



# The globalization of social sciences? Evidence from a quantitative analysis of 30 years of production, collaboration and citations in the social sciences (1980–2009)

Current Sociology

2014, Vol. 62(5) 626–646

© The Author(s) 2013

Reprints and permissions:

[sagepub.co.uk/journalsPermissions.nav](http://sagepub.co.uk/journalsPermissions.nav)

DOI: 10.1177/0011392113498866

[csi.sagepub.com](http://csi.sagepub.com)



**Sébastien Mosbah-Natanson**

Paris-Sorbonne University Abu Dhabi, United Arab Emirates; CIRST, UQAM, Canada

**Yves Gingras**

CIRST, UQAM, Canada

## Abstract

This article addresses the issue of internationalization of social sciences by studying the evolution of production (of academic articles), collaboration and citations patterns among main world regions over the period 1980–2009 using the SSCI. The results confirm the centre–periphery model and indicate that the centrality of the two major regions that are North America and Europe is largely unchallenged, Europe having become more important and despite the growing development of Asian social sciences. The authors' quantitative approach shows that the growing production in the social sciences but also the rise of international collaborations between regions have not led to a more homogeneous circulation of the knowledge produced by different regions, or to a substantial increase in the visibility of the contributions produced by peripheral regions. 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, thus losing at least partially their more locally embedded references, and to collaborate more with western social scientists. In other words, the dynamic of internationalization of social science research may also lead to a phagocytosis of the periphery into the two major centers, which brings with it the danger of losing interest in the local objects specific to those peripheral regions.

---

## Corresponding author:

Yves Gingras, UQAM, C.P. 8888, Suc. Centre-Ville, Montreal, QC H3C 3P8, Canada.

Email: [gingras.yves@uqam.ca](mailto:gingras.yves@uqam.ca)

## Keywords

Bibliometrics, globalization, periphery, quantitative studies, social sciences

## Introduction

The internationalization of the natural sciences is a well-recognized phenomenon that has been already widely analyzed. Circulation of men and ideas, knowledge production practices and research funding are the main dimensions along which this internationalization takes place (Gingras, 2002).<sup>1</sup> Today a French mathematician collaborates with a Brazilian one or an Australian one very easily while teams of physicists working at a large particle accelerator, funded by numerous countries, will often be composed of scientists of dozens of different nationalities. Therefore, most of the natural sciences can be considered today as globalized ones, even if central countries still dominate these transnational scientific fields due to their infrastructure and financial resources. The question of the internationalization of the social sciences is more recent. Cultural and linguistic differences, national traditions, state-centered institutionalization and research themes of local interest have proven to be obstacles to such a phenomenon (Gingras and Mosbah-Natanson, 2010; Heilbron, 2009). But the debate about the internationalization and the globalization of the social sciences has in fact been going on for the last few decades (for the case of sociology, see Berthelot, 1998). It first concerned the main regional divisions in the world social sciences. Until the 1980s, they were considered to be divided between western social sciences, or ‘first world social science’, and ‘second world social science’ from the communist countries, while third world social science was lagging behind (Garneau, 1985). In the last two decades, a more theoretical discussion has focused on the possibility of a unified world sociology (Archer, 1991) while the domination of western social sciences was questioned. Hence, the theoretical limits of northern social sciences have been recently documented (Connell, 2006) and solutions have been proposed to better integrate a diversity of approaches in the core of social sciences (Keim, 2011). The low status and limited recognition of third world social sciences have been analyzed, in terms of visibility (Arunachalam and Manorama, 1989) and division of labor between the north and the south (Alatas, 2003). But these discussions remained largely theoretical and, with few exceptions (Keim, 2010), empirical data were rarely used to assess the eventual move toward more globalized social sciences and go beyond (and behind) the performative discourses on the inherent necessity of ‘internationalization’ and ‘globalization’.

This article proposes to study world social sciences over a 30-year period (1980–2009) with quantitative tools based on a large bibliographic database, the Web of Science (WoS). We intend to document the social sciences and their evolution, based on a center–periphery model and by analyzing three major indicators: production of papers, international collaboration and citation patterns for the major regions of the globe. Despite their limitations, these indicators can illustrate some specific characteristics of the international relations in the social sciences and can shed light on the changes in the relations between regions: has the center–periphery structure of world social sciences been challenged first in terms of production during the last decades? Does increased internationalization favor the emergence of pluralistic patterns of collaboration between countries,

enabling social scientists from the south to collaborate directly with their counterparts and diminishing their dependency towards western countries? Are contributions from Asia or Africa becoming more visible in Europe and North America social sciences now than in the past?

## **Globalization, center–periphery model and quantitative indicators**

Our analysis of the globalization of the social sciences is based on the hypothesis of a center–periphery structure of the world social sciences system. We draw our model of a center–periphery structure from the classic history and sociology of science which consider that, historically, the world system of science has been organized around shifting centers and peripheral countries which imitated and/or competed with them (Ben-David, 1971; Schott, 1998). More recently, Keim has analyzed the center–periphery structure of the world social sciences with a model drawn from the economic dependency theory that considers institutional and intellectual characteristics of the scientific system in a country or region along three specific dimensions: development/underdevelopment, autonomy/dependency and marginality/centrality (Keim, 2010).

The first dimension opposes developed social sciences to underdeveloped ones. Developed social sciences are to be found in countries which have developed their institutional framework and research capacity since the 19th century, i.e. Europe and North America which constitute the center(s) in that sense. By contrast, peripheral countries and regions are characterized by their comparatively less developed research capacity. In this article, we consider the volume of publications as an indicator of the development of the social sciences within a given region and we try to evaluate the changes which have occurred in terms of production by region over the last decades.

The second dimension of the model opposes autonomous social sciences to dependent ones. According to Alatas, scientific dependence is the major issue for peripheral social sciences and deals with numerous aspects of scientific life and production such as dependency on ideas, dependency on the media of ideas and on investment and funding (Alatas, 2003). He defines ‘academic dependency’ as a ‘condition in which the social sciences of certain countries are conditioned by the development and growth of the social sciences of other countries’ (Alatas, 2003: 603). Here we try to assess this autonomy–dependence scheme by measuring international collaboration. A country or a region may be considered autonomous when its collaborative production is relatively low. On the other hand, countries and regions which largely rely on collaboration for their social sciences production can be described as dependent.

The last dimension of the model deals with the international recognition of social sciences from different regions according to a centrality–marginality opposition. Central social sciences are the ones which are internationally visible and recognized while peripheral social sciences are largely invisible. This dimension focuses largely on the cognitive and intellectual relations between scientific communities. To measure it, we focus on the references in social sciences articles, considering that they constitute a good indicator of the visibility of the social sciences produced by different countries and regions. This indicator enables us to avoid some tautological definitions of central social

sciences implied by the database we use because references in articles are not limited to the core journals covered by the database. Then central social sciences may be defined by their large rate of self-reference while marginal social sciences can be characterized both by their low rate of self-reference and their high rate of foreign references.

## Methodology

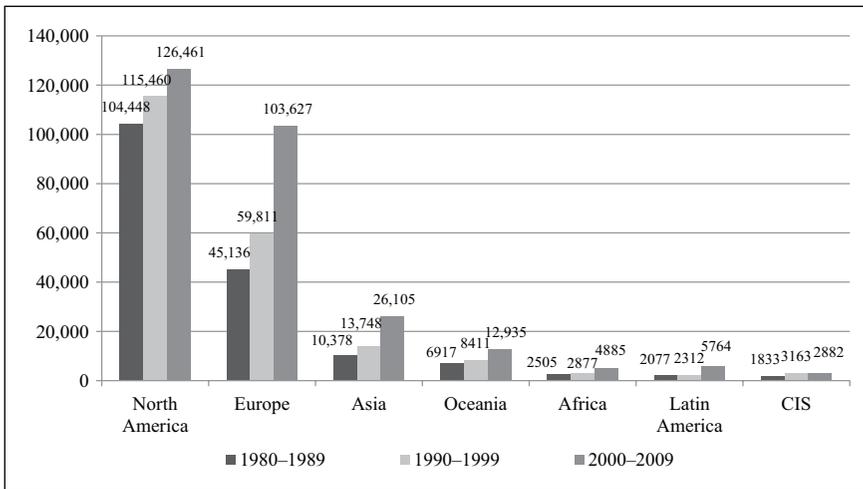
Our analysis of the global trends in knowledge production is based on the Thomson Reuters Social Science Citation Index (SSCI) of the Web of Science, which covers articles<sup>2</sup> published in more than 1000 journals in the disciplines of the social sciences and includes addresses of all authors as well as the list of references for each paper.<sup>3</sup> Such a methodological choice entails limitations that must be acknowledged. The SSCI has well-known limitations. The major one is its focus on English-language journals and its underestimation of non-English-language scientific production:<sup>4</sup> Asian languages and Spanish, for example, are strongly underestimated when compared to their expected proportion from other larger databases of journals such as Ulrich (Archambault et al., 2006; Hicks, 1999). To understand the database effect and take it into account in interpreting the trends, we analyzed the geographical origins of the journals covered and their evolution over time. The issue of language being crucial, we can only attempt, in this article, to assess changes and evolution mainly in the English-language social sciences. But, if one admits that English is becoming, even in the social sciences, a dominant language (Ammon, 2010), then this bibliometric approach can provide a good overview of the changes and evolution over time of the world social sciences at a scale that cannot be observed without the use of such large databases.

The geographical level of analysis is critical (for a discussion of spatial scientometrics see Frenken et al., 2009). Going down to specific countries would be problematic, because it would favor major western countries such as the USA, Great Britain or Germany, and it would prevent us from evaluating eventual major changes in the international relations of social sciences while neglecting small or peripheral countries. Given the large number of countries involved in the production of social sciences, we chose the region, often being a continent, as a unit of analysis. We divided the world into seven regions: Europe (defined as all the countries of the European Union plus other European countries like Switzerland, Norway, Iceland and the ex-Yugoslavian countries), North America (defined as USA and Canada<sup>5</sup>), Latin America,<sup>6</sup> Africa, Asia,<sup>7</sup> Oceania and the Commonwealth of Independent States (CIS).<sup>8</sup> This division can be questioned and others can be proposed (see, for example, Frenken et al., 2010). We chose to consider Europe as a unified region, including the ex-communist Eastern European countries because of the time span we consider in this article (here we differ from Frenken et al., 2010; see also Kozłowski et al., 1999; Must, 2006). The attribution of a region to a paper is based on the address indicated by the author.<sup>9</sup>

Finally, the definition of the social sciences being far from universal, our aim was not to limit ourselves to the single case of sociology and we included other major social sciences such as economics, political science, anthropology and geography. We chose not to include disciplines from the humanities such as history and philosophy, or psychology (which may be today considered very close to the natural sciences). From a

methodological point of view, we used the classification of the WoS<sup>10</sup> and the results presented in this article are based on the aggregation of data for those social sciences.

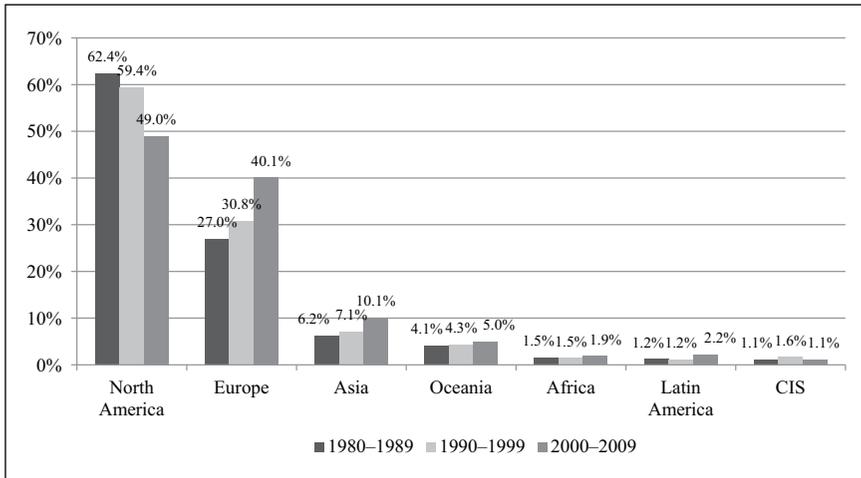
## Global trends in social sciences production



**Figure 1.** Production of social sciences publications by region according to the SSCI.

In this section, we analyze the geographical distribution of the world production of social sciences publications and its evolution over the period 1980–2009. Such an analysis allows us to establish a cartography of the world social sciences in terms of center–periphery structure and to assess whether the last decades saw any important shift in the geography of the major social sciences centers in the direction of a more globalized social science. We analyze the production in terms of papers (sheer number and share) by regions and by decade.

A first analysis of Figures 1 and 2 reveals the central weight of two regions in the social sciences: first, and by far, North America – on average around 57% of the social sciences papers have at least one North American address; and second Europe – with around one-third of the papers with at least one European address. Those two regions account for close to 90% of the global production compiled in the SSCI in each decade. Being the two regions in which social sciences have been institutionalized since the end of the 19th century and considering the size of their scientific community (Calhoun, 2010; Van Langenhove, 2010), such a result goes along with the trend in the natural sciences (Glanzel et al., 2008). The other regions are by far less productive: only Asia exceeds 5% of the world production, Oceania being close to that number and the three other regions being under 2%. The world of social sciences as represented through the journals included in the WoS is clearly structured with a center composed of western countries and a periphery composed of the other countries and regions.<sup>11</sup> Regarding the limitations of the database and its English bias, one must also consider that such



**Figure 2.** Proportion of social sciences publications production by region according to the SSCI.

a massive and quantitative domination in terms of production is very unlikely to be challenged, even with a better coverage of academic journals from Latin America or Asia in other languages.

The data also indicate two other trends. The first is the substantial growth in the number of publications for every major region, except for North America (and the CIS with an erratic production). If one looks at the absolute numbers over the three periods, it can be seen that, for almost every region, they more than doubled between 1980–1989 and 2000–2009 (except for the two regions already mentioned). The second trend is the rise of the share of each of these regions, and the decline of the North American share. Such a decline has been discussed in the recent literature on the evolution of the world science system (Leydesdorff and Wagner, 2007). This suggests an evolution of social sciences production during the last three decades toward a more decentralized order. Two regions, Europe and Asia, become more important, even central for the former (Glanzel et al., 2008).

To verify the accuracy of these first conclusions, we have to bear in mind the limitations of the database and therefore consider the possible changes within it regarding the origins of covered journals. There is a substantial rise in the number of social sciences journals covered by the WoS: from 756 in the 1980s to 1089 in the 2000s, a rise of 30%. Then, mechanically, the general, but uneven, growth is partly a consequence of a larger database. Here two major explanations can be proposed: first, that period saw a major rise in new journals that the WoS integrated into the database – hence, the general growth would not be a statistical artifact, but would correspond to a substantial evolution of the world of social sciences; second, another explanation lies in the recent competition between the WoS and the new database Scopus. This competition may have led to the deliberate strategy of covering a larger number of existing journals by Thomson (Archambault et al., 2009). Looking in more detail at the newly covered journals, it

**Table 1.** Geographical origins of social sciences journals.<sup>a</sup>

Journals	1980–1989		1990–1999		2000–2009	
North America	375	49.7%	399	48.5%	398	36.5%
Europe	308	40.8%	365	44.4%	561	51.5%
Asia	31	4.1%	21	2.6%	46	4.2%
Oceania	17	2.3%	17	2.1%	27	2.5%
International	12	1.6%	10	1.2%	11	1.0%
Latin America	8	1.1%	5	0.6%	31	2.8%
Africa	3	0.4%	4	0.5%	12	1.1%
CIS	1	0.1%	1	0.1%	3	0.3%

<sup>a</sup>The geographical origin of a journal is identified through the location of its publisher. From the ISSN database, we identified 15 international journals over the whole period (containing about 1% of social sciences articles). There are also 78 journals with 'international' in their title, but which are not classified as 'international' in ISSN. These 78 journals are distributed substantially in the same manner as other journals with regard to the continent where their publisher is located.

appears that the majority of them are recently created ones, especially in the 1990s and fewer in the 2000s. The 220 new journals<sup>12</sup> included in the 1990s were mainly created after 1980 (88.2%). It is less the case in the 2000s but there is still a majority of newly created journals: 63.6% of the 393 new journals included in the WoS were created after 1990. Therefore, the growth in the social sciences production that we observe is the result of both the emergence of new journals and of a better coverage of existing ones, the first factor being dominant.

### *The new geography of social science journals*

If we examine the new journals compiled by the WoS (Table 1), it appears that there are more new European journals than North American ones. Out of 220 new journals included in the 1990s (compared to the 1980s), 110 are European and 96 North American. Out of 393 new journals added in the 2000s (compared to the 1990s), the trend is even stronger: 240 new European ones, against only 69 new North American ones. Therefore the geography of journals compiled by the database has substantially evolved during the last decades as Table 1 shows.

How can we explain such a growth in European journals? First, a substantial number of 'European' journals<sup>13</sup> were created, mainly in English, in the 1980s and 1990s largely through the voluntaristic policy of the European Union aimed at forging a unified European research space (Heilbron, 2009). Another factor is the creation of new social science journals, again often in English, specifically in Central and Eastern European countries after the fall of communism such as the *Polish Sociological Review* created in 1993, the *Estonian Journal of Archeology* created in 1997 or the *Transylvanian Review of Administrative Sciences* created in 2005. The growth of European social sciences is thus not a statistical artifact, but corresponds to a substantial development of the European English-language social sciences, while the number of North American journals remains stable across the three periods (1980–1989: 375 journals; 1990–1999: 399 journals;

2000–2009: 398 journals). Then, the competition between the two central regions, North America and Europe, evolves in favor of the latter. In the 1980s, half of the social sciences journals were North American and only 40% European. Twenty years later, the situation is reversed, due both to a more active Europe in terms of journal creation and to a better journal coverage by the WoS. The growth of the share of European papers in social sciences is thus largely a consequence of the growth of the number of European journals, which are now much more numerous than North American ones. Nonetheless, it must be noticed that the North American domination is still prevalent in terms of numbers and share of papers (Figure 2). Even if contested by Europe as a major social sciences producer, the domination of the North American social sciences remains strong in terms of global production.

### *The peripheral regions*

As shown in Figures 1 and 2, the other regions also saw a rise in their production and their share of the world social sciences. More specifically, two regions see a substantial rise, Asia and Latin America, moving respectively from 6.2% and 1.2 % of the world production in the 1980s to 10.1% and 2.2% in the 2000s. The rise of Oceania and Africa is less strong. The CIS is an exception in terms of production and share with a substantial growth in the 1990s and a decline in the 2000s (Wilson and Markusova, 2004). As we will see in the next section, this global rise can be linked to the rise of collaborative research: more and more articles are jointly published by authors from different regions, especially in the case of peripheral regions.

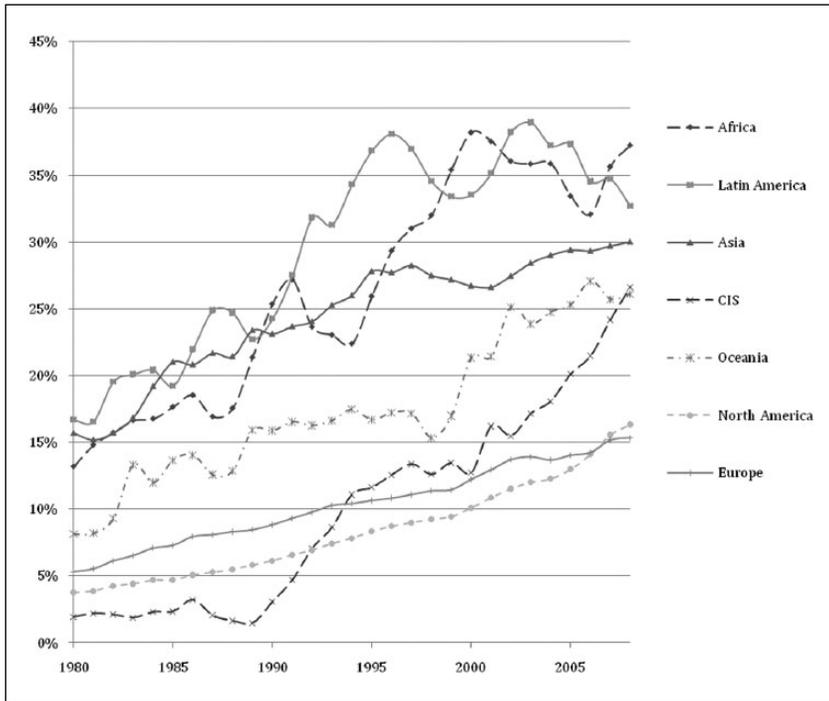
Nonetheless, one may also wonder whether the changes are linked to a growth in terms of regional journals compiled in the WoS, considering that the coverage of journals from peripheral regions may have a substantial effect on the visibility of peripheral science (Gomez et al., 1999; Tijssen, 2007). For all those regions, there is a substantial rise regarding the number of journals covered: if we compare the first and the last decade, Asian and Oceanian journals see a 50% increase in their coverage in the database while the number of African and Latin American journals covered increased fourfold. Therefore the higher production from those regions is partly explained by the better coverage of their journals, even if the numbers continue to be low. The weak coverage of Spanish-language journals largely explains the relatively low number of social sciences articles from this region while Latin America has had vibrant social sciences communities, beyond the relatively significant rise of their production compiled in the WoS (Garretton et al., 2005). The rise of Asia is even more spectacular: in the 2000s, one-tenth of the world social sciences articles had at least one Asian address according to the SSCI while the number of Asian journals in the database remains relatively small. This growing trend is largely explained, at the country level, by the emergence of new social sciences producers. If Japan, Israel and India were the main Asian social sciences producers in the 1980s, 20 years later China, South Korea and Turkey are now also important actors in the social sciences realm. China (plus Taiwan) has even become the first Asian social sciences producer, with more than one-quarter of the articles with at least one address from the continent. This new role for China in the social sciences is confirmed by other studies (Ping et al., 2009). Asia is becoming progressively a major actor in the English-language

social sciences, and within the continent a larger number of countries are involved in this trend which is no longer limited to countries linked to central social sciences producers, such as Israel or India, for diverse (cultural, linguistic or historical) reasons.

Such a change may also be linked to new national standards which require more English-language publications by social scientists from those regions. New evaluation systems based on international publications have largely been implemented in many countries, as much in Europe as in peripheral countries. Thus, the growth of European publications but also of Asian or Latin American ones that have been documented could be explained by those new publications patterns due to administrative pressure. One must also note that the changes in the database mentioned earlier, and its more European-oriented journals coverage may have impacted the visibility of peripheral regions. European journals tending to be relatively more open to non-European social scientists than North American ones, the rise of publications by social scientists from Asia or Latin America is also explained by their relatively higher presence in the former. Then, if Europe and North America remain, by and large, the main English-language social sciences producers, social sciences from other regions are becoming more and more visible in the world social sciences map that we can draw based on the SSCI.

## The rise of interregional collaboration

In this section, we examine a second indicator: interregional scientific collaboration. Collaboration has become a central feature of scientific practices for most sciences in the last decades (Gingras, 2002; Katz and Martin, 1997). More collaboration means that multi-authored papers become more numerous and this growth is linked to research specialization (Leahey and Reikowsky, 2008). It has also been shown that this trend can also be correlated with the development of more quantitative approaches in the social sciences (Hunter and Leahey, 2008). Here the question is to see whether, and to what extent, the phenomenon of collaboration in the social sciences, with their more locally embedded objects (Gingras and Heilbron, 2009), has gone beyond national borders and has become internationalized. The center–periphery structure of social sciences should here be considered along the autonomy–dependency dimension, as collaboration is supposed to largely follow an asymmetrical scheme in which social scientists from peripheral regions would collaborate mainly with social scientists from northern countries, their being largely autonomous. Therefore one must wonder if such an uneven relation is now being challenged by more collaboration between countries not belonging to the North America–Europe axis. As a matter of definition, a paper is considered the result of an interregional collaboration when it has at least two addresses from two different regions.<sup>14</sup> Thus we measure the evolution of the proportion of interregional collaborative papers in social sciences through the last 30 years published in journals covered by the WoS (Figure 3), and analyze the changing patterns of collaboration and the strength of the collaborative links between regions. In order to better visualize this structure of interregional collaboration, Figure 4 shows a map of the major collaborations between regions for the period 2000–2009 and is complemented by Table A1 (in Appendix), which shows the share of collaboration between regions for the three periods. The limits of the database must be remembered at this point because we can only loosely evaluate the changes

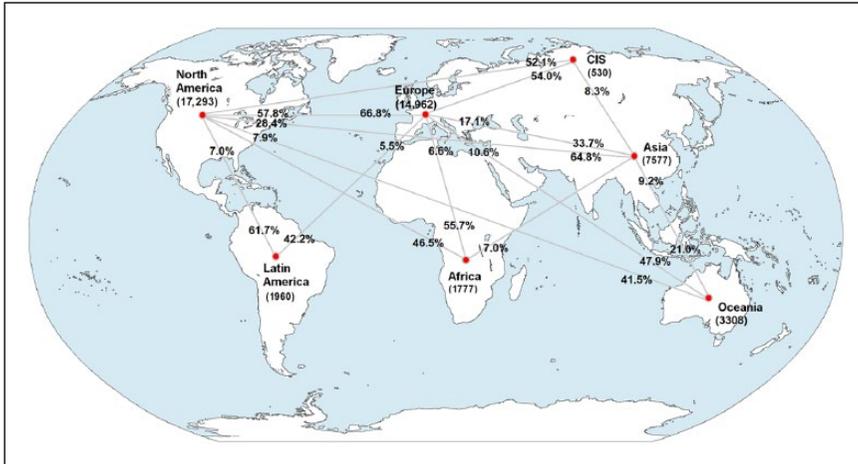


**Figure 3.** Intercontinental collaborations in social sciences (three-year moving average).

in collaboration taking place in peripheral regions between, for example, social scientists publishing collaboratively in regional journals not included in the database and published in languages other than English.

### *The rise of collaborative production*

Figure 3 shows the changing proportion over time of papers written in interregional collaboration. There is a general growth of interregional collaboration, indicating a rising internationalization of the social sciences. Overall, at the end of the 2000s, between one-sixth and one-third, depending on the region, of the articles compiled in the SSCI are written by social scientists from at least two regions. But this growth is unevenly distributed and the collaborative patterns still largely differ according to the regions. On the one hand, Europe and North America keep on producing the smallest proportion of interregional collaborative articles. At the beginning of the 1980s, only around 5% of all the European and North American articles were written with social scientists from other regions. This proportion tripled to 15% around 2009, North America being slightly more collaborative than Europe at this date. Oceania’s collaborative pattern is intermediary while the CIS’s pattern (moving from a very low collaborative rate to fourth place) can be linked to the dramatic political changes the region has experienced. On the other hand, Africa, Latin America and Asia remain the most collaborative regions: already around



**Figure 4.** World distribution of interregional collaborations, 2000–2009.

The figure should be read as follows: the number of interregional collaborative articles for each region are in parentheses; the number close to one region indicates the share of collaboration of that region with the one indicated by the arrow. We represent only interregional collaboration exceeding 5%. The total may exceed 100% due to the fact that a paper can be signed by social scientists from more than two regions and we assign a full paper to each region.

15% of their articles were written with social scientists from other regions at the beginning of the 1980s. Around 2008–2009, this rate varies between 30% and 38% for these regions.<sup>15</sup> One must note the high volatility of this collaboration rate, even with a three-year moving average, a fluctuation explained by the relatively low numbers of papers from those regions. Whereas there is a sharp rise in the rate of collaborative articles for Latin America, Asia and Africa during the 1980s, this rise has slowed down in the case of Asia since 1993–1994, while this slow down can be observed only later for Latin America and Africa.

### *Autonomous and dependent regions*

Europe and North America are the most autonomous social sciences producers, even if their interregional collaborative rate has grown steadily during the last 30 years. The large size of their social sciences communities largely accounts for the lower rate of interregional collaborations compared to other regions. Western social scientists tend to collaborate primarily with their national or regional counterparts who work on the same topics. In the case of Europe, the rise of intra-European collaborations due to new European scientific policies in favor of such collaborations may explain why North America is now a more interregional collaborative producer than Europe (Gingras and Heilbron, 2009). The two regions also share substantial cooperation with one another: half of North American collaborative papers were written with European social scientists in the 1990s and two-thirds of the European collaborative papers were written with North American counterparts in the 2000s (Table A1). But the two regions differ when it comes

to examining the changes in their collaborative patterns. North American social scientists tend to collaborate more and more with European ones, but the share of the other regions stay globally the same throughout the period. Bearing in mind that the database is more European-oriented in the 2000s than in the 1980s, such a trend may indicate that North American social scientists tend to publish more in European journals, and with European partners but, otherwise, have not changed dramatically the geography of their collaborations. The changes in the European collaborative pattern are the complete opposite: a decrease of collaboration with North America and an increase of collaboration with all the other regions. This tends to prove also that European social sciences journals are more open to international collaboration than the North American ones and our data reflect both, indirectly, the growth of intra-European collaboration, and, directly, the rise of collaborative articles written with social scientists from Europe and from peripheral regions.

Such a result also reflects the fact that, for all peripheral regions (except CIS<sup>16</sup>), the trend is toward stronger links with European social scientists. At the beginning of the 1980s, interregional collaboration meant largely, for Asian, African, Latin American or even Oceanian social scientists, collaboration with North American social scientists (up to 80% for Latin America or Asia, but also almost two-thirds for Africa). The next 20 years saw a dramatic change and Europe has become the first partner for Africa and Oceania. For example, for the last decade, African collaboration is divided in the following way: 55.7% of collaborative papers are written with European social scientists and 46.5% with North American ones.<sup>17</sup> This more European-oriented collaborative pattern may be explained by the growth of European journals in the database, even if collaboration with North America remains strong. Except for the collaborative rate of Oceanian social scientists with Asian ones, all the other rates of collaboration between peripheral regions remain marginal (less than 10%, and most of the time less than 5%), despite a slight increase. Our results do not show a large increase of interperipheral collaboration, even though one must bear in mind the limits of the database and a possibly larger increase of international collaboration in local journals from those regions.

But considering the structure of the journals covered by the SSCI, one must consider that the issues at stake, for social scientists from peripheral regions, are different from the ones for western social scientists and may explain these collaborative patterns. If Asian or African social scientists collaborate more than their European or North American counterparts, they may do so in order to get published in European and North American journals that constitute the core of the SSCI and such a trend can be analyzed as a growing dependency. Therefore these results confirm that small countries with relatively small scientific communities tend to collaborate more in order to achieve an international scientific legitimacy (Heilbron, 2001). The same appears to be true at the regional level, the size of the scientific communities being here more crucial than the size of the country itself. This may account for the differential growth of interregional collaboration of Asia, Africa and Latin America, the first region seeing a slowing down of its growth since the middle of the 1990s, in contrast to the other two, probably due to the rapid internal development of its scientific communities. But, one has also to interrogate the social conditions of such international collaborations. Far from being a strictly individual decision, collaborating with a social scientist from a foreign country or region should be analyzed

more thoroughly, taking into account the social networks of local social scientists and their resources (or lack thereof). Therefore understanding the collaborative patterns of social scientists from Africa or Latin America would require studying more precisely scientific mobility from the south to the north (also designated as the 'brain drain'), the origins of research funding (which may largely come from European, North America or international institutions) or the projects in which they are involved. The rise of collaboration must also be analyzed with a focus on the division of labor between social scientists from central and peripheral regions: it has often been noticed that social scientists from the latter are largely data providers while the ones from the former focus on the theory, reproducing a dependency scheme (Losego and Arvanitis, 2008).

### **New patterns of citations in the social sciences**

The third indicator measured here is the geographical pattern of citations in social sciences articles from different regions. Citation analysis is commonly used to assess the visibility, influence and importance of publications and journals in the case of central countries but also for peripheral ones (Arunachalam and Manorama, 1989). Studying citation patterns enables one to measure the scientific openness of scientists from a country by indicating the rate of domestic and foreign articles or journals cited in the publications of its scientists (Glanzel and Schubert, 2005). Therefore, a global analysis of the flow of citations for each region provides a way to measure the changes in the proportion of domestic and foreign references in regional social sciences production and indicates the centrality or the marginality of the social sciences from a specific region. A growing internationalization of the social sciences would signify that the geographical origins of citations would be less concentrated in European or North American journals and more evenly distributed around the world. It is important to note that the cited literature is much larger than the one included in the WoS since many of the citations refer to journals not covered in the database. The evolution of such a pattern is scrutinized by studying, for each region, the geographical origins of the cited journals over three periods of three years, 1983–1985, 1993–1995 and 2003–2005 (Table A2 in Appendix).<sup>18</sup>

The two most cited regions are Europe and North America, confirming their centrality for the social sciences across the globe. For social scientists from all regions, references to European and North American journals vary between 43.1% (CIS, 1983–1985) and 98.7% (North America, 1983–1985) of the overall references to the 200 most cited journals and, in most cases, exceed 80%. For European or North American social scientists, the figures are even higher: between 97.1% and 98.7%. We observe no real trends indicating a growing openness to peripheral social sciences. Only Europe is slightly more open with regard to Asian journals and Oceanian journals, while Europe and North America differ in the general distribution of their citations. Europeans are more prone to cite non-European journals, mainly North American ones, even if the majority of their references go to European journals. The trend that we observe is a decline of self-citations and a rise of North American ones, the two being almost equal for the last period, 2003–2005. The contrast is strong with North American social scientists, whose citations go to local journals to a much larger extent: almost 83% for 1983–1985 and almost 77% 20 years later, North American social sciences staying in that sense largely autarkic. For

the articles published by social scientists from other regions, we see a significant decline of self-citations and a consequential rise of European or North American citations, enhancing their marginality. For Africa and Oceania, the rate of self-citations diminished by half, a trend even stronger for Latin America, Asia and the CIS. For example, in the period 1983–1985, 20.9% of the references in the social sciences articles published by African researchers were African, but 20 years later, the African journals accounted for only 11.3% of the references. In relation to this decline, one can also observe, for most regions, a rise in the proportion of citations to European journals and a rise or a stability of citations to North American journals. For example, the proportion of European citations in Asian articles goes from 24.7% for 1983–1985, to 32.4% for 1993–1995 and 41% for 2003–2005, while the proportion of North American citations remains relatively stable in the African articles (respectively 31.7%, 27.6% and 31.4% for each period).

Such a decline in self-citations can be partly explained technically by the fact that we limit our analysis to the 200 most cited journals. If social scientists from peripheral regions cite more American or European journals, the local journals may fall under the threshold of 200 and they will not be captured by our research. This approach thus underestimates the total proportion of local citations but reveals the rising attraction of journals from central regions. But other hypotheses may be put forward to explain this trend. It has been shown that internationally co-authored publications are more highly cited (Schmoch and Schubert, 2008). Thus, the rise of international collaboration entails a higher concentration of citations on journals in which those articles are published and, considering that those journals are largely European or North American, such a phenomenon may be one of the decisive factors explaining the phenomenon. Beyond the collaboration issue, publishing in European and North American journals by those researchers may imply following western scientific norms, and for instance citing almost exclusively English-language legitimate authors and publications and fewer local ones. Those social scientists may keep on citing their local colleagues, but in local publications not compiled by the SSCI or citing mainly those works which are published in more central journals. One may also wonder if social scientists from peripheral regions who succeed in getting published in central English-speaking journals do not tend to work on less locally embedded objects and adapt their methods and references to more globalized, here meaning European or North American, topics. Therefore, this decline in self-citations would signify that these social scientists, in search of an international but also national recognition due to new research evaluation criteria, neglect locally relevant issues.

## Conclusion

The results presented in this article, notwithstanding the technical limitations we have mentioned, confirm the center–periphery model and indicate that the centrality of the two major regions that are North America and Europe is largely unchallenged, despite the growing development of Asian social sciences. Our quantitative approach shows that the growing production in the social sciences but also the rise of international collaborations between regions that we have been able to measure have not led to a more homogeneous circulation of the knowledge produced by different regions, or to a substantial

increase in the visibility of the contributions produced by peripheral countries or regions. 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 core regions, thus losing at least partially their more locally embedded references, and to collaborate more with central social scientists. Peripheral social sciences thus seem to be more and more centrally oriented to dominant social sciences producers. Our results point toward the existence of two large markets or spaces of social sciences surrounded by peripheral regions attracted by one or the other center, even though one must bear in mind that those three decades may also have witnessed the development of peripheral arenas for peripheral social sciences which cannot be measured using the WoS and which are largely invisible for central social sciences. Contrary to what a generous vision could expect, this 'internationalization' has not led to a real rise in the relative visibility of those peripheral contributions even in the references of the researchers from those countries. In other words, the dynamic of internationalization of social science research may also lead to a phagocytosis of the periphery into the two major centers, which brings with it the danger of losing interest in the local objects specific to those peripheral countries.

### Funding

This research was made possible through a grant from the Canada Research Chair Program of the Social Sciences and Humanities Research Council of Canada.

### Notes

1. A first paper based on a shorter time span and focusing only on production and citation patterns was published in the UNESCO World Social Science Report (Gingras and Mosbah-Natanson, 2010).
2. We focus on social sciences journals and articles. For an analysis of the world production of social sciences monographs, see Kishida and Matsui (1997).
3. Of the 1362 social science journals compiled in the database over the three decades, 79 have fewer than 50% of their papers with an address. For the period considered, there are about 14% of papers that include no address for the authors. Those papers have not been taken into account in the presentation of geographical data.
4. Another limitation is the focus on academic journals while it has been documented that publications in the social sciences do not follow the same dissemination practices as the natural sciences (Hicks, 2004; Kishida and Matsui, 1997).
5. The strong link between Canada and the USA has been documented for the case of sociology (Gingras and Warren, 2006).
6. We include South American countries, Central American countries, Caribbean countries and Mexico for obvious cultural reasons.
7. Here again, we consider Asia as a geographical continent, including Middle Eastern countries. Our geographical division splits the Arab world into two but it has no effect on the whole considering the very low production of Arab countries.
8. It includes all countries from the former USSR except the three Baltic states.
9. Since a given paper may have several addresses from the same or different countries, we attribute one paper to each region present in the address. Therefore, when we calculate the proportion of social sciences article by region, the total may exceed 100% due to the fact that a paper can be signed by social scientists from more than one region.
10. More precisely, the following specific disciplines are included in our definition of 'social

- sciences' when using the Thomson database: 'area studies', 'anthropology and archeology', 'criminology', 'demography', 'economics', 'science studies', 'geography', 'planning and urban studies', 'international relations', 'political science and public administration', 'miscellaneous social sciences', 'general social sciences' and 'sociology'.
11. Oceania being much smaller than the other regions and culturally linked to Europe and North America, social sciences from this region may be considered as developed ones, contrary to the social sciences from the other four regions.
  12. This number exceeds the difference between the total number of journals covered in the 1990s and the total number of journals covered in the 1980s, due to the fact that a certain number of journals ceased to be covered.
  13. For example the *European Sociological Review* created in 1985, the *European Journal of the History of Economic Thought* created in 1993, the *European Journal of Women's Studies* created in 1994, the *European Journal of International Relations* created in 1995, *European Societies* created in 1999 or *European Union Politics* created in 2000.
  14. Most of the time two addresses reflect the collaboration of (at least) two different authors, but there are also cases in which an individual author has links with two institutions in different countries or regions. In such a case, the collaboration has more to do with institutions than with authors.
  15. The proportion of interregional collaboration is even bigger for those regions if regional journals are not considered (an average difference between 3% and 6%). For example, in the case of Latin America for the period 2004–2008, the rate of interregional collaborative articles is 35.5% for all the social science journals, but rises to 41.8% if we exclude Latin American social science journals.
  16. This is shown by the large decline in European collaboration after 1989 for the CIS: 63.9% of the collaborative papers were written with European social scientists for the period 1980–1989, and only 41.8% for the period 1990–1999.
  17. Once again, the total may exceed 100% due to interregional collaboration (i.e. a paper can be signed by European collaborators and non-European ones).
  18. We study the first 200 most cited journals for each region and period. Given that the distribution of citations to different journals is a power law (Pareto distribution) and thus very skewed, adding journals which are difficult to identify beyond the first 200 is onerous in time and does not change the main pattern. We generally capture 50% of the total references to journals.

## References

- Alatas SF (2003) Academic dependency and the global division of labour in the social sciences. *Current Sociology* 51(6): 599–613.
- Ammon U (2010) The hegemony of English. In: *UNESCO World Social Science Report 2010*. Paris: UNESCO Publishing, pp. 154–155.
- Archambault E, Campbell D, Gingras Y et al. (2009) Comparing bibliometric statistics obtained from the Web of Science and Scopus. *Journal of the American Society for Information Science and Technology* 60(7): 1320–1326.
- Archambault E, Vignola-Gagné E, Côté G et al. (2006) Benchmarking scientific output in the social sciences and humanities: The limits of existing databases. *Scientometrics* 68(3): 329–342.
- Archer M (1991) Sociology for one world: Unity and diversity. *International Sociology* 6(2): 131–148.
- Arunachalam S and Manorama K (1989) Are citation-based quantitative techniques adequate for measuring science on the periphery? *Scientometrics* 15(5–6): 393–408.
- Ben-David J (1971) *The Scientist's Role in the Society: A Comparative Study*. Chicago: University of Chicago Press.

- Berthelot JM (1998) Les nouveaux défis épistémologiques de la sociologie. *Sociologie et sociétés* 30(1): 23–38.
- Calhoun C (2010) Social sciences in North America. In: *World Social Science Report 2010*. Paris: UNESCO Publishing, pp. 55–58.
- Connell R (2006) Northern theory: The political geography of general social theory. *Theory and Society* 35(2): 237–264.
- Frenken K, Hoekman J and Hardeman S (2009) Spatial scientometrics: Towards a cumulative research program. *Journal of Informetrics* 3(3): 222–232.
- Frenken K, Hoekman J and Hardeman S (2010) The globalization of research collaboration. In: *UNESCO World Social Science Report 2010*. Paris: UNESCO Publishing, pp. 144–148.
- Garneau F (1985) The multinational version of social science. *Current Sociology* 33(3): 1–169.
- Garretton MA, Murmis M, de Sierra G et al. (2005) Social sciences in Latin America: A comparative perspective – Argentina, Brazil, Chile, Mexico and Uruguay. *Social Science Information* 44(2–3): 557–593.
- Gingras Y (2002) Les formes spécifiques de l'internationalité du champ scientifique. *Actes de la recherche en sciences sociales* 141–142(1–2): 31–45.
- Gingras Y and Heilbron J (2009) L'internationalisation de la recherche en sciences sociales et humaines en Europe (1980–2006). In: Sapiro G (ed.) *L'Espace intellectuel en Europe, XIX<sup>e</sup>–XX<sup>e</sup> siècles*. Paris: La Découverte, pp. 359–388.
- Gingras Y and Mosbah-Natanson S (2010) Where are social sciences produced? In: *UNESCO World Social Science Report 2010*. Paris: UNESCO Publishing, pp. 149–153.
- Gingras Y and JP Warren (2006) A British connection? A quantitative analysis of the changing relations between American, British and Canadian sociologists. *Canadian Journal of Sociology* 31(4): 509–522.
- Glanzel W and Schubert A (2005) Domesticity and internationality in co-authorship, references and citations. *Scientometrics* 65(3): 323–342.
- Glanzel W, Debackere K and Meyer M (2008) 'Triad' or 'tetrad'? On global changes in a dynamic world. *Scientometrics* 74(1): 71–88.
- Gomez I, Sancho R, Moreno L et al. (1999) Influence of Latin American journals coverage by international databases. *Scientometrics* 46(3): 443–456.
- Heilbron J (2001) Echanges culturels transnationaux et mondialisation. *Regards sociologiques* 22: 141–154.
- Heilbron J (2009) La sociologie européenne existe-t-elle? In: Sapiro G (ed.) *L'Espace intellectuel en Europe, XIX<sup>e</sup>–XX<sup>e</sup> siècles*. Paris: La Découverte, pp. 347–358.
- Hicks DM (1999) The difficulty of achieving full coverage of international social science literature and the bibliometric consequences. *Scientometrics* 44(2): 193–215.
- Hicks DM (2004) The four literatures of social science. In: Moed H (ed.) *Handbook of Quantitative Science and Technology Research*. Dordrecht: Kluwer Academic, pp. 476–496.
- Hunter L and Leahey E (2008) Collaborative research in sociology: Trends and contributing factors. *The American Sociologist* 39(4): 290–306.
- Katz JS and Martin BR (1997) What is research collaboration? *Research Policy* 26(1): 1–18.
- Keim W (2010) Pour un modèle centre-périphérie dans les sciences sociales. Aspects problématiques des relations internationales en sciences sociales. *Revue d'anthropologie des connaissances* 4(3): 570–598.
- Keim W (2011) Counterhegemonic currents and internationalization of sociology: Theoretical reflections and an empirical example. *International Sociology* 26(1): 123–145.
- Kishida K and Matsui S (1997) International publication patterns in social sciences: A quantitative analysis of the IBSS file. *Scientometrics* 40(2): 277–298.

- Kozłowski J, Radosevic S and Ircha D (1999) History matters: The inherited disciplinary structure of the post-communist science in countries of Central and Eastern Europe and its restructuring. *Scientometrics* 45(1): 137–166.
- Leahey E and Reikowsky RC (2008) Research specialization and collaboration patterns in sociology. *Social Studies of Science* 38(3): 425–440.
- Leydesdorff L and Wagner C (2007) Is the United States losing ground in science? A global perspective on the world science system. In: *Proceedings of the 11th International Conference of the International Society for Scientometrics and Informetrics* 1, pp. 499–507.
- Losego P and Arvanitis R (2008) La science dans les pays non hégémoniques. *Revue d'anthropologie des connaissances* 2(3): 334–342.
- Must U (2006) 'New' countries in Europe: Research, development and innovation strategies vs bibliometric data. *Scientometrics* 66(2): 241–248.
- Ping Z, Thijs B and Glanzel W (2009) Is China becoming a giant in social sciences? *Scientometrics* 79(3): 593–621.
- Schmoch U and Schubert T (2008) Are international co-publications an indicator for quality of scientific research? *Scientometrics* 74(3): 361–377.
- Schott T (1998) Ties between center and periphery in the scientific world-system: Accumulation of rewards, dominance and self-reliance in the center. *Journal of World Systems Research* 4(2): 112–144.
- Tijssen RJW (2007) Africa's contribution to the worldwide research literature: New analytical perspectives, trends, and performance indicators. *Scientometrics* 71(2): 303–327.
- Van Langenhove L (2010) The status of social sciences in Europe. In: *UNESCO World Social Science Report 2010*. Paris: UNESCO Publishing, pp. 82–86.
- Wilson CS and Markusova VA (2004) Changes in the scientific output of Russia from 1980 to 2000, as reflected in the Science Citation Index, in relation to national politico-economic changes. *Scientometrics* 59(3): 345–389.

## Author biographies

Sébastien Mosbah-Natanson is Assistant Professor of Sociology at Paris-Sorbonne University Abu Dhabi. He was a postdoctoral fellow at Université du Québec à Montréal, as part of the team of the Canada Research Chair in History and Sociology of Science between 2008 and 2011. He has recently published in *Revue française de sociologie*, *European Journal of Sociology* and *Revue d'histoire des sciences humaines* and is currently working on a book about the birth of French sociology (forthcoming).

Yves Gingras is Professor in the Department of History at Université du Québec à Montréal (UQAM), Canada Research Chair in History and Sociology of Science and Scientific Director of the Observatoire des sciences et des technologies (OST). In recent years, he has published in *History of European Ideas*, *PLOS One*, *Social Studies of Science*, *Revue de synthèse*, *Scientometrics*, *JASIST* and *Journal of Informetrics*. His most recent book is *Sociologie des sciences* (Paris: PUF, 2013).

## Résumé

Au cours des dernières décennies, l'internationalisation et la mondialisation apparaissent comme un objectif fondamental pour les sciences sociales. Les incidences de ces nouvelles tendances ou de leur multiplication sur les cultures, les économies et autres aspects de la vie sociale depuis les années 80 ont été largement documentées par des chercheurs issus de nombreuses disciplines, en particulier de l'économie et de la sociologie. Cet article se propose d'étudier le monde des sciences sociales au cours des

trente dernières années (1980-2009) à partir de l'analyse quantitative d'une vaste base de données bibliographiques, the Web of Sciences (WoS). Notre but est d'étudier les sciences sociales et leur évolution à l'aide du modèle centre-périphérie et de l'analyse de trois principaux indicateurs : la production des articles, la collaboration internationale et les profils de citations en différentes régions du monde. En dépit de leurs limites, ces indicateurs peuvent servir à illustrer certaines caractéristiques spécifiques des relations internationales dans le champs des sciences sociales et mettre en évidence les changements survenus dans les relations entre régions : la croissante internationalisation favorise-t-elle l'émergence de discours délocalisés s'appuyant également sur toutes les contributions à leur disposition dans les différents pays ? Ou renforce-t-elle la dépendance des pays du Sud à l'égard des régions scientifiques dominantes de l'Europe et de l'Amérique du Nord ? Les contributions de l'Afrique et de l'Asie gagnent-elle en visibilité et crédibilité en Europe et en Amérique du Nord ? La structure centre-périphérie dans le monde des sciences sociales a-t-elle été remise en cause au cours des dix dernières années ?

### **Mot-clés**

Bibliométrie, études quantitatives, mondialisation, périphérie, sciences sociales

### **Resumen**

Durante las últimas décadas, la internacionalización y la globalización se han convertido en un tema central para las ciencias sociales. Los efectos de estas nuevas, o al menos aceleradas, tendencias en las culturas, economías y otros aspectos de la vida social desde la década de 1980 han sido ampliamente estudiados por los científicos sociales de varias disciplinas, especialmente la economía y la sociología. Este artículo se propone estudiar más de 30 años (1980-2009) de las ciencias sociales en el mundo con las herramientas cuantitativas basadas en una amplia base de datos bibliográfica, la Web of Science (WoS). Nuestra intención es documentar las ciencias sociales y su evolución, a partir de un modelo centro-periferia y analizar tres indicadores principales: la producción de artículos, la colaboración internacional y los patrones de citación de las principales regiones del mundo. A pesar de sus limitaciones, estos indicadores pueden ilustrar algunas de las características específicas de las relaciones internacionales en las ciencias sociales y pueden arrojar luz sobre los cambios en las relaciones entre las regiones: ¿El incremento de la internacionalización favorecen la emergencia de un discurso deslocalizado, utilizando todos los aportes de los diferentes países por igual ? ¿O acentúa la dependencia de los países del sur de las regiones científicas ya dominantes de Europa y América del Norte? ¿Las contribuciones de Asia o de África son cada vez más visibles ahora en Europa y América del Norte que en el pasado? ¿La estructura centro-periferia de las ciencias sociales del mundo ha sido cuestionada en las últimas décadas?

### **Palabras clave**

Bibliometría, ciencias sociales, estudios cuantitativos, globalización, periferia



