

## Centers, peripheries and subordination. A view on Latin American Science.

Kreimer, P. *Science and Society in Latin America. Peripheral Modernities*. New York and London. Routledge. 2019. 270 p. \$48.95. ISBN 978-1-03209326-0

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There has been a renewed interest, in Science and Technology Studies in science developed outside Western Europe and North America. A new subfield of postcolonial studies of science and technology (Harding, 2011) has been consolidated. This perspective proposes that science developed in Southern or non-Euroamerican contexts is immersed in a "coloniality of power" (Mignolo, 2002). In post-colonial societies, these scholars argue, scientific theorization is confined to the use of Western philosophical and scientific tools, since native knowledge (magic, folklore, wisdom) are deemed by Northern rationality to be illegitimate.

Postcolonial studies of science and technology have amassed a large number of case studies, which document the interactions between Western science and traditional or indigenous beliefs, and the relationships of subordination, hybridisation or complementarity established between developed and developing countries. Relevant work in the field includes studies on the pharmaceutical exploitation of native flora in Mexico (Hayden, 2003), uranium mining in Africa (Hecht, 2012) or the incorporation of the indigenous worldview into the political arena in the Andean region (de la Cadena, 2015).

These studies are useful to highlight asymmetries between countries that provide natural resources or ancestral knowledge and countries or corporations that industrialize and extract profit from them. However, by emphasizing the unequal relationships between the global North and South, this perspective may lead us to overlook the deep asymmetries *within* each of these regions. This is especially relevant in the global South. In Latin America, Africa and Asia, colonisation processes unfold over very different temporalities and with different characteristics. To accommodate this diversity, authors such as Anderson and Adams (2008) propose to "creatively complicate" the dichotomic distinctions between center and periphery, dominated and subordinated, or traditional and modern. However, others might argue that adopting such a relativistic outlook may carry the risk of minimizing the pervasive asymmetries in resource availability, public authority, and power between science in the global North and science in the global South (see Dicenta, 2020 in this journal).

Pablo Kreimer's recent book *Science and Society in Latin America* cleverly addresses these complexities. His approach pursues two simultaneous objectives. On the one hand, it highlights the inequalities between the global North and South and how they affect the

construction of research agendas and scientific communities. On the other hand, it aims to improve our understanding of centers and peripheries in science, showing the nuances and complexities that are lost when “Northern science” and “Southern science” are considered sufficient explanatory categories. Kreimer's book provides conceptual tools for the evaluation of inequalities and asymmetries at multiple scales.

Aiming to make the diversity in the global South more visible, Kreimer proposes to add a new layer of complexity and to speak of a plurality of centers and peripheries. "Not all knowledge produced in 'Western' or 'Northern' countries is automatically 'central' but can often be 'peripheral' in the dynamics of a given field. For instance, a prestigious American university can be 'hegemonic' in engineering or computer science but 'peripheral' in anthropology or cultural studies" (Kreimer, 2019, p. 53). This perspective enables him to break with the idea that everything produced in developing countries is peripheral and to present a more complex and multipolar map of world science. In it, there are regions such as southern Europe that are peripheries within the center and others, like the technological hubs in India, that are centers within the broader periphery of the global South.

Furthermore, to better understand the relationships between centers and peripheries, Kreimer introduces the concept of *subordinate integration*. Through this concept he analyses how scientific teams from developing countries are inserted into international networks of scientific cooperation. "Research agendas are often defined within central groups and then adopted by satellite teams as a condition necessary to a complementary style of integration. But such agendas are generally a response to the social, cognitive, and economic interests of the dominant groups and institutions in the most developed countries" (Kreimer, 2019, p. 177).

A relationship of subordination is established *de facto*, insofar as Latin American teams in general cannot participate in the definition of the research agenda within the networks in which they participate, but are often rather relegated to tasks of lesser theoretical complexity, such as routine data collection work. As a benefit, they gain the prestige associated with ties to world-class centers of excellence, as well as access to equipment, international funding, and employment and training opportunities for students. Such dynamics further consolidate a local scientific elite, that operates as a center within the periphery. The flip side of this, however, is that the capacity of local scientists to adapt research questions to the needs of local economic and social actors is strongly constrained. Hence, opportunities to achieve greater local socio-economic impact are being missed.

Based on an analysis of collaborative networks funded by the EU's Framework Programmes, Kreimer argues that since the mid-1990s a new international division of scientific work has emerged. The negotiating capacity of researchers is now almost non-existent since the major funding allocations are guided more explicitly by the European bloc's economic competitiveness. These objectives are hardcoded in the research priorities of the framework programmes (Holbrook and Frodeman, 2011). The participation of Latin American groups in these networks is largely based on the availability of local resources (flora, fauna), the opportunity to conduct clinical or field trials in far-off locations, or the reputation of a peripheral group in a specific technique or knowledge niche needed to advance the central agenda.

Apart from the analysis of these collaboration networks, the most detailed case study in the book is devoted to Chagas, a neglected disease endemic in the region. The poor rural population in South America are the ones most affected by the illness, yet they do not have the symbolic and material resources to become a public voice on the issue. This has led to

the disease being made visible by other social groups, who translate the interests of the sick and give their plight visibility in the public arena. Kreimer traces the history of scientific research on Chagas and the different approaches that spokespersons have taken in framing the need for more research on the disease. He focuses especially on the process that has taken place since the 1970s in which the focus of research switched from the insect known as *vinchuca* (the vector) to the parasite which causes the disease. This microorganism (*Trypanosoma cruzi*) was used by many molecular biologists as a model organism (like a lab rat) for the study of broader biological mechanisms such as protein glycosylation and the regulation of gene expression.

Kreimer argues that the prevalence of basic research using this parasite over applied and clinical research in Latin America can be understood as a consequence of subordinate integration. Latin American elite researchers strive to position their research agenda in such a way that it integrates research on a neglected disease with topics of interest to the broader global community of molecular biologists. This allows them to secure important resources from international agencies, access first-rate scientific equipment and collaborate with world-class work teams. However, it also distances Latin American researchers from patient concerns and from the clinical aspects of the disease. Although there are research groups involved in both the clinical and psychosocial aspects, they are detached from the local elite and constitute a periphery within the periphery.

Throughout these case studies, Kreimer shows a great sensitivity to the problems which Latin American scientists are subject to and the multiple dimensions of international scientific collaboration. The book is very effective in showing the asymmetries between the global North and South and the relations of subordinate integration that are being generated. It enriches the analysis of international scientific collaborations, as it highlights the trade-offs faced by scientists from the peripheral regions.

However, in the cases presented throughout the book, nuances regarding centers and peripheries within the Latin American region and within the developed world are not given the same level of attention as the relations between the global North and South. While a book cannot cover everything, more attention to these aspects would have been helpful to better support the multi-level perspective proposed by the author. This could have been accomplished by delving further into the relations of subordination that exist *within* the center and *within* the periphery, and then analyzing how they shape relations between the global South and the global North<sup>1</sup>.

Centre-periphery relationships also structure STS as an academic field. Kreimer's own work is a good case in point. It has been very influential in the Latin American STS agenda while remaining relatively peripheral to the STS global agenda (Kreimer and Vessuri, 2018). This marginal role may result partly from Spanish being little known by scholars in the Anglophone world. In this context, the English translation of his works may promote better relations between centers and peripheries in the STS community. In this sense, Kreimer echoes Law and Lin's (2014) proposal to show the situated character of theoretical reflections in the field. The book provides an essential contribution to this dialogue.

The discussion of postcolonial science studies presented in the book raises broader issues about the conceptual frameworks for studying science in the global South. The multi-scale perspective on centers and peripheries can complicate North/South dichotomies and add

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<sup>1</sup> See Perrotta and Alonso (2020) for a recent discussion on the applicability of Kreimer's ideas to the study of collaborative networks in Latin American social science.

complexity to the world map of science. In this view, the grounds for justifying the study of Latin American science are different from those outlined by postcolonial approaches. The focus is not to search science for continuous traces of a colonial situation. Rather, Latin American scientists' strategic rationality, their collaboration strategies and their research agendas are understood as adaptive responses to the difficulties of carrying out scientific activities in a much less favorable socioeconomic context. Additionally, this perspective has value beyond Latin American science since it can also become a useful tool for understanding the geopolitics of scientific production in diverse regions in the global North.

In contrast to postcolonial studies, the book also helps bring STS closer to science and technology policy issues. The regular dialogue between STS and science policy studies has been a central feature of the Latin American STS community. The book clearly shows a fruitful interaction between the two fields.

On a broader level, the book shows the need for studies that examine intraregional dynamics, as regards the intensity and type of participation of research groups from different Latin American regions in collaborative networks. Which countries contribute more to a global agenda? What economic, cultural and historical factors may explain these differences? These questions can be answered only by understanding the pre-existing asymmetries between Latin American science systems.

For example, more research is needed on the dynamics of scientific cooperation between Latin American universities and how it differs from cooperation with scholars from the global North. Are the same relationships of subordinate integration also present in intraregional cooperation? Studies on collaborative networks located entirely in Latin America may be useful to illustrate the plurality of scales involved in center-periphery relationships.

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