

Can open and collaborative science meet social needs?

Date

Reporting Period: February 2015 - February 2016

Report Due: Apr. 8, 2016

Report Prepared by:

Pablo Kreimer

Hugo Ferpozzi

Leandro Rodríguez Medina

Suggested Citation: Kreimer, Pablo, Ferpozzi, Hugo, and Leandro Rodriguez Medina. "Can open and collaborative science meet social needs?." Midterm Progress Report for Open and Collaborative Science in Development Network (OCSDNet), April 8, 2016.

1. Executive Summary

- Re-state initial research objectives

The project main research objective aims to analyse under which conditions open and collaborative scientific networks have the ability to cooperate in the effective use of the knowledge produced to attend specific social problems. In other words, the project aims to

a) Identify the formation of collaboration networks, and the different actors and elements that take part in them.

b) Analyse knowledge production, circulation and sharing means (communication and collaboration platforms, research instruments and tools) and outputs (papers, patents, institutional documents).

c) Single out the factors and motivations that lead researchers and teams to take on problem agendas, conceptual and methodological frameworks, problem definitions, and collaboration platforms.

d) Provide a reflexive and participative review of the scientific treatment of social problems that includes the project stakeholders.

- Describe substantial shifts (if any) from your original proposal and why the shifts occurred

The incorporation of two new case studies (together with two new PhD candidates participating in the project) condenses our more substantial shift from the original proposal. These new case studies brought in other sets of stakeholders and dynamics between science, government and the broader community into our research. We have thus decided to incorporate a new research objective aiming to elaborate a typology of open science collaborations which took different variables as a basis -i.e., the “driver” of science collaborations (scientists, affected population, other stakeholders, NGOs, etc.); the degree of “openness” (limited to scientific community or extended to other actors); and the interests brought into play, among others. These key variables are a tool to understand the implications for the co-production of knowledge, and their use -or not- in approaching and solving social issues.

- Briefly outline key observations and emerging findings

Analysis of the new case studies shows different dynamics in shaping social issues and in proposing ways to address them. Degrees of openness and barriers against it vary significantly between cases, and especially between the different stakeholders involved in each case. Such differences seem to depend on variables such as (a) the types of knowledge at stake, (b) political influence and resources, and (c) the ability to effectively use knowledge resources. The degree of openness depends also on (i) institutional policies and incentives, (ii) geographical location, (and iii) the type and duration of cooperation between academics and stakeholders.

2. Research Problem

- State research question

Our questions intend to assess potential impacts (positive and negative) of open and collaborative science, especially regarding the social use of knowledge by local peripheral societies. The central research question, therefore, is to determine under what conditions can open collaboration networks contribute to an effective use of knowledge in peripheral societies; which consequences are associated to more or less open networks, and what is the specific role of the technical organization of open research collaboration. This is to ask:

What factors affect—positively and negatively—open and collaborative science within these networks? What does openness mean in the contexts of these networks?

How are Latin American research groups integrated into international research networks? What is the role of epistemological and technical motivations, of international visibility, and of the social use of knowledge, respectively?

What are the mechanisms of knowledge circulation and sharing in these scientific networks? To what extent are they “open” and collaborative? What are their facilitators and constraints?

Who are the most frequent partners and how is power and decision-making distributed—including research agendas—within the networks? What other stakeholders participate in the formation of these networks besides research teams themselves? What are the governance structures of these scientific networks? How do they affect the open and collaborative character of these networks?

What are the variables determining the Latin American research groups participation in more or less open or collaborative networks? What is the role of traditional incentives such as social and economic capital (recognition and funding)? How are the technical, institutional, and epistemological factors affecting this traditional model of scientist’s motivation and exchange?

What is the role played by the international cooperation policies in each country in regards to the integration of collaborative networks? Do South-South and North-South scientific networks operate in the same way, in terms of the adoption of open and collaborative science mechanisms and values? At last, does openness contribute to the adoption of research agendas more connected to social problems?

- Describe research approach and methods

The methodological strategy has been deployed both in the analysis of primary and secondary data, on the basis of qualitative (1) and quantitative techniques (2).

For the first stage (1.1), we started by “following the actors”: this is a strategy that corresponds to the approach raised by laboratory studies, which consists in following the research groups at

the different loci of knowledge production. Participants have been inquired about their actual research links, funding sources, institutional settings and general practices, in order to generate a rich description of the network. Key informant interviews were conducted as qualitative in-depth interviews to assess the elements that are perceived as motivations, facilitators, and constraints, and which affect on the researchers' actual collaboration practices, open or closed. In the same way, interviews assessed the researchers' stance on the social problems which their investigations are related to.

Simultaneously (1.2), we have identified the groups and actors that are formally related to the networks, according to the links that can be singled out using institutional documents, websites, and various written and documentary sources in other media and supports. At last, we have inquired into different levels of regulation which might affect the open and collaborative character of international scientific networks (particularly, intellectual property rights).

For the second stage (2), we have started observing and analysing the features and the dynamics of collaboration between groups in each field using bibliometric tools. Here, after collecting all the papers produced by the different research groups, we will develop a keyword strategy to access the information, working in collaboration with specialists in each field. Data will be initially analyzed as a whole in order to determine its general structure (2.1), and then separated into five year periods to track the evolution of the fields (dynamics), finding shared actors that appear in consecutive periods (2.2).

Whereas traditional bibliometric analysis has chiefly relied on co-citation analysis, we are working with new resources such as bibliographic and heterogeneous coupling methods that also allow us to explore the cognitive and the semantic contents of the papers being analysed. Such methods analyse not only shared referenced, but also integrate as shared title words, authors, referenced journals, keywords, subjects, addresses, and so into analysis.

Complex networks can therefore be surveyed and recreated with greater insight and precision. Data obtained with these methods provide a better account of "disciplinarity cohesion" and enable following the intellectual links of the scientist through their production, to be contextualized with our initial qualitative approximation (1). Emerging dynamics will be further understood by applying graphic analysis to the complex datasets obtained from cross analysis of shared references, including title words, keywords, authors, and journals. This will allow us to map the spatial and temporal dynamics of the networks, to identify the participation of non-academic actors in publications, and to assess co-authorship in quantitative (intensity) and qualitative (thematic) terms .

The maps and networks generated from (2.1) and (2.2) are meaningful inputs to read and rethink the interviews conducted in the first stage (1.1 and 1.2); both strategies will be improved from crossing these sets of data.

Given that we understand mobility as a meaningful form of scientific cooperation, during this stage we also trace and analyse young researchers' training in international centres and universities (2.3).

Finally, integrating the data obtained from (1) and (2), we will also observe the articulation of the networks in terms of the actors' motivations: whether they respond to institutional policies or regulations, to the relationships with other actors to industrialize knowledge, or to other factors that operate as stimulus for the formation of networks. This will be contrasted with the analysis of (discursive) network objectives, the goals of the funding agencies or institutions that sponsor them, and the overall funding structure.

A comparative analysis will be carried out from different variables that are present in each case study.

- If your research problem has changed since project inception, please explain why/how.

The research problem remained the same for the most part, but acquired new, richer insights from the two new case studies.

The final research steps, once integrated the results coming from different methodological approaches, expect to achieve a suggestion of an empirically-based typology of the various configurations regarding knowledge production, circulation and use at the different levels and by several social actors.

3. Research Objectives and Emerging Findings

- Describe specific research objectives

Our specific research objectives have been stated as follows: (a) identify the formation of collaboration networks, and the different actors and elements that take part in them; (b) analyse knowledge production, circulation and sharing means (communication and collaboration platforms, research instruments and tools) and outputs (papers, patents, institutional documents); (c) single out the factors and motivations that lead researchers and teams to take on problem agendas, conceptual and methodological frameworks, problem definitions, and collaboration platforms; and (d) provide a reflexive and participative review of the scientific treatment of social problems that includes the project stakeholders.

The two new case studies gave us new insights into devising a typology for open science collaborations and their connection with local social problems. In this way, the construction of the typology can be considered as a new specific objective.

- To what extent is the project achieving its objectives? Describe challenges or barriers, if any.

No significant barriers have been encountered. Challenges mostly resided on:

- a) "Language barriers" with scientists from natural and hard sciences.
- b) Reaching NGO representatives.
- c) Widening our empirical data (adding more different cases). During the last period, however, we could overcome this barrier, thanks to the inclusion of two new PhD students.

- Describe your project's emerging findings

Even when open and collaborative science practices are taking place, and even in if open resources for knowledge are relatively widespread, taking advantage of these requires rather sophisticated competences.

Using open knowledge may become a challenge for some stakeholders when it is “handed down” to them, as there are very different stakeholders with very different ability and resources to effectively use this knowledge. These differences sometimes lies in cognitive aspects (i.e., experts vs. “lay” stakeholders, such as biologists and groups affected by diseases), but sometimes the gap is due to more “sensitive” aspects such as political influence, institutional support and access to infrastructure (i.e., pharma companies and global NGO representatives vs. researchers at public institutions).

These gaps turned the question on whether knowledge is open or closed into what is to be done with knowledge and how.

In addition to this, while there are certain researchers/groups that collaborate closely with stakeholders (migrants, NGOs, decision-makers), others tend to rely on more traditional approaches to knowledge production, where stakeholders play the usual role of informants. Open or closed knowledge seems to depend more on traditions of research (more open in the Southern and Northern borders, for example) than on the utility/usefulness of knowledge.itself.

- What do your findings suggest about the nature/context of open science in development?

Our particular context in development (Argentina, Brazil and México) seems to be a constitutive factor in both shaping the issue and proposing solutions. In at least three of our four case studies, for instance:

1. Neglected tropical diseases are, by definition, endemic in developing regions. Although they have recently spread out to developed regions or wealthy sub-areas within the context of development, biomedical research on such diseases (and especially drug development) is dominated by international NGOs and research centres from developed countries which collaborate with local stakeholders. These local stakeholders related to public research, on the other hand, accrue recognition and resources from ties with international stakeholders.
2. In the case of Mexico's migratory patterns, the collection of data is a very sensitive issue due to risks associated with human trafficking and surveillance. Migration patterns are, as one would expect, heavily influenced by economic opportunities in the United States. Local social scientists studying the phenomenon, on the other hand, draw heavily on 'mainstream' (or Northern) conceptual frameworks and methods. At the same time, researchers claim to be aware of both issues, and regard it as problematic only to a certain extent. Certain peripheral institutions (El Colegio de la Frontera Sur) and regions (borders) seem to work more closely with stakeholders and, perhaps as a consequence, they are more case-oriented and less concerned with mainstream theoretical contributions (from abroad).
3. In the case of major mining projects in Argentina, the main stakeholders are

transnational mining firms, on the one hand, and local organizations opposing their activities, on the other. Scientific knowledge is to be used and mobilised by both parties in order to back up their stance on the conflict. At the same time, however, access to scientific knowledge can be partly restricted due to conflicts of interest between the different parties and their possible influence on assessment processes.

4. The case of jaguar preservation research could be even more “rare” in terms of involving international stakeholders. This particular research network, which includes collaboration from a considerable number of non-scientific and non-institutional stakeholders, seems to be entirely based in the local context. In other words, no major international stakeholder seems to take part in the production of knowledge or in the shaping of the issue. However, this local research group (dedicated to monitoring endangered jaguars) is likely to play a key role in defining the issue altogether.

4. Project Implementation and Management:

- Briefly describe completed and pending activities in the table below.

Completed Activities (February 2015 - 2016)	
<i>Type of Activity</i>	<i>Details</i>
First annual workshop with peers	Theoretical and methodological discussion and review with colleagues and peers working on related topics, including two other South American OCSD projects.
Preliminary meeting with advisors	Discussion of possible drafts and policy recommendations. Initial discussion on implementation of quantitative methods.
Pending Activities (March 2016 - February 2017)	
<i>Type of Activity</i>	<i>Details</i>
Advisors’ round	Specification of quantitative methods and elaboration of research outputs
Second annual workshop	Annual workshop which will share results and incorporate stakeholders for feedback and shared learning.

5. Project Outputs and Dissemination

- Describe project outputs and dissemination strategies:

Workshops held: February 2015 - 2016

Name of workshop	Outcome(s) of workshop	Number of participants present	Any relevant links to event information

First annual workshop with peers	Issues associated with open science in the South American context. Reviews on adequacy of concepts and methods used.	~15	
----------------------------------	--	-----	--

Conferences Attended (to discuss Open Science)

Name of Conference	Your contribution to the event	Outcomes of the conference? (collaborations, contributions, etc.)	Any relevant links to event information
Chan, L., Rosset, A., Diouf, D., Agrivina, I., & Ferpozzi, H. "Catalysing open science collaboration in the Global South." Information and Communication Technologies and Development 2015 Conference. Nanyang Technological University. Singapore, May 16-19 2015.	Speaker: Hugo Ferpozzi		
Research forum: "Buenas Prácticas de Investigación en el marco de la Acreditación". [In English: Good research practices in the context of accreditation]. Asociación Colombiana para el Avance de la Ciencia (ACAC) and Consejo Nacional de Acreditación (CNA). Bogotá, Colombia, October 30, 2015.	Conference speaker: Pablo Kreimer		
Conference: La evaluación como política implícita". [In English: Evaluation as implicit policy]. Asociación Colombiana para el Avance de la Ciencia (ACAC) and Consejo Nacional de Acreditación (CNA). Bogotá,	Conference speaker: Pablo Kreimer.	Interaction with Colombian authorities to re-think scientific evaluation methods to increase openness and utility of local knowledge production.	

October 1, 2015.			
Symposium: 'Science &You: Current strategies and means for action': "Social Studies of Science and Public Understanding of Science: convergence or parallel paths?" Nancy, June 3-5, 2015	Keynote speaker: Pablo Kreimer	Discussion with scientific journalists and scholars in PUS (Public Understanding of Science) to set up bridges between social studies of science and the social dissemination of scientific knowledge. Open science (together with public controversies) is precisely one of the "bridge topic" between both fields.	
STEPS Latin America: "Abriendo la agenda del desarrollo". [In English: Opening up the agenda of development]. Buenos Aires, November 5-6, 2015.	Panel: Pablo Kreimer	Discussing of the relationships between production, dissemination and use of science in developing and developed countries.	
"Moving knowledge between disciplines: does architecture care about social sciences' spatial turn?", Denver, CO, 11-14 November 2015	Paper presentation: Leandro Rodriguez Medina (with Martha V. Peña & Alejandra Sosa)	Discussing the degree of openness of architecture firms in Mexico to social sciences' contributions on public space.	
"Have Architects Heard about the Spatial Turn in the Social Sciences? Or How to Be Creative by Ignoring Social Knowledge". Workshop "(Dis)Connecting Circuits Affecting the Production of Knowledge in the Social Sciences", Freiburg, Germany, 16-18 March, 2016.	Paper presentation by invitation: Leandro Rodriguez Medina	Presentation on the main factors that encourage or discourage knowledge circulation between disciplines in order to understand how 'open' architecture might be to social sciences' theories and empirical analysis on space.	

Partnerships Formed to date:

Name of Partner	Type of stakeholder (policy maker, research organisation, community group, etc.)	Briefly describe your collaboration with this partner
Mariana Sanmartino	Mariana Sanmartino is a 'mainstream' researcher and science communicator/educator ("translator") in the field of Chagas disease.	We have agreed to include Mariana Sanmartino in our second annual workshop, both for overall discussion and also as an actor that works closely with different stakeholders.
CLACSO	Academic organization	Design and set up of open STS Latin American repository.

List of relevant publications (February 2015-2016):

Name of Publication	Type (book, journal article, newspaper, blog, etc.)	Link
Kreimer, P. (2015). Co-producing Social Problems and Scientific Knowledge: Chagas Disease and the Dynamics of Research Fields in Latin America.	<i>Sociology of Science Yearbook</i> , Vol. 29. ISSN: 0167-2320	
Levin, L., Jensen, P. & Kreimer, P. (forthcoming 2016). Does size matter? The multipolar international landscape of nanoscience.	Journal: <i>Scientometrics</i>	
Kreimer, Pablo (2015), "Los mitos de la ciencia: desventuras en las prácticas científicas, los estudios sobre la ciencia y las políticas científicas".	<i>Nomadas</i> (Journal), No. 42.	
Kreimer, P. (Ed.) (in press 2016). <i>Contra viento y marea. Emergencia y desarrollo de campos científicos en la periferia</i> . Buenos Aires: CLACSO.	Edited volume: <i>Contra viento y marea. Emergencia y desarrollo de campos científicos en la periferia</i>	

<p>Delvenne, P. & Kreimer, P. (in press 2016). North-South cosmopolitized science. In D. Tyfield (ed.), <i>Routledge Handbook of Political Economy of Science</i>. London: Routledge</p>	<p>Edited volume: <i>Handbook of Political Economy of Science</i></p>	
<p>Vessuri, H. & Kreimer, P. (2015). "La science latino-américaine: tensions du passé et enjeux du présent". In: M. Kleiche-Dray (ed.), <i>Les ancrages nationaux de la science mondiale</i>. Paris: Edition des Archives contemporaines</p>	<p>Edited volume: <i>Les ancrages nationaux de la science mondiale</i></p>	
<p>Magallanes-Blanco, C. & Rodriguez Medina, L. (2015) Indigenous knowledge in the social sciences: comunalidad and the challenge to Western categories. In Vessuri, H. & Kuhn, M. (ed.) <i>Contributions to Alternative Concepts of Knowledge</i>. Stuttgart: Ibidem Publishers.</p>	<p>Edited volume: <i>Contributions to Alternative Concepts of Knowledge</i>.</p>	
<p>Rodriguez Medina, L. (2016, in press) "Y conocerán la internet, y la internet ¿los hará libres? El acceso abierto visto desde la periferia". In Escamilla, D. (ed) <i>Producción cultural y nuevas tecnologías</i> (preliminary title), México: Consejo Nacional para la Cultura y las Artes (CONACULTA).</p>	<p>Edited volumen: <i>Producción cultural y nuevas tecnologías</i> (preliminary title).</p>	

Any Other outputs:

We have set up the open library/repository for publications within the field of Science, Technology and Society. The library aims to share, invite other to contribute and make readily available all the Latin American publications and papers related to the field of STS studies

(including drafts, pre-prints and such) whenever possible. Available at:
<http://www.bibliotecacts.org/>

6. Impact

- In what ways does your research project contribute to the development objectives of your partner community?

Key contributions, which are still very recent:

- a) We are taking part in open science forums, and institutions in Argentina (most notably, so far, CLACSO) and
- b) Colombia's science evaluation system is starting to show signs of change.

- How does your work contribute towards building the field of Open Science?

We have thought about open science collaboration as a source of potential benefits and risks in development. We have taken critical studies on the subject as an inspiration to achieve a more reflexive and context-oriented understanding of the connections between openness, scientific knowledge and social issues. We have criticized some “mainstream” ideas on the subject, such as “more open collaboration will necessarily bring better outcomes”, showing how openness is not just “something” that anyone can take advantage, but actually depends on different types of capacities and on the stakeholders’ position.

These findings have been put forwards in published papers and others which are still work in progress and discussed across different academic meetings and community events.

- In what ways could the network better support your project in terms of short and long-term impact?

(See point 9.)

8. Reflective Learning:

- How are you capturing your team’s learnings from participating in the network?

Face-to-face interactions and specific feedback from the network members are our most valuable source of learnings.

- To what extent are these lessons shaping your practice?

Our team has been working for more than 20 years from a sociological point of view to analyse scientific practices, knowledge production and the use (or non-use) of this knowledge. During this project, thanks to the network, we started considering the character of openness as a crucial element of these processes within all of our in all our projects and empirical studies -

whether they are considered under the OCSD project or not.

- Has feedback from the network had an impact on your research to date? (consider insight from the coordination team, advisors and peers in the network). What further support could the network provide towards achieving your team's project goals?

Feedback from the network has impacted in several different ways:

-We have acquired broader insights from the network diversity in a general sense. The inclusion of a diverse set of collaborators, advisors and so forth (from practitioners, artists and non-academic peers to more "old-fashioned" researchers) contributed with constructive feedback and learning at many different levels: from communication strategies ("the simpler, the better") to more precise theoretical and methodological insights, including, especially, views on the role of science in the contexts of development.

-On the other hand, there are groups working in different contexts than our own (for example, Africa) and have shown us dynamics and situations in relation to science and development which share common features but also differ a lot from our own.

9. Recommendations (for OCSDNet):

- In your experience, Is OCSDNet fostering a culture of shared learning in the network?

Yes (see below).

- Do you have any other advice/feedback that you would like to provide to OCSDNet or IDRC? (consider modes of communication, evaluation, etc.)

During the two network meetings we felt that each project had very little time for in-depth discussion with other projects leaders and advisors. Indeed, longer discussion sessions centered on project findings (i.e., trying to find regularities or similarities and differences among projects, as well as the advantages and handicaps of a variety of theoretical and methodological approaches) could help in systematizing common findings. We think that this could enrich the network's work.

10. Additional Comments (optional)

- Please provide any additional comments.