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Introduction: Current tensions and trends in the World Scientific System

Fernanda Beigel

Several studies have delved into the globalization of academic exchanges, the expansion of internet search engines, transnational networks and the multiplication collaborative flows (Didou and Gérard, 2009; Altbach, Reisberg and Rumbley, 2009; Gingras and Mosbah-Natanson, 2010; Leclerc-Olive et al., 2011; Arvanitis and Gaillard, 2012). These new trends have been created by the expansion of English as a 'universal' lingua franca and the development of an 'international' system for academic publishing. This publishing circuit has been reinforced in the last decades, along with the increasing mercantilization of higher education and the application of scientometrics for external evaluation of institutions or individual competition for tenure and promotion. Global university rankings are built giving increasing importance to research performance, by measuring the volume of articles published and observing 'research influence'. National rankings are also marked by these 'international' tendencies along with the creation of public or private agencies for external evaluation that have a strong influence in investment decisions.

The database that has enabled the construction of these rankings and indicators has been the Philadelphia-based Institute for Scientific Information (currently Thomson & Reuters, Web of Science), empowered as the unique representation of 'international' science for more than 40 years. The basis for the consolidation of WoS was the creation of citation indexes, built through the 1950s and 1960s thanks to an 'army of indexers' (as Garfield liked to call the authors) because their references replaced former 'cataloguers' (Thomson Reuters, 2013: 26). The progressive inclusion of non-American journals in these citation indexes transformed WoS in a platform for global visibility. During the last few decades, along with the growth of academic publishing, ISI-style indexing became universally accepted, moulding even peripheral journals. Citation data collected by ISI and impact factors calculated in WoS became, thus, conceived as 'universal', while being built in concrete academic centers that reached the top of the system they themselves created –ISI ultimately defined what, and how, a paper was 'publishable'.

As Vessuri, Guédon and Cetto (2014) have argued, although designed originally to graph the circulation of theories, concepts, methods and tools, to analyze the networking connections among scientists and to measure the possible impact of published articles,

these citation indexes began to be taken as indicators of quality, and the whole of the scientific enterprise is managed through this obsessive race toward excellence. Heilbron (2002) argues that bibliometrical analysis was, and is, a legitimate source, while 'scientometrics' has become an ambiguous practice for the sociology of science that intends to objectivize the process of production of knowledge.

The historical development of the World Scientific System (WAS) and its unequal nature has been profusely studied (Alatas, 2003; Altbach, [1977] 2002; Schott, 1991, 1998). The second post-war internationalization period played a main role in 'universalizing' Northern theories and methodological models throughout the non-western world. In fact, despite 'the periphery principle' [1] and other alternative projects that emerged in the 1950s, the world leader in technical assistance and private foundations for science and higher education was the United States.

However, the historical configuration of the WSS and the concept of 'academic dependency' is a contested issue. Against simplistic center-periphery models that reduce asymmetries to export-import relations, empirical studies have shown that autonomous knowledge is produced outside the 'centers of excellence'. Although theories and methods produced in the periphery have low possibilities for 'exports' to mainstream circuits, this doesn't imply that this knowledge is the result of massive imports of central models (Beigel, 2013). Diverse paths of professionalization were forged in Asia, Africa and Latin America during the period of 1960–1980: 'peripheral centers' emerged and several regional academic circuits were developed (Beigel, 2010; Chatelin and Arvanitis, 1989). These academic communities developed local paradigms and concepts, along with networks for collaborative research and its own media for communicating results.

A truly global publishing system came along in the 1990s and a new path of academic dependency was extended within peripheries. During the implementation of neoliberal policies in the Latin American universities, increasing scarce resources oriented scientists to foreign funds and research agendas became determined heteronomously. The peer-reviewed journal article replaced the book which had been the principal media for academic dialogue (Beigel, 1995). Peer reviewed and indexed journals published in English became the main reward in a system increasingly centralized towards the US as an attraction center for postgraduate studies, research funding and publishing.

This publishing system, dominated by its ISI-style core and the hypercentrality of English contributed to establish a WSS characterized by the unequal distribution of material resources and academic recognition. According to Schott (1998) the belief in universality of science and the degree of institutionalization has been in the base of the construction of the system, but centralization is due to concentration of ties observable in international collaboration, citation and mobility. Yuxtaposing 'various kinds of travels with the scientific achievements such as those earning Nobel award and deference to the achievements, it is evident that a region's centrality or peripheriality in the networks of traveling mainly reflects weather the region is a center or periphery of achievement attracting deference' (Schott, 1998:127).

Schott's empirical study on international prizes, foreign students and accumulation of academic recognition, showed that ties to the periphery are attenuated below its research and ties to the center accumulate in excess of its research (1998: 135). In the same line,

several authors have shown that global science is analyzed with minimum input from the peripheries and relying on 'international' databases that include only mainstream journals written in English (Arvanitis and Gaillard, 1992; Gareau, 1985; Krishna, Waast and Gaillard, 1997). However, a more radical critique is required in order to surpass a simplistic view of the links between 'mainstream' and 'marginal' science. The center-periphery focus is a relational perspective that was built to understand underdevelopment within an international economic structure. When analyzing a symbolic capital as scientific recognition it becomes evident that the mainstream has been self-built on the supposition that outside there was backwardness and lack of academic value (Vessuri, 1995). Merging Dependency Analysis and Bourdieu's reflexivity, it is possible to go beyond the classic stereotype that poses centrality as equal to autonomy, and periphery as its heteronomous alter ego. A relational concept of academic dominance can be developed, considering the historicity of both the unequal distribution of research capacities and the specificity of the accumulation of 'international' scientific reputation. Observing 'circuits' is a more accurate route for explaining entangled processes that operate in the distribution of scientific recognition, simultaneously at work in the local, national and transnational grounds (Beigel, 2014).

Alternative circuits

Resistance to the ISI publishing regime has grown in the last few years, not only in the social sciences, which have been kept marginalized in mainstream indexes, but also in the exact and natural sciences. The Elsevier boycott by mathematicians in 2012 and the San Francisco Declaration on Research Assessment the same year are signs of the gradual cracking of credibility of rankings and impact factor as a means to evaluate scientific quality. Alternative circuits have expanded within the open access and common goods movement. Transnational publishing in open access is indeed a fruitful path to co-construction of knowledge. Rallet (2012) analyzes the hope offered by new technologies to reduce geographical inequalities concerning knowledge production, and observes movements of dispersion and concentration. There is, he points out, more access to new and diverse sources, increasing collaborative research through virtual interactions, and a diminishment of the share of traditional 'developed' countries in the global amount of published articles in mainstream journals. Keim (2014) has recently discussed three types of knowledge circulation that cross through traditional center-periphery structures: reception, exchange and negotiation of theory and practice. Regarding exchange, she argues, it depends on transnational mobility and networks, interstitial positions (Guilhot, 2014), communicational languages and alternative frames of reference built in collaborative projects.

The survey made by Gaillard, Gaillard and Arvanitis (2012) on collaboration and coauthorship between Latin American and European scientists shows that there is an evolution of responsibilities among partners that challenges the traditional view of asymmetric international relations. The advantage of this study is that it is not build on bibliometrical analysis made on mainstream database such as Web of Science or Scopus, but exploring scientific trajectories and the determinant role played by international mobility. The study shows that Latin American and European partners share decisions on budget and program, and feel equally rewarded by results in terms of publications and recognition.

However, the relation between international collaborative projects and publishing in mainstream circuits is not necessarily of a democratic nature. On the other hand, the fact that the population in the survey is or has been involved in international collaboration obscures the structural facts that contribute to the social selection of these scientists in the periphery. The authors mention the relevance of the institutional insertion of the scholars and the fact that most of these scientists had made a séjour of at least six months abroad. All of which confirms that successful trajectories depend on proficiency in English and 'international capital', two cultural capitals that are at the core of the asymmetries within the periphery.

The population under study in Gaillard, Gaillard and Arvanitis (2012) was predominantly hard sciences, thus, it is worth discussing international collaboration in the social sciences and humanities specifically. This is the task assumed by Mosbah-Natanson and Gingras in an article that explores the global trends in the production of articles in WoS where the general share of Southern regions has increased and North American share has diminished in favor of European output. They address international collaboration under a theoretical frame built on the center-periphery focus, and they argue that a country or a region may be considered autonomous when its collaborative production is relatively low. On the contrary, countries and regions which largely rely on collaboration for their social sciences production can be considered to be dependent. The evidence collected show a general growth of international collaboration and the highest is verified for Latin America, Asia and Africa. They conclude that social scientists from peripheral regions, while producing more papers in the core journals compiled by the SSCI, have a stronger tendency to cite journals from the two central regions and to collaborate more with western social scientists thus losing at least partially their more locally embedded references. According with Mosbah-Natanson and Gingras, the dynamic of internationalization of social science research may also lead to a phagocytosis of the periphery into the two major centers.

However clear and simple academic dependency may be observed within the mainstream circuit, it should be noted again that this is due to the limitations of WoS as an empirical base for analyzing global trends. Thus, it is not possible to conclude that peripheral regions are more dependent of the center, because there is no information on the other circuits, nor collaboration in research projects, nor of journals from the domestic circuits. Moreover, as will be seen in other papers that are part of this dossier and in the next section, the center-periphery model has been under scrutiny because several limitations have been determined and it is safer to speak of diverse forms of peripheriality.

The article by Johan Heilbron (2014) deals with the social sciences as an emerging global field with a core–periphery structure, featured by a duopolistic Euro-American core, multiple semi-peripheries and a wide range of peripheries. It can thus be seen as a four level structure: in addition to the local and national level, transnational regional as well as global structures have gained increasing importance and a better understanding of 'globalization' requires more precise studies of both levels, in their own right as well as in their evolving interconnectedness. Heilbron focuses on translation flows and shows that these tend to reproduce, not correct the core-periphery structure. There are many more books translated *from* English than *into* English, whereas for all other languages the

reverse holds true, 'The practice of translation is in this respect quite similar to that of citations: the more central the scientific production of a nation or region is worldwide, the more it has a chance of being cited and translated, and the lower the translation or citation rate is into this language' (Heilbron, 2002).

To consider the social sciences as a global field, a perspective also present in the article by Mosbah-Natanson and Gingras (2013), is certainly worth discussing given that the evolution and current state of these disciplines are determined by hierarchies established in the scientific field as a global structure. These hierarchies and inequalities have a direct impact in funds, research capacities, publishing circuits, evaluative cultures and, accordingly, in the distribution of scientific prestige among and within disciplines. According to Heilbron, historical structures of circulation are therefore a crucial feature for understanding how science works and evolves. Thus, considering that 'international publishing' has become a general principle of legitimation worldwide, this Special Issue should serve to discuss in which forms the circuits of circulation are 'structuring' the social sciences, (see the article by Beigel in this Special Issue).

The article by Vessuri, Guédon and Cetto (2013) considers the regional case of Latin America in order to illuminate the current state of science in 'peripheral' countries, along with potential and limitations of alternative circuits in open access. They argue that the present competition regime based on impact factor and journal rankings pervaded the evaluation systems of both Latin American national science councils and universities during the 1990s. On one hand, because the obsession for internationalization influenced the scientists to adopt the mainstream agenda in the selection of topics that were considered suitable to get papers accepted and gain 'visibility' in 'core journals'. On the other hand, because local journals ended up adapting to indexing rules or disappearing, resigning local needs and realities. However, in parallel, Latin America (LA) was gradually building its own system of journals and repositories to ensure the worldwide projection of its research results, as well as its preservation. LATINDEX, SCIELO and REDALYC represent relevant initiatives that put LA in the forefront of the international movement towards open access and visibility of perihperal science. These databases expanded and consolidated in the last decade, to the extent that some high-quality journals and the organization SCIELO have been approached by commercial companies interested in including them in profitable indexes. The article raises the alarm on these predatory moves on LA open access movement and reflects on what remains to be done to make sure that an impressive amount of research results from LA will be recognized all over the world.

New forms of scientific peripheriality

The publishing system has become determinant in the distribution of scientific recognition by reinforcing a hierarchy built on the basis of a triple principle: institutional development, discipline and proficiency in English. According with Beigel (2013) this has had an impact on the process of differentiation along the periphery among internationalized scientists and researchers restricted to domestic circuits. A new form of brain drain took place since indexed journals increasingly appropriated knowledge created in peripheral contexts, because an important share of those papers became unavailable to the local

scientific communities where these authors were affiliated, given the lack of material resources to pay expensive suscriptions. Thus, the position of a given scientific community/individual researcher is related to its historical path of integration to these circuits of circulation of knowledge.

But scientific peripheriality has become a complex phenomena, not only restricted to geographical dynamics, and certainly not featured by 'academic imperialism', an image that emerges from analysis based only in mainstream databases such as WoS but not when the 'periphery' is empirically observed. A Chilean journal indexed in ISI could become 'mainstream' within the Chilean scientific field but stay completely marginal among 'mainstream' American journals. Entering mainstream circuits rarely changes the hierarchy of knowledge produced in the periphery within the WSS, although it assures local recognition. Successful strategies of integration such as the Chinese case seem scarcely effective counteracting the persistence of the US and other scientific authorities in mainstream journal rankings and most-cited papers. While successful concerning global production of articles, the outstanding performance of China implies an aggressive linguistic adaptability, given the fact that the journals listed in mainstream indexes are published dominantly in English. Accordingly, one of the main successes of ISI and the mainstream circuit has been to 'universalize' the *croyance* of the major value of change English, compared to other languages.

Given that the WSS involves structural constraints and individual trajectories that operate in multiple levels (local, national, regional, transnational) national fields cannot be the unique unit of the analysis for explaining the structure of academic dominance. Heilbron argues that transnational, regional and global structures have gained increasing importance and a better understanding of 'globalization' requiring more precise studies of both levels, in their own right as well as in their evolving interconnectedness (2013). A given scientist affiliated to an institution in the periphery can put into practice different strategies: the individual integration to an international research network for publishing in mainstream journals; regional mobility through public agreements between LA countries; to publish exclusively in the local circuit in order to gain a position at national universities. But freedom of choice is limited by the structure of the national field and the international hierarchy built in mainstream circuits. In other words, a non-English speaking social scientist from the periphery will restrict his/her possibilities to local or LA recognition. An English-speaking social scientist can probably publish in the international circuit and gain certain 'international' recognition but will probably be outside local publishing circuits.

The studies on Nigeria, Argentina, Chile and Lebanon included in this Special Issue suggest that diverse circuits cross through national scientific fields and are relatively segmented in-between, partly as the result of the unequal distribution of cultural and linguistic capital among scientists, partly due to structural constraints and the local history of professionalization. The article by Beigel explains the unequal nature of 'international' publishing and its impact in national communities. The case of Argentina shows that national, regional and mainstream circuits are diversely valorized in co-existent evaluative cultures that are segmented by the structural heterogeneity of the national scientific field. A big and dynamical domestic circuit is described, composed of hundreds of non-indexed journals mostly valorized and read at public universities, while discarded

when evaluating scientific background for tenure at the internationalized National Council for Scientific and Technical Research (CONICET).

These type of segmented circuits are also observed in the article by Omobowale Akanle Adeniran and Adegboyega (2014) who conducted a qualitative study on the practice of paid publishing in 'foreign' journals among Nigerian academics. These 'foreign' journals publish rapidly with high fees and feature little or no peer review. The study concludes that predatory journals will not advance Nigerian scholarship into the global scholarly mainstream which the 'international rule' ultimately seeks. Paid-for publishing is observed as a dimension of peripheral scholarship that has evolved in response to the quest to standardize scholarly publication by discouraging sub-standard local publishing.

The effects of the supremacy of English are particularly pervasive in creating segmented circuits in the Arab world, such as has been observed by Hanafi (2011) when dealing with the compartimentalization of Lebanon universities. Local and international publishing have separated two different elites: those who publish in English but 'perish locally', and those who are recognized locally and write on Arabic but 'perish globally'. The article by Hanafi and Arvanitis (2014) presents the results of a survey among Arab social scientists in order to observe the circulation of the research written in Arabic. Marginalization or isolation appears next to certain elites, the co-existence of different legitimization processes depend much upon the language of instruction, the institution and country of affiliation, the outlets and ways to publish and the dissemination of social science results. This phenomenon is not only caused by the hypercentrality of English but also by 'dependency by choice'.

The study by Ramos Zincke (2013) is based on an extensive database of the production of anthropology, political sciences and sociology, including articles, in indexed and non-indexed journals, books and working papers, a closer look at the complete scientific output of the social sciences in Chile. Ramos observes that intellectual dependency clearly emerging from WoS data analyzed in world reports is not as evident when focusing in more comprehensive studies. One of the first findings is that 42.6% of the whole references found in between 2006-2010 belong to Chilean authors and are related to local debates. Via network analysis he shows that the reception of foreign references are concentrated in classic theorists –such as Weber– and a group of recognized more contemporary authors: Habermas, Bourdieu, Luhmann, Giddens and Foucault. But also, closely intertwined with them, there are several of the 'local theorists', such as Moulian, Larraín, Tironi, Brunner. Ramos argues that Chile's social sciences are strongly embedded with global debates but through a local mediating grid of theoretical translation.

Final words

The main objective of this Special Issue is to discuss these new trends through empirical studies. It is worth noting that many of these studies are of a different nature and involve diverse types of evidence. Some of them work on a corpus of social science production published as books, papers and research reports, some work on mainstream databases such as Scopus or WoS, others address scientific communities through qualitative analysis. They do not lead to the conclusion that social scientists from peripheral regions are

becoming more and more dependent on central regions, which instead would largely stay autonomous. Neither on the contrary that asymmetric international relations have come to an end. In order to surpass the tendency to evaluate peripheral science with the mainstream tautological concept of autonomy, diverse circuits must be observed, multiple types of data must should be put to work and content analysis should be addressed.

Note

1. According with Petitjean (2008), the 'periphery principle' arose at UNESCO in the 1950s. It was defined as a change of perspective more inclusive of 'third world' scientific contributions. UNESCO funded several institutions and projects located in peripheral countries and was an Organization particularly open to third world initiatives, but it was also a vehicle to the diffusion of American and French theoretical models along with other international agencies.

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