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The complex dynamic of scientific diffusion:

the case of the Ciência & Saúde Coletiva journal[1]

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Abstract

In this article I seek to describe, analyze and problematize the process of scientific communication, dissemination and diffusion. The basis for this reflection is the performance of the *Ciência & Saúde Coletiva* journal over its eleven years of existence; I seek to link this case study with the field of interests of the process of communication, indexing and consequently, the standing of the publication, the editors and the authors on the international stage. The data published and illustrated in the article are part of the journal's archive, and were categorized and analyzed by me, in collaboration with its executive editor. In the analysis and conclusions, I attempt to show that in the field of science and technology, the "gold of the 21st century", there is no room for naivety. However there is space for national and international cooperation and for endowing academic production with a social purpose: Science for Society.

Keywords

Science and technology in health, scientific communication in health, scientific diffusion in health, the field of collective health

Introduction

This article aims to problematize the question of scientific communication, dissemination and diffusion. In the first section, I describe the process of constructing the *Ciência & Saúde Coletiva* [Science and Collective Health] journal, of which I am the scientific editor, over its eleven years of existence. In the second part, I discuss the individual and collective effort that we have invested to try and disseminate the information about the authors and their articles in the correct way, and all the pitfalls, difficulties, interests and problems present in this final stage of the scientific production process.

In dealing with the history of a specific scientific periodical, my hypothesis is that I will raise questions which transcend the idiosyncrasy of a single publication and which may be applied more generally (with the necessary caution) to scientific dissemination and diffusion as a whole. In this text I would like to invite contributors to reflect more deeply and widely, thereby seeking to broaden the horizons of those who are concerned with their own production, their own article, with the space occupied by the journal in the totality of scientific publications, focusing only on individual credit in their career. My purpose in doing this is to

show that sharing problems and responsibilities also strengthens all the actors involved and increases the chances of overcoming the challenges, sometimes massive, faced by scientific editors.

Material and methodology

All the quantitative data presented in this article is drawn from the records of the *Ciência & Saúde Coletiva* journal, stored on paper up to 2005, and the technical annual reports sent to the CNPQ (National Council of Scientific and Technological Development), copies of which are kept in the archives. Since 2006 the information has been stored in electronic spreadsheets. Working with the executive editor we developed categories of analysis for production and we summarized the data in the summary table published here. This data was then transformed into various diagrams. In this study we present only four illustrations, in accordance with this journal's editorial guidelines. The second part of the article is based on a dialogue with the history of the journal and with authors who critically analyze the field of scientific communication.

Scientific communication, dissemination and diffusion

All scientific activities begin with the development of a project or protocol which generally includes the following steps: literature review, refinement of the instruments for observation or data collection, observation or field research activities and construction of the various stages of analysis (ordering, classification, cross-referencing of data and theories and synthesis of results). Generally the final product of a piece of research is a report which documents all the stages of production of the work and which represents the repository of the discoveries and findings which will be communicated through specialist channels during and at the end of the research process.

There are three widely used expressions used to refer to the rhetorical activities and the means used by scientists to interact with the public: communication, dissemination and diffusion. I will attempt to define them, but with the caveat that a review of the relevant literature shows that these three expressions are rather imprecise and are used interchangeably. There is no conceptual rigour in the designation of the processes in question. I will try to differentiate between them in the context of this text. I define scientific communication as the exchange of information between the members of the academic community. For GARVEY (1979), communication includes the dissemination and use of information from the moment a scientist formulates an idea and prepares a project. Generally speaking, he says, this is an informal process, involving meetings over lunch, via email, in the corridors and behind the scenes at meetings and congresses. It also takes place formally via articles, books, seminars, presentations at congresses and so on. However, communication is a phase of the scientific process which is the responsibility of the researcher, which is formalized by common consent with scientific editors, since it is up to the author to present his or her research, even though it must be in the format standardized and normalized by the journal or by other means of dissemination which he or she chooses. The aim of the communication stage is to include the research and the researcher in the scene and in national and international dialogue on the specific issue which is the focus of his or her research.

As for dissemination, I define it, in this text, as the process designed to ensure that the communication of the scientific and technological information reaches a specialist audience, transcribed in codes and channels which are specific to that area of knowledge. This activity is generally carried out by scientific editors of books, journals and other media, including electronic media. Disseminating the results of research and the academic debate of a specific area constitutes a specific and increasingly specialist process which, in particular, mobilizes peer review. Articles are currently the dominant vehicle for scientific communication and dissemination, with the medium being academic journals, which in turn put together national, regional and international databases.

Looking at the Brazilian academic landscape, we can see that dissemination of articles has been growing geometrically. Today the country occupies eighteenth position in the world in the number of articles published in journals indexed in international databases, which is a good performance in comparative terms (GUIMARÃES, 2004). This process of development is in line with the increase in the number of academic master's programs (known as *stricto sensu* courses in Brazil) and the ongoing requirement of these courses that master's and doctorate students publish the results of their research. In addition, there are increasingly rigorous evaluation criteria established by the agencies for promotion and evaluation, based on the quantity and quality of scientific production, which are applied when seeking funding for courses or research projects.

The fundamental question which comes to mind is why so much emphasis and value is given to scientific communication on individual and institutional resumes, when other means of checking and comparing productivity exist, such as supervision of students, number of classes taught, consultancies and technical production. The answer in itself is simple, but it hides a series of issues and problems. I believe that the greater value accorded to publication is due, firstly, to the fact that research is the soul of scientific and technological progress, and secondly, because dissemination of research gives it a social existence. Nowadays there is an unshakeable consensus in the scientific community about the need to share the science which is constructed in laboratories and research groups, leading to the radical conclusion that science that is not communicated and not duly disseminated is science which simply does not exist: no-one can guess what happens inside a researcher's office if his or her research

activity is not made public through an internationally established format (VESSURI, 2003). Authors such as LAFUENTE et al., for example, write that in the scientific world "*I exist because I am thought about and not because I think*" (LAFUENTE et al., 1998:32), thereby inverting the Cartesian theory "*I think, therefore I am*".

However, it is not just communication aimed at peers and dissemination through specialist scientific publications which are important in science and technology. Without wishing to apply a utilitarian logic to the intellectual field, it is also a worldwide consensus that as well as promoting the socialization of findings and, therefore, the progress of thought and practise, as well as evaluation and criticism within their own milieu, scientists need to diffuse the knowledge to the general public, using language accessibly to lay people. For this reason, authors such as ALBAGLI (1996) frequently use the expression scientific diffusion as a synonym for popularizing science. So as well as making possible the dialogue between peers which happens as a result of dissemination through books, articles and electronic media, scientific communication has the important function of spreading scientific literacy among the general public. This is taking place more and more and requires the use of specialized methods and techniques from the language of mass communication in magazines, articles and sections in the mainstream media and in open access or institutional electronic publications. This activity has at least two important consequences: it projects the meaning and the public utility of scientific activities and creates a social awareness of the importance of investment in this sector.

In her well-known work, KNORR-CETINA (1981) stresses that communication infiltrates scientific research and is responsible for its projection. So it is nonsense to talk about "private science" or science without communication and without dissemination.

Despite having broken down the concepts of communication, dissemination and diffusion of knowledge, in this article I will deal only with the communication and dissemination carried out by the scientific journal, and as a result, with the praxis of publishing articles.

Science and Collective Health for Society

The title of this section is the slogan of the journal under consideration here and which the reader can easily find online at www.cienciaesaudecoletiva.com.br. *Ciência & Saúde Coletiva* is a bimonthly periodical of Abrasco (Brazilian Association of Collective Health). The term "collective health" which is present both in the name of the journal and that of the association requires an explanation. To put it simply, "collective health" is a synonym for "public health" and whenever we translate the term into English or into any other foreign language we refer to this similarity because it is only in Brazil that the expression "collective health" is used in an institutionalized way. As with all concepts, which emerge and become historically established "collective health" refers to the processes of political struggle around the so-called "Sanitary Reform", begun during the period of military dictatorship in Brazil (1964-1979), which aimed to universalize the right to health throughout the Brazilian population (TEIXEIRA, 1987; ESCOREL, 1999). The notion took shape and created its own identity through a criticism of the concept of "public health" (TEIXEIRA, 1987), a term whose historical meaning was always linked to state interventions to overcome diseases which decimated or affected specific population groups. The reform movement believed that the term "collective", the object of the politicization which was considered necessary for the advance of a "sanitary awareness" (BERLINGUER, 1978), covered not just the state as the intervener in a society which was the victim of epidemics and endemics, but also, importantly, the movements and groups which organize themselves to defend and win their right to health and to define the parameters of what they consider to be a healthy life. To summarize, the term "collective health" was one of the banners of the social struggles for the Brazilian sanitary reform which was enshrined in the so-called Citizen Constitution of 1988. The expression was preserved in Abrasco's name (Brazilian Association of Collective Health) and began to be institutionalized by the scientific evaluation and promotion agencies such as Capes [the Brazilian Ministry of Education's agency for the development of higher education staff and evaluation of postgraduate programs], CNPq and FINEP [the Brazilian innovation agency]. So it is only right to maintain the expression in the name of the journal - *Ciência & Saúde Coletiva* – since this is the association's official vehicle for scientific dissemination.

The expression "for society" after the name of the journal is deserving of this institution which has always had the socialization of knowledge in the area of collective health as one of its most important activities, ever since it was founded in 1979, disseminating it through congresses, seminars, books, conferences and meetings and working for the improvement of health care, management and policies. However, the discussion about the creation of the association's own print publication only took place during the 1990s. This desire came at the same time as the beginning of the development of the *stricto sensu* academic master's in the area of collective health, which was consolidated during that decade. Given that, in the Brazilian case, talking about the academic master's degree is the same as talking about the advance of science and technology in all areas of knowledge, the decision to create the *Ciência & Saúde Coletiva* journal corresponded to the development of scientific thought in this field. The desire to promote this initiative was also based on the experience of the majority of scientific areas in the country; despite the existence of other journals competing for the diffusion of research and debates in the disciplines they represent, they created

their own vehicles for communication and dissemination. The decision to set up the journal in question was finally taken in the second half of 1996. This much thought-about, debated and dreamed-of creature has just turned eleven: from 1996 to 2001 two issues were edited each year. In the following years, there were four issues per year. The journal went into 2007 publishing six issues per year, in response to the growing demand from the collective health field and the consistent increase in the demand for publishing articles in this publication.

Ciência & Saúde Coletiva has taken shape as a scientific space for the publication of debates, the presentation of research, for setting out new ideas and controversies in the field. In 2006, 108 articles were published (four thematic issues and one supplement), under the authorship of 304 researchers and professionals from the area. There was a visible growth in the participation of contributors when, for example, we compare data from 2002 (the first year that the journal became quarterly) when 67 articles by 162 authors were published. In each issue there is also participation by researchers from English, French and Spanish-speaking countries. At the moment, the annual total of articles received by the executive secretary is around 500 and increasing, since 545 were received in 2006. Since its founding the journal has faithfully met the requirements of periodicity and normalization in line with the standards in the Vancouver Convention, which are generally followed by medical journals (C&SC, 2006).

During 1998, the journal defined its personality (this is why we consider 1996 and 1997 to be a sort of pre-history) through two important editorial decisions. Firstly, a change was made to the format and standardization. As well as a new way of organizing the content and the space which persist until today, a new cover was designed which gave the journal the identity which it maintains today – a stylized electronic image of the Brazilian population (combining the ideas of science and collective health). Secondly, there was an editorial decision to make the journal thematic. This decision was based on Abrasco's proposal to take up, scientifically, the discussion of the state of knowledge about relevant issues in the field of public health, investing in the diffusion of research and public debates. For this reason, each issue begins with a debate which brings together opinions from around six experts around a reference text.

The aim of this debate is to showcase controversial topics in the field of health and contribute to clarifying them. There then follow ten to fifteen articles about the topic under consideration; after that come research and review articles on a range of free choice themes in collective health; one or two opinions about research in progress, information about results of scientific meetings or one or two interviews. At the end there are book reviews, where possible relating to the topic under consideration.

Each issue includes at least 25 articles.

From the scientific point of view, the journal follows all the internationally recognized procedures. It has (a) a scientific editor and a team of executive editors; (b) an editorial body covering the main areas under development in collective/public health in Brazil – epidemiology, health planning and management, social sciences and health, science and technology and health and environment; (c) an Editorial Board made up of 72 researchers with doctorates from national health institutions from all over the country and some international representatives from a range of countries (Argentina, Peru, Venezuela, Colombia, Mexico, Chile, Canada, United States of America, France, England and Australia); (d) and a diverse group of ad-hoc consultants. Peer review is compulsory for all texts.

For each thematic issue the journal also involves one or more well-known researchers in the field in question as guest editors. These editors initially produce a *terms of reference*, setting out the objective, the meaning and the importance of the topic under consideration, selecting the feature writers and discussants. The terms of reference is prepared by common consent with the scientific editorship (scientific editor and associate editors) who read it, review it and give opinions on possible modifications. Once it is approved, the terms of reference is distributed within the journal's annual timetable and the invited editors take on joint responsibility for the production of the issue in question. All the researchers invited to write thematic articles are aware that their work will also undergo peer review and consent to this.

The choices of the topics to be dealt with by the journal's issues come from various sources of inspiration. Some, for example, respond to demands picked up on by the editors in the light of problems which exist and which need to be investigated in more depth. In these cases, it is time to submit the question for analysis by the most important researchers in the respective area. This was the case for the issues about (1) the evaluation of postgraduate teaching in collective health; (2) the analysis of the connection between health and environment in the development process; (3) the debate about the prevention of violence; (4) the concept of health as quality of life; (5) the analysis of health policies in the aftermath of the Constituent Assembly. We also produced other important issues on the request of the editors, for example those which: (1) celebrated 100 years of public health in Brazil; (2) discussed the impact of new discoveries in genetics on collective health; (3) discussed the Brazilian public health system, the SUS, in practice; (4) developed the debate about the collective and subjectivity in health praxis; (5) analyzed in depth the Pnad [national household survey] data from 1998 and 2003 (two issues); (6) focused on male health; and (7) focused on non-transmittable diseases.

Other issues are organized in response to demands from researchers or health managers as was the case of the issues dealing with: (1) health research; (2) health

and work in Brazil; (3) evaluation as a strategy for change in primary care, and others.

The following table synthesizes the internal functioning of the journal, showing the process for selecting what will be published and how this takes place. The production of a journal is akin to the workings of a small business with a complex range of activities and involvement of different actors. And for each article which is published - with its individual personality and history - more than half are sent back to their authors because they were not of the right quality or because they did not fall within the

Table 1 - Summary of the journal's dynamic

Journal Content	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Original Articles	7	8	18	24	27	24	59	94	98	110	545
Review Articles	1	1	2	2	2	2	2	2	4	5	6
Opinion Articles	6	8	17	14	25	13	30	20	27	19	4
Announcements	0	0	0	0	0	0	1	5	1	3	2
Technical Notes	0	0	0	0	0	0	5	5	1	1	-
Book Reviews	4	3	4	4	10	6	11	5	10	12	5
General News	0	0	1	0	0	0	0	0	4	4	3
Communications	0	0	0	0	0	0	0	3	4	3	3
Article Dynamic and Handling											
Articles submitted	20	20	40	80	86	87	205	242	418	495	545
Articles accepted	18	17	37	50	54	49	151	166	219	231	195
Articles rejected	2	3	3	30	32	38	54	76	199	264	229
Time between submission/ acceptance (months)	3	3	3	3	3	6	8	8	6	6	12
Time between acceptance/ publication (months)	6	6	6	10	8	12	10	12	12	12	6
Number of peer reviewers	22	22	22	10	10	22	78	86	113	118	162

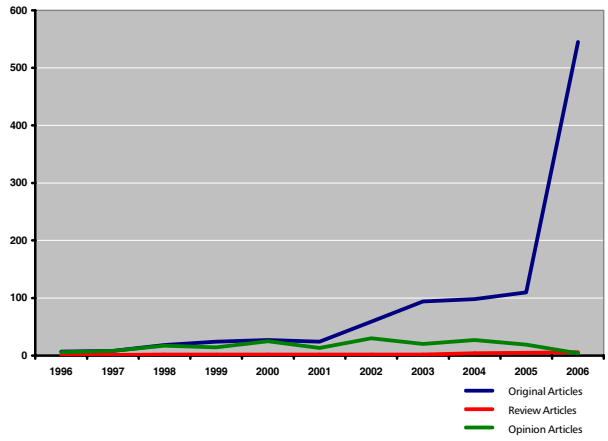
Distribution of Fascícules											
donation	National libraries	6	6	40	40	60	30	30	60	35	35	42
	Foreign libraries	1	1	10	10	12	20	40	40	15	15	23
subscription	National libraries	6	4	4	10	25	47	48	56	47	64	86
	Foreign libraries	1	0	4	3	6	3	3	4	4	8	40
	Members	1000	800	500	1850	2000	2500	2500	2580	1200	1250	425
	Non-members	20	20	520	20	680	398	398	1720	2048	2058	-
exchange	National journals	20	10	30	30	30	35	30	28	20	28	40
	Foreign journals	10	10	40	40	40	40	40	25	15	12	38
	Sales	40	50	53	100	100	300	280	420	330	380	410

Educational level / Year	Reader and Subscriber Profile										
	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Doctorate	380	420	770	800	935	635	740	1060	1510	2070	1850
Master's	360	380	600	450	580	496	560	910	1364	1320	1412
Postgraduate diploma	280	288	478	410	565	418	418	1090	1556	2036	2350
Undergraduate	0	0	10	8	10	14	12	8	12	15	5
Technical	20	22	28	52	108	58	58	120	120	75	68
Occupations											
Medical doctors	150	160	160	168	178	178	203	247	273	269	283
Health workers	210	210	267	287	312	333	381	400	465	525	525
Biologists	30	30	30	18	18	21	25	25	29	29	24
Nurses	60	60	60	60	60	64	94	94	104	116	113
Pediatricians	30	30	30	30	30	30	60	60	65	68	71
Postgraduate professors	100	100	155	168	188	188	188	257	307	312	327
Postgraduate coordinators	20	20	20	20	25	25	30	35	50	80	61
General public health professionals	75	75	110	153	159	160	165	209	229	295	283
Biostatisticians	40	50	80	108	108	138	148	156	180	180	208
Epidemiologists	90	110	110	125	135	145	145	173	173	183	194
Dentists	10	10	12	10	10	0	0	26	36	66	42
Public health management professionals	55	75	120	172	174	178	186	255	264	350	339
Preventive medicine professionals	50	60	76	94	94	102	140	190	205	205	226
Social scientists	120	120	86	107	127	127	151	180	220	248	230

scope of the publication. However, a reasonable number of articles are sent back to the authors for improvement of the content and form. It is important to note that this interaction has an irreplaceable pedagogical value, despite all the problems of bias and competition between people and groups often highlighted by those whose texts are questioned by evaluators and scientific editors. There is no such thing as perfection. The following is a synthesis of the editorial dynamic.

The graph below shows a typology of the texts published in the journal. I would like to emphasize that the majority of them correspond to the communication of research, with systematic reviews and debates in second place. This selection shows the dynamism of research activities in collective health and the privileged space which diffusion of research has come to occupy.

Figure 1 - Content typology of the journal



In relation to the reader profile, over the years the journal has become more "elite", which is quite understandable given that it is a scientific periodical which is particularly popular with holders of doctorate and master's degrees and academic master's students. This analysis of the reader profile shows that hardly any of the journal's readers are undergraduate students, a fact which is receiving the necessary attention and investment from the Editorial Board.

Ensuring that the journal reaches the Association's target audience is a crucial element of the editorial policy and may possibly still be the weakest aspect of *Ciência & Saúde Coletiva*. In Brazil there is hardly any tradition of investment in scientific diffusion aimed at society, because this would require specially targeted social marketing, something which is still in its infancy in the country. It is certainly the case that the arrival of electronic media has emphasized, problematized and dynamized the question of the diffusion of, and wide public access to, scientific knowledge, in particular that which is generated with public resources. Web pages are definitely an important and successful development. For example, the www.cienciaesaudecoletiva.com.br page received 40 thousand visits in its first year. The situation with regards to the distribution of the print version of *Ciência e Saúde Coletiva* is more problematic, since we have detected an extremely important group of readers who should be targeted and prioritized but are not yet receiving this attention: undergraduate students in all areas of health sciences.

Each article received by the journal goes through the following process: (a) in the first instance, it goes through an editorial filter to check if it is relevant to the scope of the journal; (b) if relevant, it is registered, processed and sent, without the name(s) or anything which could identify the author(s), to two peer reviewers who have 20 days to give a verdict on its merit and quality. At the moment authors and contributors use the www.cienciaesaudecoletiva.com.br page for submitting and evaluating the article.

The flow between the submission of an article and its publication takes around eight months. However, including the written and electronic process and following the example of several international journals, we have started making articles available online up to 24 hours after they have been approved for publication. The standardization of the format and standards for citation mean that authors can cite them and receive credit immediately. When the article is published in the print version and is included in the Scielo database it is then removed from the journal's website.

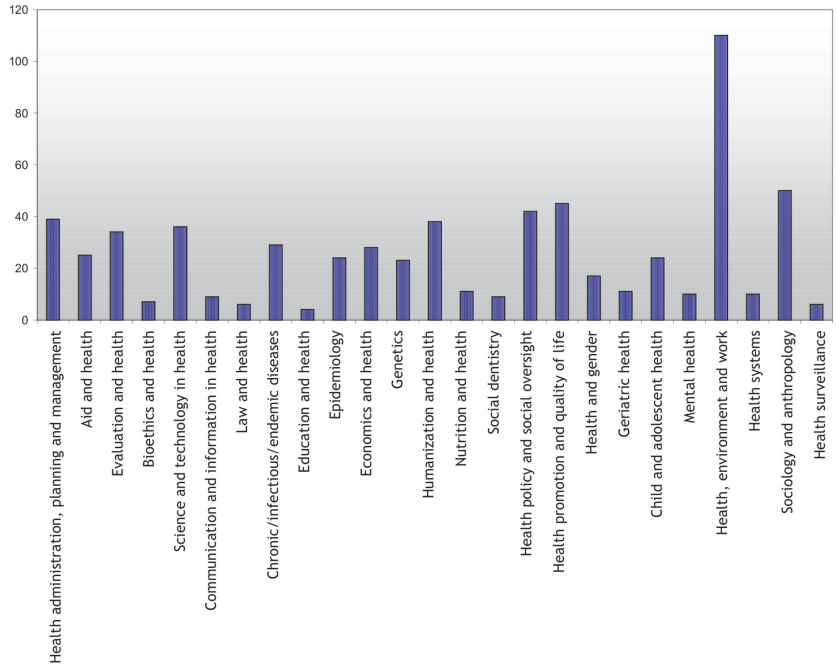
The diagram next page shows the profile of the content published in the journal. I have grouped together the topics giving priority to some categories and trends. Despite this subjective intervention, it is clear that the published texts correspond to the field of collective health, which suffers from an ongoing problem of how to define its limits. This problem is also present in this journal, and requires sensitive and careful arbitration in such cases. However, wherever possible, we favor an interdisciplinary approach and the inclusion of related areas.

The other graph shows the variety of topics covered by published articles. However, the main contributions received and accepted are concentrated around a few of them: health, environment and work; health promotion and quality of life; health policies and social oversight; evaluation in health; science and technology in health; sociology and anthropology of health.

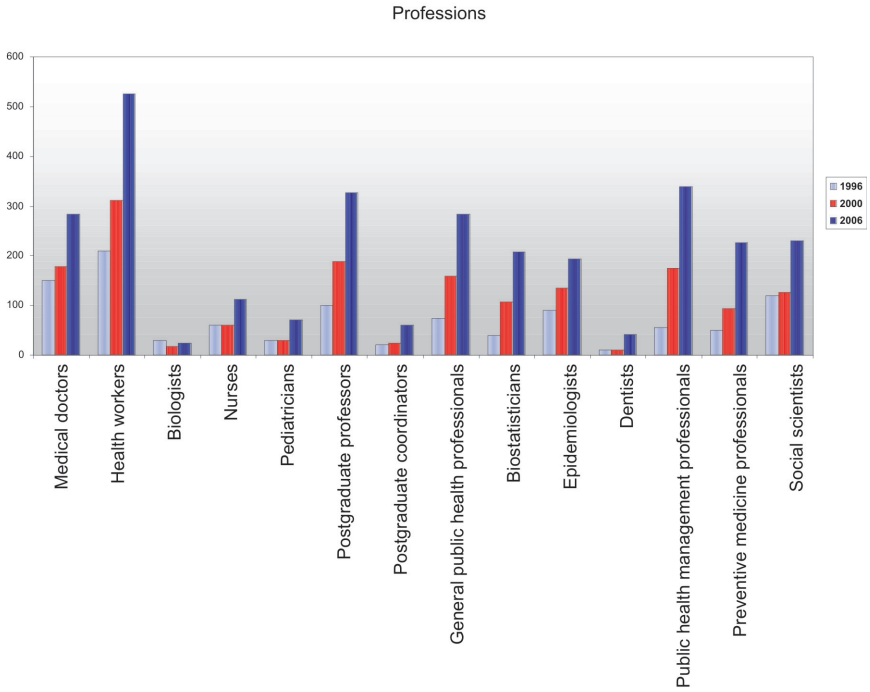
The table shows the participation of our readers in professional and scientific activities. The following chart shows a consistent growth in the number of readers, with the majority of them corresponding exactly to the journal's profile and its thematic focus: health workers and researchers working on preventive medicine and collective health, managers, policymakers, lecturers and coordinators of postgraduate courses, doctors, social scientists, biostatisticians and, to a lesser extent, biologists, dentists and nurses. The professional category was self-assigned by the readers.

One of the problematic aspects of the journal is its distribution to society in general. This point has been the subject of discussion by the editorial group especially in relation to the access of undergraduate students to the print edition. We know for certain

Figure 2 - Topics covered by the journal from 1996 to 2006



Professional activities of readers and subscribers



that we reach the researchers and professionals mentioned above and university libraries throughout the country and some abroad. On the other hand, the electronic edition of the journal is available to the general public and the "contact us" facility receives messages from readers from the most varied social groups and with a range of interests. However we believe that the socialization which needs to be achieved to guarantee the popularization of *Ciência & Saúde Coletiva* requires further attention and improvement in the editorial policy.

In general, one of the big problems associated with a scientific journal is its funding. *Ciência & Saúde Coletiva* is funded, in part, by Abrasco, which sustains it through national and international subscriptions, both institutional and individual. However there are two institutions who have been crucial to the success, punctual delivery and editorial quality of the journal throughout its history: the Oswaldo Cruz Foundation (Fiocruz) which hosts its executive secretariat and provides institutional support, and the CNPq, which has contributed some of the necessary funding and evaluation from the outset and which we consider to be a seal of quality. In addition to these two organizations, the Ministry of Health has often collaborated with funding for issues on its specific areas of interest.

The print run for the paper version of the journal is currently 3,000 copies, which can be considered a success, at least in Latin America. As well as the members of Abrasco, there are around 400 individual and institutional subscribers and a high number of one-off subscriptions or purchases by non-members. A small number of copies are designated for exchange and distribution to Brazilian and overseas libraries. When there has been interest from an institution in specific issues, the print run has occasionally been increased accordingly. That was the case, for example, with the issue on "Workers' Health: New and Old Problems" sponsored by the Ministry of Health. 2,000 extra copies were produced, for distribution to delegates at the III National Conference on Workers' Health in 2005. This was not an exception, far from it. The same thing happened recently with a special issue on research in health; the Ministry requested 1,000 extra copies for distribution at the Second National Conference on Science and Technology in Health.

Ciência e Saúde Coletiva has been indexed in the Scielo database since 2002 and in various other databases such as: Lilacs (Latin American & Caribbean Health Sciences Literature), Latindex (Regional Online Information System for Scientific Journals in Latin America and the Caribbean, Portugal and Spain), Red ALCyC (Network of Scientific Periodicals for Latin America and the Caribbean, Portugal and Spain), Red ALyC (Latin American and Caribbean Network of Scientific Periodicals), CSA (Sociological Abstract), CAB International/Global Health Abstracts (Commonwealth Agricultural and Applied Sciences database & Global Health International Public Health database), Repdisca (Sanitary Engineering and Environmental Sciences documentation collection) and Doarj (Directory of Open Access Journals), Summary of Brazilian Journals and Free Medical Journal (Free Access to Medical Periodicals).

We have a vision for the future for *Ciência & Saúde Coletiva*, because every small business has to think ahead. We have a plan for progressive internationalization, for increasing the number of partnerships and for widening and deepening the journal's distribution. The respect and the affection of the journal's authors and readers, the immense dedication of its executive group and the support from successive directors of Abrasco have already made it an indispensable presence in the marketplace of ideas about collective health in Brazil, and to a lesser extent in Latin America and the world. The thematic format of the journal, which captures the issues of deep and undeniable interest for debate and knowledge in collective health makes the difference and ensures it a privileged niche in the hubbub of ideas and research in health.

The complex task of scientific diffusion

The description of the second part of this article introduced the reader to a techno-political way of working which requires intense investment on a day-to-day basis as well as in the medium and long term. Unfortunately the launch of a new scientific journal on the market is just the beginning, rather than the end of the process. The story of the high levels of "infant mortality" among vehicles for scientific diffusion is well known among scientific editors. To establish a place in this market it is necessary to conjugate many verbs indicating action: (a) win credibility; (b) attract contributors with established reputations; (c) reach out to readers and transform them into contributors; (d) compete for space in the best-known indexing databases; (e) in the case of Brazil, achieve a good rating in the Qualis database maintained by the evaluation and promotion agencies; and the hardest one, (f) internationalize the journal and guarantee its presence in international databases, which are traditionally respected and count in academic evaluations.

Each of these points and the verb to be conjugated are shorthand for superhuman effort by any editor. But this means responsibility and additional pressure for an editor in a developing (or underdeveloped?) country since, like any human construction, scientific diffusion is permeated by myths, by siren calls and by the same processes of domination (cultural, of the field, of geopolitical space, amongst others) of prejudices and disadvantages. One of the most common myths in this competitive market is the idea that periodicals published in English are superior per se, which leads contributors to prefer "foreign" periodicals. It is indeed true that English is the language of science and of the market, but this does not necessarily mean that it serves as a seal of quality. In fact the myth that what comes from abroad or what is published abroad is better makes it harder for a Brazilian periodical to become indexed in a widely recognized foreign database. For example, to be indexed in Medline it is not enough for a Brazilian journal to meet all the internationally established requirements which safeguard and universalize scientific communication. It will have to compete with the internal criteria of the American administrators (since this is an American database, created by and for the American scientific and medical community). The act of extending access to this database to health sciences journals worldwide is an important gesture, but it can be thought of as a strategic choice and the result of editorial policies formulated by administrators in that country (rightly so). Another example is the favoring of the Institute for Scientific Information (ISI) as a source of distinction and competitive classification of Brazilian periodicals and researchers. The ISI is a privately owned company which maintains a key scientific database, the one with the highest prestige in the world at the moment. However, its "impact" criteria are frequently questioned by editors and researchers in the area of scientometry and science and technology policy, due to the rigidity of its criteria and the vicious circle of its procedures. This is shown, for example, by Guimarães (2007) in a brilliant analytical article published in a modest publication about the popularization of science:

The continued use of the ISI as a source of quantitative analysis has provoked a double-edged problem. In first place, the merit and/or the relevance of the scientific and technological contributions is replaced by a diffuse category called "impact". In second place, this so-called "impact" is indicated by the number of times the article is cited by other people in periodicals which are indexed in the database which developed the category of "impact" (…) Much more than the imagination, the originality, the inventiveness, the breaking down of established concepts, "impact" as an indicator of merit or relevance of this research [GUIMARÃES is referring to Brazilian research considered to have higher impact by the ISI and which he questions on the grounds of merit] *comes from the way in which it is carried out.* (GUIMARÃES, 2007:19)

As HABERMAS (1982) shows in his work on the subject, all scientific knowledge fits into the sphere of interests. And since there is no such thing as disinterested communication, interests remain as the force controlling and orienting the field in which it manifests itself. In the case of *Ciência & Saúde Coletiva* the immediate motive that mobilizes authors is above all the need to accumulate points on their resumes or their postgraduate academic records and for the master's and doctorate programs they are part of. For this reason, all contributors directly or indirectly pressure the editors to constantly improve and extend the indexing bases of their publications. However, as HABERMAS points out, the actors need to find technical, communicative and emancipatory answers to their problems. And their interests can be emancipatory when they are sufficiently argumentative and justifying and reach the largest number possible of partners.

For other scholars of the sociology of science such as BOURDIEU (1983), KNORR-CETINA (1981), and LATOUR et al. (1997), science and technology also constitute a field of interests and power. And this power becomes stronger as society transforms science and technology into the agents of production in the post-industrial society (MINAYO, 2002). Science and technology is the "gold" of the 21st century. The players in this field therefore compete for recognition, prestige and funding. The forms of scientific diffusion and the geopolitics of the distribution of scientific power are also reflected in the status of academic journals, even when this process which seems to have been "naturalized" by culture is presented as simply a question of merit.

To summarize, *Ciência e Saúde Coletiva* positions itself within the debate, the search for improvement and the competition for funding, for national and international recognition and perfecting its quality. However at no point do we, its editors, cease from developing its social role of contributing to Science and Technology in Health for the Benefit of Brazilian Society.

Conclusions

I end this article, which only covers a small part of the problems of scientific communication, dissemination and diffusion, by drawing attention to a few points. Firstly, looking after a journal is a painstaking endeavor which is fascinating due to the challenges which it contains from any point of view. I call it painstaking because a scientific periodical requires daily dedication to tasks which range from improving the procedures to developing strategies to avoid "infant mortality" and guarantee a place amongst the best. Secondly, this internal work is not enough. Entrepreneurialism in this field means going beyond the editorial office and winning over the political fora of science and technology.

The scientific editor must simultaneously be engaged in the pursuit of national recognition and the process of internationalizing his or her journal: at home, because science has to provide answers for national problems, and abroad, because, to paraphrase Marx, science, like capital, does not have a fatherland. Its universal language and its universally standardized and regulated procedures unite the four corners of the world. Our journals are there to strengthen this union. However, finally, we should not delude ourselves. Science is also a field of interests, even though the world of science and technology has the mission to give technical, communicative and emancipatory responses to humanity (HABERMAS, 1982). But its role can only be emancipatory when it is sufficiently argumentative, justificatory and brings together with precision the largest possible number of interests in its praxis. For this reason, scientific diffusion is not free even when we are increasingly creating a territory characterized by universal access.

The path worn by editors to manage to guarantee a place in the sun for their scientific periodicals is long and steep. The obstacles include dismantling deeply rooted myths which have led many scientific opinion leaders to disparage national periodicals of great merit, giving them low scores and pushing our best researchers away from them. Part of a scientific policy dedicated to the greatest number of interests is to value serious and reliable databases such as Scielo, taking the necessary steps so that the science constructed in the country is concurrently disseminated, presented and reviewed, and can therefore advance for the benefit of Brazilian society.

Notes

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