

Is Brazilian scientific publication at a crossroad?

Much has been written about the fact that the Brazilian scientific activity was severely hit by the crisis in the last two or three years, but the consequences of this fact specifically for the international disclosure of produced science in Brazil has been very little commented. However, we all know how to be one of the windows representing this country abroad as well as the greatness for our self-esteem in this country. So, for those who create science at our current crisis becomes severely traumatic. Since scientific activities in Brazil are financed mainly by public authorities, the measurements of financial constraint is to cut governmental funding for the implementation of research projects, reduction of research scholarships in various levels of post-graduation courses, or even the extinction of scientific exchange programs with other countries, as for example, Science without Borders were hard coups for the community.

On the other hand, it is well known that the development on scientific activity is directly associated to the dissemination of information and thus, it becomes evident the possible negative impact of this problem on international publications of our local science production or from what is produced here by our researchers in exchange programs in other countries.

That accelerated growth, since the early 1990s until a few years ago, our scientific publication in Journals with high impact (indexed in the *Institute of Scientific Information (ISI) –Thomson Reuters* recognized as one of the highest selective standards in the world), has brought a great satisfaction, not as a country of the future, but as a country of the present. Maintaining this condition is becoming very difficult. We need to be careful now, for us not to become a country of the past!

In fact, a country that in 1980 had an average international publication close to zero, reaching a of the lowest ranking position in the world and three decades later (2013) has reached the 13th position among more than one hundred countries in this scenario, surpassing countries of greater scientific tradition such as Holland, Russia, Switzerland, Poland, Belgium, Denmark or Scotland¹ still causing us pride. We have to recognize the commitment of our managers of the scientific activity and technology as the *Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq)* (National Council for Scientific and Technological Development), the *Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (CAPES)* (Coordination for Improvement of Students in Higher Level of Education), and the *Financiadora de Estudos e Projetos (FINEP)* (Studies and Projects Financing) that were determinants in this accelerated growth. In a country that is still in development, with little tradition in research, without the culture of scientific publication, nothing has been easy in this field. And now, it all seems that it will not be easier! On the contrary, Research and Development are connected in every country.² And this is not, at all different in Brazil.² As an example of this connection, scientific publication in our country has become clearly evident to this fact.²

That explosion of our publication which was reaching the 13th level in the world in 2013,^{1,3} reaching a plateau level with other countries in an accelerated growth such as South Korea - we had about 43,000 articles published annually¹ – and at the same time, it was side by side with the economic growth of this country. However, considering a strong relation between science and development, we now have fear, given the implications of this financial crisis in Brazil, by the involution of scientific activity and consequently by our publications and its visibility in the world. In fact, when we observe the evolution of our gross domestic product, in which 2010 grew a positive rate of 7.5%, we have verified that it had decreased gradually until it reached the rate of -3.6 % in 2016.⁴ Our scientific future, at least for the next few years, does not seem to be hopeful. It is possible that this plateau level of publications which was high (but already with some indications of a stationary phase in 2013-2015),³ truly begins to decrease. This also draws attention that Brazil had a position, in terms of publications in Journals considered having high impact factor according to the assessment in Nature index in 2015,

where this country was very well represented (23rd place among the 100 countries considered to be more prominent in scientific publications in the world).⁵ Therefore, we were in ascension, which was not much. This was exactly the moment that we needed to advance more and these data demonstrated us that we could do it in terms of the quality in our publications. Not that our articles were considered as of low level, it was only the quality, assessed by the impact factor of the Journals - did not show such an intense increase as the amount published. Our articles advanced in quantity, but the quality still presents two critical aspects. At first, its relative impact is 0.6 when compared to the world which is 1.0. Secondly, this impact has remained stationary during these years and it did not show any parallel increase comparing to the quantitative increase. Thus, it was very beneficial on Nature's evaluation⁵ because it highlighted a recent prominence (2015) of quality in Brazilian publications. It was a sign that our qualitative stability could be improving. Therefore, the problem now is, how can we continue in this perspective?

Everything does not seem to be easy and there is not even a foreseeable future. It is unlikely that instead of striving to decrease in quantity, or even the worse of all, decrease the quality of our publications. Moreover, with the new policies to publish by the international scientific publishers in which the fees charged are increasingly high, we do not see a very positive panorama; however, tragic! But if this is our moment, our reality, what should we do? Some scenarios seem plausible. The first would be, of course, the resumption of a vigorous economic growth in this country in the coming years. In addition to this, a policy could be implemented (or what is the most difficult, a culture) to support public and private Brazilian companies, the publication and also its own research activity. An initiative might be more practical and closely would be the stimulation of a great exchange program among institutions or research groups as well as entrepreneurship in all areas of scientific research with the union of everyone who works in this field. In this sense, initiatives has been formed by organs such as FINEP, CNPq and CAPES whose managers must take part of this fight. We know that it has not been easy at all.

In this case, we will not be alone.

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