EDITORIAL

The significance of scientific journals in knowledge communication[1]

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In one of the most significant reflections on higher education institutions in the periphery of capitalism, Darcy Ribeiro (1968), in *Las Universidades Latinoamericanas*, identified three central functions our universities should fulfill. First, the *teaching function* primarily involves training students and professional staff, which is essential for the life and progress of global society. Second, the *creative function*, linked to research, which allows for the incorporation, expansion, and adaptation of existing knowledge to the integral development of the country. Finally, the *political function* entails the participation of universities in addressing the nation's pressing issues, including the creation of "communication instruments" to engage with the broader society of which universities are an integral part. Scientific journals can be seen as one of the key vehicles through which these three functions can be fully implemented.

The primary function of scientific journals is the "[...] communication of science" (Stumpf, 1996), serving both academic and non-academic audiences. According to Barbosa et al. (2013, p. 6-7), this function can be further specified as follows: scientific journals "[...] disseminate research results (scientific knowledge) by scientists, allowing the integration of those conducting research in similar fields, while also facilitating the dissemination and retrieval of information by those interested in their work". Silva et al. (2016, p. 117) remind us that the nature of scientific progress relies heavily on the communication of research conducted within the various "[...] scientific communities in each area of knowledge".

In geography, prominent scholars have focused on the circuits of knowledge production and dissemination within educational and research institutions. Nigel Thrift was one such scholar, asserting that all forms of knowledge are historically and geographically specific, meaning that knowledge is always *situated within* particular contexts, influencing how it is its produced, shared, and "consumed" (Thrift, 1996). Every society possesses a particular "knowledge stock", which is unevenly distributed among its individuals based on their social group affiliations and their proximity to the centers of knowledge production and dissemination. Another important aspect highlighted by Thrift (1996, p. 104) is that the knowledge typically produced by educational and research institutions (such as universities and scientific associations) heavily relies on written forms and physical means of dissemination. This dependency traces back to the advent of the printing press, which facilitated the spread of knowledge through books, brochures, newspapers, pamphlets, and posters during the medieval period in Europe.

For Thrift, the invention of the printing press had several key consequences for the organization and dissemination of knowledge: 1. Acceleration of the dissemination of the available stock of knowledge; 2. *Codification* of knowledge, which became both possible and necessary; 3 Consultation, comparison, and selection between different pieces of knowledge became feasible for the first time, as seen in libraries; 4 This ability to record, codify, and compare also enhanced the accuracy of knowledge, particularly scientific knowledge, in contrast to practical, religious, and "unconscious" knowledge that predominated among the general population in medieval Europe; and finally, 5 The expansion of written knowledge enabled this type of knowledge to be accessed through reading, which facilitated the development of skills and understanding "at a distance," reducing reliance on "face-to-face" interactions in dedicated teaching environments (Thrift, 1996, p. 104).

During this period, before the establishment of scientific journals, the communication of innovations by scientists primarily occurred through personal letters to their colleagues or through the minutes and reports of scientific meetings. These letters circulated among

select individuals and had a predominantly personal nature. They were often addressed to recipients more inclined to agree with rather than challenge the ideas presented, which limited their potential to advance knowledge (Stumpf, 1996, p. 1).

Another significant geographer who offered an interpretation of the conditions for the production and dissemination of scientific knowledge is David Livingstone (2003), in his work *Putting Science in Its Place*. The central objective of the book is to demonstrate the "inescapable spatial nature of science," arguing that its development depends not only on specific "sites" or "locations," but also on *regional settings* and conducive *national environments*. Regarding science production sites, Livingstone shows that, alongside the gradual institutionalization of universities, places such as churches, museums, botanical gardens, hospitals, and courts largely functioned as "laboratories." These institutions accumulated instruments, devices, books, and various types of equipment, enabling the collection, manipulation, and dissemination of information crucial to the advancement of scientific knowledge. These places gradually evolved into powerful "centers of accumulation" and "calculation" (a term borrowed from Bruno Latour) for various material and immaterial objects essential to the systematic production of scholarly knowledge. This included books, precision instruments, ideas, specimens (both animals and plants), and more. (Livingstone, 2003).

The author thus demonstrates that, throughout history, the circulation and "consumption" of knowledge have been as important as its production. Knowledge circulation occurred through universities, scientific societies, literary academies, and circulating bookstores, reinforcing the significance of certain *nodal points* within these networks. These networks were established to handle knowledge both for speculative purposes ("knowledge for its own sake") and pragmatic, geopolitical reasons. Some major European universities also supported and legitimized expansive colonial structures, as seen in England and France. The imperial conquest of the globe, beginning with the European mercantile period, was significantly optimized by these early centers of scientific knowledge production (Livingstone, 2003, p. 171). Science, being both part of diverse cultures and the universal stock of knowledge, possesses an undeniable geographical nature: "[...] *like other elements of human culture, science is situated*. *It unfolds in highly specific venues, shaping and being shaped by regional characteristics; it circulates globally in minds, on paper, and through digitized data*" (Livingstone, 2003, p. 179).

During the seventeenth to nineteenth centuries, journals gradually emerged as a legitimate medium for communicating scientific advances, increasingly competing with books, which had previously been the primary means of such communication. The publication of innovations in journals offered two main advantages: 1. they occurred more quickly, advancing debates and providing fair recognition of the priority and originality of the ideas to their authors; and 2. It was also a cheaper option, as books were expensive to print and distribute, especially the larger volumes (Stumpf, 1996, p. 2).

It wasn't until the nineteenth century that journals began to take on the features we discern today. Among the characteristics that became established during this period were: 1. the more or less regular periodicity of their publication; 2. the emergence of two primary forms of financing: either the associations that organized the journals covered the publication costs, or they were sustained by charging subscription fees to members of scientific associations who wished to receive the issues; 3. There was also a significant specialization of journals into specific fields of knowledge (physics, biology, geography, history, etc.). By the early

twentieth century, the growth in the number of journals continued to accelerate. This was largely since they were being published not only by specialized associations but also by universities, colleges, commercial publishers, and even the state, which was interested in promoting scientific discussions in areas of strategic interest (Stumpf, 1996, p. 3).

The dynamics of journal editing, publication, and dissemination underwent profound changes starting in the 1970s, with the more systematic use of information technologies throughout the editorial process. At the beginning of this decade, both in the USA and in England, journals evolved into "editorial processing centers" (Stumpf, 1996, p. 4), designed to optimize the entire publishing chain—from the receipt of article submissions, the assignment, and evaluation by reviewers, to the editing and printing of the journal[2].

In the 1990s, this process intensified further, as journals gradually transitioned to fully digital formats, utilizing the internet to make their issues available *online* rather than in physical copies. Silva et al. (2016, p. 118) note that this digitization not only facilitated the development and creation of new scientific journals but also significantly contributed to the formation of international research networks. For journal editors, this practice brings two major advantages: 1. A better pace and efficiency with which the editing process takes place; 2. The dramatic drop in costs across various stages of publication, particularly in the areas of printing (which has been largely abolished) and distribution (now primarily conducted *online*), has significantly transformed the landscape of academic publishing[3]. Barbosa et al. (2013, p. 5) detail these advantages as follows: the availability of the *Internet*, free-of-charge journals (most of it), rapid and unlimited dissemination of content, low production costs, and enhanced communication between readers and authors via email. Furthermore, the benefits extend to broader access, where a significantly larger audience can simultaneously access and read articles instantly. Libraries also benefit from more physical space, as journals are now stored digitally rather than on shelves (Ferreira and Caregnato, 2008, p. 172).

GEOUSP's historical commitment to being a public and free medium for Brazilian geographical science deserves special mention, as emphasized in the editorials by Antas Junior (2022) and Juliasz and Garcia (2024). This commitment aligns with a broader recent effort to build circles of knowledge production and dissemination that are not only scientifically relevant but also socially legitimate, addressing issues of interest to the entire Brazilian population, rather than just a specific class of individuals or institutions. With this stance, the journal is part of a recent effort to build networks for the production and dissemination of knowledge that are scientifically relevant and socially legitimate. This is achieved by focusing on topics that are of interest to the Brazilian population, rather than just a specific class of individuals or institutions. This public orientation is a responsibility that should be embraced by all journals linked to public higher education institutions, especially since most of the funding for these activities comes from public sources, whether federal or state (Parker, 2011). As shown by Silva et al (2016, p. 119):

[2] This model continues to underpin the rigor and prestige of scientific journals. As Parker (2011, p. 30) notes, "the scientific character of journals stems from original articles, which present unpublished research results and are accepted for publication following a peer review process and adherence to editorial policies."

[3] As shown by Antas Junior (2022, p. 1), "Until the mid-2000s or shortly thereafter, most scientific journals were printed-paper publications, demanding editors to manage various specific challenges like slower production processes, less frequent issues, fewer articles per issue, lack of access to publications... and the accumulation of hundreds of piles of paper volumes in storage due the poor distribution to the places of interest."

> [...] the open access model views scientific research as a public asset, particularly when funded by public resources, and argues that it should be freely accessible to anyone interested in its content. Open access to scientific information enhances communication within the scientific community and promotes equal access between developed and developing countries, benefiting researchers and readers alike.

This heightened concern for the common good serves to broaden the accessibility of this knowledge to the general public, both academic and non-academic. This, in turn, contributes to the social legitimacy of public universities in the country. This is a concern that, according to Kuramoto (2008, p. 870-871), will reinforce the dynamics of scientific research in universities and could have positive consequences for various processes: 1. Increase the internationalization of scientific information produced locally; 2. reduce the so-called "cognitive exclusion" in society; and finally, 3. Contribute to the reduction of social inequalities[4].

This also reflects the spirit of the articles featured in this issue of GEOUSP, which provide readers with insights into recent innovations by Brazilian and Latin American researchers. These researchers have rigorously addressed topics that are crucial to both geography and contemporary society.

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[4] As Parker (2011, p. 36) notes, "Open access to scientific knowledge involves publishing research results on the web without access barriers." It is grounded on the view of scientific knowledge as a public good and the fact that much research is funded by public resources. Furthermore, its main objective is to increase the visibility and accessibility of scientific production. Open access is considered especially important for developing countries".

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