society and citizenship, and 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 that it generates social improvements in reality.

References

Aiello, E., Donovan, C., Duque, E., Fabrizio, S., Flecha, R., Holm, P., Molina, S., Oliver, E., & Reale, E. (2021). Effective strategies that enhance the social impact of social sciences and humanities research. *Evidence & Policy: A Journal of Research, Debate and Practice*, *17*(1), 131–146. https://doi.org/10.1332/174426420X15834126054137

Berger, P. L., Kellner, H., & Others. (1981). *Sociology reinterpreted: An essay on method and vocation*. Anchor Books.

Cabré-Olivé, J., Flecha-García, R., Ionescu, V., Pulido, C., & Sordé-Martí, T. (2017). Identifying the Relevance of Research Goals through Collecting Citizens' Voices on Social Media. *International and Multidisciplinary Journal of Social Sciences*, *6*(1), 70–102. https://doi.org/10.17583/rimcis.2017.2652

De Silva, M., Gokhberg, L., Meissner, D., & Russo, M. (2021). Addressing societal challenges through the simultaneous generation of social and business values: A conceptual framework for science-based co-creation. *Technovation*, *104*, 102268. https://doi.org/10.1016/j.technovation.2021.102268

Edwards, R. (2022). Why do academics do unfunded research? Resistance, compliance and identity in the UK neo-liberal university. *Studies in Higher Education*, *47*(4), 904–914. https://doi.org/10.1080/03075079.2020.1817891

Elster, J., & Przeworski, A. (1998). *Deliberative Democracy* (Vol. 1). Cambridge University Press.

European Alliance for SSH. (2016). *European Alliance for SSH contribution on SSH integration in*

Horizon 2020 Stakeholders' Workshop, July 2016. European Alliance for SSH.

https://eassh.eu/Position-Papers/EASSH-is-invited-at-the-EC-Third-Stakeholders-Meeting-

on-SSH-in-Horizon-2020~p1266

European Commission. (2012, June 11). *"Science against Poverty" Conference under the*

Spanish Presidency. CORDIS. https://cordis.europa.eu/project/id/268168/reporting

European Commission. (2019). *Co-design towards the first strategic plan for Horizon Europe. A*

report on the web-based consultation and on the European Research and Innovation Days.

European Commission.

https://ec.europa.eu/info/sites/default/files/research_and_innovation/strategy_on_resea

rch_and_innovation/documents/ec_rtd_he-co-design-activities-report_102019_.pdf

European Commission. (2021). *European citizens' knowledge and attitudes towards science*

and technology. European Commission.

https://europa.eu/eurobarometer/surveys/detail/2237

European Commission. (2022). *Horizon Europe (HORIZON) Programme Guide* (V1.5). European

Commission.

https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/guida

nce/programme-guide_horizon_en.pdf

FECYT. (2022). *Hacia una comunicación inclusiva de la ciencia: Reflexiones y acciones de éxito*.

FECYT.

https://www.fecyt.es/es/publicacion/hacia-una-comunicacion-inclusiva-de-la-ciencia-refle

xiones-y-acciones-de-exito

Feldman, Z., & Sandoval, M. (2018). Metric power and the academic self: Neoliberalism,

knowledge and resistance in the British university. *tripleC: Communication Capitalism &*

Critique Open Access Journal for a Global Sustainable Information Society, *16*(1), 214–233.

https://doi.org/10.31269/triplec.v16i1.899

Flecha, R., Soler-Gallart, M., & Sordé, T. (2015, December 9). *Europe must fund social sciences*.

Nature Publishing Group UK. https://doi.org/10.1038/528193d

Flecha, R., & Soler, M. (2014). Communicative Methodology: Successful actions and dialogic

democracy. *Current Sociology. La Sociologie Contemporaine*, *62*(2), 232–242.

https://doi.org/10.1177/0011392113515141

FY 2013 appropriations: Nearly $10 billion in R&D cuts. (2013, March 27). American Association

for the Advancement of Science.

https://www.aaas.org/fy-2013-appropriations-nearly-10-billion-rd-cuts

Girbes, S., Sebastián, J., Rodríguez, X. P., Fontanals, M., Campeny, G., Gómez, B., & Soler, M.

(2022). Co-creation Processes Contributing to the Societal Impact of Science:

Contributions from the Net4Impact Network. *International and Multidisciplinary Journal*

of Social Sciences, *11*(1), 54–81. https://doi.org/10.17583/rimcis.10009

Global Social Media Statistics. (n.d.). DataReportal. Retrieved June 5, 2022, from

https://datareportal.com/social-media-users

Habermas, J. (1984). *The theory of communicative action, volume I*. Boston: Beacon Press.

Harris, E. (2010, September 8). Science spending cuts: how should we judge Vince Cable? *The*

Guardian.

https://amp.theguardian.com/science/political-science/2010/sep/08/science-spending-cuts-vince-cable

INCLUD-ED Consortium. (2011). *INCLUD-ED. Strategies for inclusion and social cohesion in Europe from education. Final Report*. 6FP European Commission. http://creaub.info/included/wp-content/uploads/2010/12/D25.2_Final-Report_final.pdf

Madrid, A., Joanpere, M., de Botton, L., & Campdepadrós, R. (2020). Media Manipulation Against Social Justice Researchers: Second-Order Sexual Harassment. *Qualitative Inquiry: QI*, *26*(8-9), 983–988. https://doi.org/10.1177/1077800420938853

Merton, R. K. (1973). *The Sociology of Science: Theoretical and Empirical Investigations*. University of Chicago Press.

Morrish, L. (2020). Academic Freedom and the Disciplinary Regime in the Neoliberal University. In S. Dawes & M. Lenormand (Eds.), *Neoliberalism in Context : Governance, Subjectivity and Knowledge* (pp. 235–253). Springer International Publishing. https://doi.org/10.1007/978-3-030-26017-0_13

Muñoz, A., Moreno, C., & Luján, J. L. (2012). Who is willing to pay for science? On the relationship between public perception of science and the attitude to public funding of science. *Public Understanding of Science* , *21*(2), 242–253. https://doi.org/10.1177/0963662510373813

Poppy, G. (2015, September 30). *Science must prepare for impact*. Nature Publishing Group UK. https://doi.org/10.1038/526007a

Pulido, C. M., Redondo-Sama, G., Sordé-Martí, T., & Flecha, R. (2018). Social impact in social

media: A new method to evaluate the social impact of research. *PloS One*, *13*(8), e0203117. https://doi.org/10.1371/journal.pone.0203117

Pulido, C. M., Villarejo-Carballido, B., Redondo-Sama, G., & Gómez, A. (2020). COVID-19 infodemic: More retweets for science-based information on coronavirus than for false information. *International Sociology: Journal of the International Sociological Association*, *35*(4), 377–392. https://doi.org/10.1177/0268580920914755

Pulido Rodriguez, C. M., Ovseiko, P., Font Palomar, M., Kumpulainen, K., & Ramis, M. (2021). Capturing Emerging Realities in Citizen Engagement in Science in Social Media: A Social Media Analytics Protocol for the Allinteract Study. *International Journal of Qualitative Methods*, *20*, 16094069211050163. https://doi.org/10.1177/16094069211050163

Pulido Rodríguez, C., Villarejo Carballido, B., Redondo-Sama, G., Guo, M., Ramis, M., & Flecha, R. (2020). False news around COVID-19 circulated less on Sina Weibo than on Twitter. How to overcome false information? *International and Multidisciplinary Journal of Social Sciences*, *9*(2), 107–128.

https://hipatiapress.com/hpjournals/index.php/rimcis/article/view/5386/3070

Roca, E. (2020, September 27). *There is no causal relationship between having suffered gender-based violence in childhood and future violence*. Social Impact Science. https://socialimpactscience.org/gender/2020/09/27/there-is-no-causal-relationship-betw een-having-suffered-gender-based-violence-in-childhood-and-future-violence/

Searle, J., & Soler, M. (2005). *Lenguaje y ciencias sociales. Diálogo entre John Searle y CREA*. Barcelona: El Roure.

SIOR. (2016). *1st Conference on Social Impact of Sciences*. Social Impact Science.

http://socialimpactscience.org/sis2016/

Soler Gallart, M. (2017). *Achieving social impact* (1st ed.) Springer International Publishing.

Soler-Gallart, M., & Flecha, R. (2022). Researchers' Perceptions About Methodological

Innovations in Research Oriented to Social Impact: Citizen Evaluation of Social Impact.

International Journal of Qualitative Methods, *21*, 16094069211067654.

https://doi.org/10.1177/16094069211067654

Soler, M., & Gómez, A. (2020). A Citizen's Claim: Science With and for Society. *Qualitative*

Inquiry: QI, *26*(8-9), 943–947. https://doi.org/10.1177/1077800420938104

Stier, J., & Smit, S. E. (2021). Co-creation as an innovative setting to improve the uptake of

scientific knowledge: overcoming obstacles, understanding considerations and applying

enablers to improve scientific impact in society. *Journal of Innovation and*

Entrepreneurship, *10*(1), 1–14. https://doi.org/10.1186/s13731-021-00176-2

United Nations General Assembly. (1948). Universal declaration of human rights. In *UN General*

Assembly. http://www.un.org/en/udhrbook/pdf/udhr_booklet_en_web.pdf

Valls, R., Puigvert, L., Melgar, P., & Garcia-Yeste, C. (2016). Breaking the Silence at Spanish

Universities: Findings From the First Study of Violence Against Women on Campuses in

Spain. *Violence against Women*, *22*(13), 1519–1539.

https://doi.org/10.1177/1077801215627511

Van den Besselaar, P., Flecha, R., & Radauer, A. (2018). *Monitoring the Impact of EU Framework*

Programmes. European Commission. https://doi.org/10.2777/518781

Vidu, A. (2019, January 24). Omertá (24): El Rector enemigo del feminismo. *Diario Feminista*.

    https://eldiariofeminista.info/2019/01/25/el-rector-enemigo-del-feminismo/

Vidu, A., Puigvert, L., Flecha, R., & López de Aguileta, G. (2021). The concept and the name of

    Isolating Gender Violence. *Multidisciplinary Journal of Gender Studies*, *10*(2), 176–200.

    https://doi.org/10.17583/generos.2021.8622

Weber, M. (1978). *Economy and Society: An Outline of Interpretive Sociology*. University of

    California Press.