



## Run For The Science

To begin, best wishes for the new year to you, dear RBGG reader! We are delighted to present the first issue of 2020 and, in this editorial, will consider a highly contemporary topic: the role of science in our lives.

In the same year that our first thematic issue is published (in N6, although, as RBGG operates a continuous publication system, the first articles published are already available), tackling public policies related to aging, I would like to offer here some reflections on the value given to scientific information today.

Recently, certain attention grabbing phrases on the internet have set the tone for Brazilian researchers, stating that “only science can stop a pandemic” and “the research institutes, universities, national health service (or SUS), the health regulatory agency (or Anvisa) and thousands of civil servants will save us”. We can take the current scenario, of this most recent pandemic to threaten us, as an example.

When faced with Covid-19, which continues to spread throughout the world in early 2020, people have an opportunity to more concretely visualize the importance of science in their daily lives. Despite all the access to information that the internet allows, we are well aware of the volume of incorrect or inaccurate findings that are dispersed. In “neo-medieval” times, it seems we need a “neo-enlightenment” movement. Fighting the infamous fake news is vital for all of us, but access to the right information can sometimes be difficult. Meanwhile, several publishers of scientific journals, even those large organizations which aim to profit due to their high publication and access rates, have temporarily made articles describing studies of the disease available via open access. In view of the huge profits of these large publishers, the ethical importance of publicizing research in an open manner is clear. And not just at this critical moment for humanity.

In Brazil, despite so many negative headlines – often due to a lack of knowledge – we play an important leadership role in world science. SciELO (the Scientific Library Online) is at the forefront of the open science movement, and has been the largest collection of open access journals in the world since 2007, according to the most recent report from Science Metrix (2018)<sup>1</sup>. One way of measuring the importance of SciELO is to consider how it was attacked in 2015 by a representative of the same large commercial publishers<sup>2</sup>, in an attempt to reduce the weighting of the Brazilian library, as well as the Mexican Redalyc (the *Red de Revistas Científicas de América Latina y el Caribe, España y Portugal*, or the Network of Scientific Journals from Latin America and the Caribbean, Spain and Portugal). In Latin America, just like in in political-economic issues, there is strength in the union of nations and, specifically in academic cases, the joint defense that has led to open access has been fundamental in allowing our researchers to publish and follow what is being studied.

Here these words may seem like a defense of an idealistic banner of open science in Latin America. This remains the case – even for all the merit in adversity – but that is not the main focus of this text. In fact,

the aim is to illustrate the importance of these initiatives, supported by public money, so that the knowledge produced can also become what is inherent to its nature: public. The librarian responsible for the standardization of RBGG references and keywords, Gisele de Fátima Nunes da Silva, has a phrase that sums this up nicely: “knowledge has to circulate, has to be disseminated: it should not be lying on a shelf or trapped under a high access fee” Making the full content of articles available for the broader knowledge of researchers and professionals who work most directly with the population is essential to improving knowledge and practices.

In Brazil the Capes (the Coordination for the Improvement of Higher Education Personnel) Portal of Journals has also been a fundamental tool among researchers in Brazil for searching and accessing articles. The funding that supports it and guarantees access to so many journals is also public. Outside the institutional route, when accessing from home, for example, users must pay (and handsomely) to access these same articles. I would venture to say that without the broad access that the Capes Journal Portal allows, it would be almost impossible to carry out research today, given the volume of articles published daily in each area. When accessing texts of interest to his or her institution, a researcher keeps up to date with literature in the area, which few could do if required to pay the expensive access fees for the articles. It is one more way that relates our population and the science it funds.

In addition to publications aimed at academics and professionals, scientific dissemination aimed at the general public is also very important and, at the same time, one of our greatest challenges. Since the beginning of the last decade, selections for research grants from state funding agencies (FAPS, or foundations for research support) have included the requirement of at least one annual activity of scientific dissemination in public schools in the relevant state. In the case of the Rio de Janeiro state agency, or FAPERJ, a fair was also set up to present the results of studies financed to the general public. Also, in 2012, the Lattes Platform, one of the few initiatives in the world that standardizes and allows the matching of curriculums of researchers with their scientific production, began to include fields to identify content that focuses on the general public. More than merely part of institutional obligations, scientific dissemination should be a commitment of the researcher to their financiers, the people – as the vast majority of research funding comes from the taxes of the population.

Even in countries where the public higher education system is not free, such as the United States, most research funding comes through public funds. This seems somewhat counterintuitive, given that the words “public” and “free” are synonymous. In Brazil, until very recently, almost all such financing was provided by public resources, through federal (Capes and CNPq) and state (FAPS) development agencies. The Serrapilheira Institute was a pioneer in the systematic financial support of the private sector for Brazilian research. However, despite this great weight of public funding, there is often a gap between those who produce (researchers) and those who finance (the people). The need to bring these two groups together is clear.

It is the researcher’s obligation to give back to the population for two reasons: an ethical requirement, a commitment to repay the taxes that have been invested in science; and an issue of responsibility, due to the valuation of research as a whole by the general population. The ethical commitment goes into the question of why we have science. The sums raised from the population and, it is hoped, properly managed by our government, being distributed across the budget for science and technology, can and should be the main driver for the development of society. In terms of valuation, the logic is simple: you cannot value what you do not know. It is vital to help develop scientific awareness. A society that values science provides more support for research initiatives, participates more in studies that require voluntary participation and, with such greater interaction, can expand its knowledge (including as fertile ground for future scientists). It is not a question of placing the researcher in the role of “knowledge holder”, on a pedestal to be idolized. Quite the opposite! Valuing what science says means understanding, as a minimum, what science is about, and why it can bring us more reliable solutions and answers to our daily lives than unsubstantiated opinions.

But how can we demand that a population which, like ours, still has a low level of education, “understands, as a minimum, what science is about”? As an initial step in breaking this vicious cycle, the scientist needs to

possess the awareness that we discuss here, of the importance of disseminating their works. Thus, we begin a virtuous cycle, from the researcher who presents their results to society, to a society that starts to listen to what systematic and organized studies can tell us about phenomena and values, and supports them.

And what is the main challenge in this regard? To use precise and accessible language. Part of the gap that exists between scientists and the general public is precisely due to communication, whether direct or through disseminators such as scientific journalists. There are two serious errors in scientific dissemination: emphasizing aspects that may not be the center of the information provided by the study (a researcher often aims to stir up controversy or attract attention in a sensationalist manner); or using too many technical terms, concepts or too much jargon, making the information inaccessible to the general public. Unfortunately, scientific dissemination is not part of the systematic training of researchers, at least in the vast majority of Brazilian graduate courses. Consequently, the second error becomes common on the part of researchers. At the same time, often in an attempt to facilitate understanding, information is broken up in such a way that much is lost, even running the risk of becoming inaccurate or so imprecise that incorrect conclusions are drawn. It is vital to achieve a balance: technical terms, jargon and concepts should be avoided, except where necessary, and when included should be combined with definitions and descriptions and accompanied by examples and metaphors. The researcher should develop this ability to comply with the commitments already mentioned in this text. Knowing how to communicate their findings to the academic world is as important as explaining them to the population that funds their work.

RBGG has encouraged its authors in this regard. Everyone who an article approved for publication receives an invitation to send a video summary of their study, which is posted on the magazine's YouTube channel. The instructions for the video are simple, so that the authors, in around five minutes, can present the main findings and directions of their study in a clear and objective manner, avoiding jargon and technical terms. We have seen how studies with summary videos attract more attention, especially as the process provides more material about the article to be published on our social networks. This is the reason behind our suggestion for our authors to send their videos; so that our readers can access and appreciate the work of colleagues through another visual approach; and also for other scientific journals, which can use this or other ideas in order to stimulate effective scientific dissemination.

We hope that the reflections presented here may be seeds for thinking about the role of scientific knowledge in our lives. That we researchers strive to spread our science further, both in academia and among the general public. That, as a society, we listen more to scientific information and not to unsubstantiated opinions. That our governments give due value to science too, even in response to our demands as a society. There is no doubt that the best leverage for a country's development is investment in education, science and technology. To paraphrase the popular expression, we should not be thinking of "run for the hills" in the current scenario of this pandemic, but "run for the science". May we all stay well in these times, especially our older adults, to whom RBGG is dedicated!

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