Scientometrics and Evaluation of Humanities and Social Sciences

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Abstract: - The more intense and stricter demands of scientific policy is that scientific production in the Humanities and Social Sciences be evaluated with bibliometrics methods and indicators (by impact factor, publishing in most cited journals, citations and visibility in „prestigious“ data bases, etc.). Theoreticians and advocates of bibliometrics and scientometrics methods are very skeptical regarding the application of these indicators in Humanities and Social Sciences. Social sciences and humanities do not have only scientific function. Papers are published on national languages and are not primarily intended for scientific communication but for much larger audience. That means that papers, essays and books in Humanities and Social Sciences have also cultural, educational, social and political purposes.

In spite of actual philosophy of globalization and theory that science is (or must be) international - it is a fact that Humanities and Social Sciences are primarily oriented to the research and promotion of cultural and national identity. Their subjects bind them to the national domain, although this does not exclude a multinational research, international comparisons and exchange of experiences.

Our stand is that papers in Humanities and Social Sciences cannot be measured by strict standards of scientific communication taken from the natural, medical and engineering sciences (in terms of communication forms). Because the data do suggest that this approach eliminates as non-scientific work 2/3 of production of workers in the Humanities and Social Sciences. It is obvious that cultural, educational, political and pedagogical functions are an integral part of the social and scientific responsibility of the author in the Humanities and Social Sciences. Therefore, their activity can be measured rather by influence factor and not by impact factor on which literal application of scientometric’s methods insists.

Key-Words: - Evaluation, Scientific policy, Scientometrics, Bibliometrics, Humanities, Social Sciences

1 Introduction
The more intense and stricter demands of scientific policy is that scientific production in the Humanities and Social Sciences be evaluated with bibliometrics methods and indicators (by impact factor, publishing in most cited journals, citations and visibility in „prestigious“ data bases, etc.).

New book of regulations for evaluation of scientific work which the Croatian government established for the Social Sciences prescribe categories (A1 and A2) and the amount of scientific papers in each category as the minimum requirements for promotion in scientific title. According to these regulations, category A1 consists of papers published in journals indexed in the citation database Web of Knowledge. Besides the papers in category A1 it is necessary to publish a certain number of A2 papers in journals indexed in other prescribed international databases [12].

“Publishing in international journals has become a paramount criterion to evaluate academic research output in many countries as evidenced by Butler [2002] in the case of Australia, such policies tend to have a negative effect on the quality of publications and to contribute to publication inflation, which limits the promotion of high-quality science at national level.” [6].

Theoreticians and advocates of bibliometrics and scientometrics methods are very skeptical regarding the application of these indicators in Humanities and Social Sciences.

So we can rightfully raise the question why is one commercial database (WoS), taken as a criterion for the evaluation of national scientific production? and why this base is more important and more valued than others? How come that as a measure of productivity, as primary base, is not taken, for example, Scopus?
Namely, research of K. Pavlina [10] shows different visibility of Croatian scientists in information and communication sciences in different databases. The average number of papers for Croatian scientists, employed at universities, i.e., departments of information sciences, visible in the WoS database is only 0.5 papers per scientist, while in Scopus 3.8 papers per scientist are visible and 20 in Croatian Scientific Bibliography.

Inconsistency in the application of criteria for evaluation of scientific production also produces following paradoxes. Journal Synthesis Philosophica was established in 1984, and publishes papers in German, English and French. This is an established international publishing project, which has entered the scientific base Curent Content. However, the Regulations [12] as the criterion for the evaluation started using another database, and so the journal Synthesis Philosophica falls into the category of the journals in which it is not worth publishing, "since scientists who publish their papers in it will not get the number of points that they objectively deserve." Consequence is that researchers from other European countries take great care to publish in the journal while Croatian scientific policy does not recognize papers in this journal as A1 paper [14].

Publications in Humanities and Social Sciences do not have only scientific function. The intention of papers published in national languages is not exclusively for scientific communication but for much larger audience. That means that papers, essays and books in Humanities and Social Sciences have also cultural, educational, social and political purposes.

The problem of evaluation of natural and social sciences is as old as the sciences. Therefore it is necessary to understand the origin of these differences. We do not belong to those who think that the problem is in bibliometrics. The problem is in its inappropriate application, as each research topic requires adequate research method. Therefore, application of bibliometric and bibliometric’s indicators should follow from the understanding of the difference of the nature of Social Sciences and Humanities (SSH) and the Natural Science. This has been pointed out by many authors from C. Snow's [13] (talk about two cultures) onwards. Taking into account these differences, we should accept that among scientific disciplines the differences in communication forms exist, and that the same form of communication in natural and social sciences can have different functions. The problem with the application of bibliometrics methods is insufficient familiarity with the nature and functions of communication form and the nature of different scientific disciplines and fields.

2 Misconceptions of Bibliometrics Approach
The most recent study of humanities and social sciences in Croatia [7] starts from the premise and philosophy that dominates in the natural sciences: first, "the purpose is to continuously create new knowledge." From that follows that the task of bibliometrics is to measure productivity and competitiveness as the main criteria for the evaluation of scientific activity [7].

Bibliometrics has developed a system for the evaluation of productivity and competitiveness through a series of indicators (Impact Factor, "list of best journals" factor of citations of the journal and scientists). These indicators are calculated and measured on papers in journals as the dominant form of communication. The postulate that journals and papers are dominant form of communication is a direct consequence of the need to control scientific production in natural sciences, as a factor of the entire economic and technological development at the time of the occurrence of Information Sciences.

In order for recent research SSHS in Croatia [7] to adapt such popular opinion it had to take into account only the selected data. Different types of communication forms in SSHS in Croatia (which occurred in the period from 1990 to 2005) are reduced to scientific papers, respectively journals. And the thesis was that the paper is a basic form of communication. With this reduction 2/3 publications in SSHS were rejected on the grounds they are not scientific forms, or for science relevant knowledge. The publication of this study was accepted by the public media, to disqualify SSHS scientists in Croatia, and moreover the evaluation criteria were not given in the study itself.

Methodological, social, and ultimately a political problem arose from the (lack of) understanding of the rejection of 2/3 of registered publications of scientists at SSHS. The fact of not evaluated 2/3 of production, which is rejected in the quoted analysis, indicates the lack of understanding of the nature of SSHS, or in other words the lack of interest for the research of the nature of SSHS and justification of application of bibliometrics indicators for evaluation of SSHS science.

Different studies show that paper in the journal is not the main form of communication in SSHS, but are distinctively present also citations of books and citations of conference papers. In some scientific
disciplines the book is a basic form of communication, in others the proceedings, and in third is the journal paper. Which scientific field or discipline conforms to which communication form depends largely on the speed of publishing information to a wider audience. According to research by L. Butler [5] on the Australian scientific population, Natural Sciences published frequently in the journals, Engineering (including Computer Science), Applied Sciences, Earth and Agriculture published frequently in the proceedings, while the SSHS have a wide range of publications (books, journal papers, book chapters, creative works and others) and none is dominated by a large majority.

In research of doctoral dissertations [11] done in information and communication science most often cited type of publications are periodicals (49%), then monographs (34%), while standards, semi publications and other publications are cited only 16%. Most cited references in doctoral dissertations were written in English (55%) then in Croatian, (28%) while 17% of citations were written in other languages. That means that information and communication scientist follows the international scientific literature. Also, citation half-life in Information Sciences is 7.5 years (range from 0 to 508). So therefore, we can say that scientists of information sciences in Croatia follow the latest and national and international literature.

Most resent research of Lasić Lazić, J. [8] which examine 1418 papers used for election of 121 information scientists in Croatia in scientific title (table 1) shows that in the case of information science the most frequent form of publishing is scientific conference papers with international peer-review.

Table 1: distribution according to the publication type of 1418 papers used in election

<table>
<thead>
<tr>
<th>Type of publication</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Author's books</td>
<td>35</td>
<td>2.5</td>
</tr>
<tr>
<td>Book chapters</td>
<td>32</td>
<td>2.3</td>
</tr>
<tr>
<td>Journal papers and review papers in CC journals</td>
<td>22</td>
<td>1.6</td>
</tr>
<tr>
<td>Scientific conference papers with international peer-review</td>
<td>890</td>
<td>64.8</td>
</tr>
<tr>
<td>Scientific papers in other journals</td>
<td>274</td>
<td>19.9</td>
</tr>
<tr>
<td>Other papers in other journals</td>
<td>59</td>
<td>4.3</td>
</tr>
<tr>
<td>Other conference papers with peer-review</td>
<td>62</td>
<td>4.5</td>
</tr>
</tbody>
</table>

What can be concluded from the review of the distribution of information and communication science is that a form of communication conforms to scientific conference papers with international peer-review. The reason for this is on the one hand that the Information Sciences is half national and half international, and on the other hand research topics (e.g. digital libraries, e-learning, digital archives, natural language processing) include modern technology, which also shows that they are following current trends in science and technology.

3 Functions of Communication Forms

Different forms of communication are appropriate for different scientific disciplines: in natural science dominant are papers in journals, while in SSHS books are still more important and more influential then the papers. But also, the function of the same communication form is different in different disciplines: papers and books in SSHS do not primarily or exclusively have to be intended for scientific communication. They often, and even more, have an educational, pedagogical or cultural function.

The problem of bibliometrics evaluation of scientific production in SSHS is its starting from the assumption that the paper in the journal is the basic form of scientific communication, with the purpose of creating and sharing knowledge. In spite of scientific and reading practice, and numerous bibliometrics research and notices by scientists, the fact that this is not the primary form of communication in all scientific disciplines, and that it is not sufficient for the evaluation of scientific productivity and competitiveness is not accepted.

The topic of research in social sciences is society, and the very purpose of social science is not to be competitive but it also has other tasks: educational, pedagogical, cultural, political, historical, preservation and evaluation of heritage, etc. Therefore, the knowledge that can be reached in the social sciences is not intended only for scientists but it has a much wider audience. Scientific researches in the SSHS sciences have a goal to understand social and cultural events. The results of these studies cannot be directly applied, because the consequence of such use would be to legitimize violent change of society.

Since social sciences have a wider audience, and not only scientists, the role of papers from SSHS is not exclusively scientific. Therefore its communication form is neither primarily nor exclusively journal paper.

Diana Hicks [3] points to the fact that on methodological difficulties that SSHS faces by popular bibliometrics evaluations based on international journal literature indexed in the SSCI.
when today book publishing still predominates in the humanities. The same applies to Croatia, since in old Regulations the promotion to the title of assistant professor in Humanities required a published book (which did not have to be done in natural sciences). Further Hicks [3] explains four types of publications that social sciences and humanities publish: journal articles, books, national journals and non-scholarly press.

Here is a brief description of these four types of publications [3]:

**Journal articles** are internationally oriented, largely in English language and are peer reviewed. Glänzel [5] thinks that in social sciences a decade long citation window would be needed to capture the slow accumulation of citations. Other researches show that natural scientists publish papers mostly in journal or conference proceedings (85%) while social scientists and humanities publish 61% of their publications in conference proceedings or journals, other types of publications are „books, edited books, book chapters, monographs and reports, creative works and “other”“. „Thus, journal based bibliometrics indicators will be based on a smaller fraction of research output in the social sciences than in the natural sciences.“ [3].

In other researches, by examining the citations in social sciences it is found that citations are mostly transdisciplinary: „In all, 28% of the papers could be assigned to a social science field.“ [3]. These 70% of papers that cannot be identified as social sciences spoke about a wide range of topics covered by social sciences and their active participation in all areas and activities of the society.

Although books in social sciences have a small percentage of output, they receive a substantial proportion of citations. According to several researches, books are more cited in social sciences than journals (see [3]). For example, research done by Clements et al. [2] about citations in two American sociology journals found that books are more cited than journal articles by a ratio of 3:1. This fact makes books an important channel of communication in social science and it is even more important in humanities. So, all of these data show that books in social science should not be overlooked by creators of scientific policy and by bibliometrics.

**National journals** are important part of social science since society is what social science is concerned about. “Bibliometric evidence suggests that both producers and consumers of social science are nationally oriented. Research shows that compared to natural scientists, social scientists both write for and read fewer foreign languages or even foreign journals.” [3]. Researching reading habits by authors’ citation patterns Yitzhaki [16] found that: American and British authors cited 99% of English language publications; German and French authors cited 60% of publications in their own languages.

**Non-scholarly press** contains non-specialist journal such as for a school teachers, to make long story short, the general public. “Burnhill and Tubby-Hille found that in the UK “projects in education [were] reaching practitioners through such periodicals as the Times Education Supplement, with researchers in sociology, social administration and socio-legal studies publishing in such periodicals as New Society and Nursing Times.” (Burnhill and Tubby-Hille, 1994, p. 142) Where national literatures develop knowledge in the context of application, publishing in non-scholarly journals moves knowledge into application. The literature therefore performs a function similar to patenting for scientists. But patent systems are indexed, can contain citation structures amenable to bibliometrics analysis and have gained respect as a valued output worthy of evaluation (Narin, 1994). In contrast, non-scholarly literature, being also national literature, is less well indexed, does not earn citations and has not yet earned respect as a valued output of scholarly work interacting with application.” [3].

Differences in the prevalence of certain types of publications in the SSHS come with different usage of these communication patterns e.g.: art history monographs of Pablo Picasso or Ivan Meštrović etc. are not primarily written for other art historians but for a wider audience. Croatian-Croatian dictionary is not written only for the scientific community but also for all users of Croatian language.

In the research of Turkish co-authorship networks in social sciences Gossart and Özman [6] found that two groups of scientists, ones that publish in national journals and ones that publish in international journals, make two separate groups of scientists and there are few linkages among this two groups. Also they conclude that topics published in “international publications and national publications refer to different scientific contexts in general. While international research is oriented more towards basic research, national research agenda is rather concerned with the domestic issues. One of our main arguments in this paper is that these two agendas should be seen as complementary.”

From all of that we can conclude that social science has four types of publications and each of them are serves specific ends and contains different kinds of researches.
4 Bibliometrics and Scientific Policy

With the creation of citation databases (SCI, CC, etc.) instruments for more precise and systematic management of scientific policy are being developed. With all the good sides of these processes, uncritical use of bibliometrics’ methods and indicators has its negative side.

A common mistake, especially in the countries in transition, is that the citations are used as a key criterion for the evaluation of the overall scientific production and scientific promotions.

Misunderstanding of the nature of different communication forms and the nature of knowledge has resulted in the promotion of titles and the evaluation of scientific production by the usage of WoS (or other databases), and in giving priority to journals indexed in international databases. An indirect consequence of this approach is the degradation and colonization of SSHS in countries that do not communicate with the "world" languages.

Another consequence is quantitative and not qualitative evaluation of publications in SSHS. With this the spirituality and culture as key determinants of SSHS were eliminated.

Quantitative evaluation rather than qualitative evaluation of scientific papers is insisted upon. This creates an artificial, fictitious division of papers. The divisions that have only administrative and bureaucratic functions: A1 papers become those cited in one particular "international" database; A2 papers are those which have been cited in other listed databases [12]. Following this kind of logic, other papers are not relevant for scientific promotion and to the scientific community.

Problems of development and impact of ideas and papers in SSHS are far more complex.

Long ago, C. Snow [13] pointed out that the original idea does not spread very rapidly. For an idea to spread, there must occur social and cultural changes that will lead to the implementation of the forgotten idea.

Similar opinion, also, have Molinié and Bodenhausen [9] who think that bibliometrics evaluation of scientific journals and scientists themselves actually lead to a state in which new ideas are being developed in journals which bibliometrics evaluation places on the periphery of scientific excellence, precisely in highly specialized journals, while leading journals develop popular solutions and deal with popular subjects.

In support of this kind of reasoning goes phenomenon known in bibliometrics as "Sleeping Beauty" (also known as "Mendel syndrome"). This group includes papers that receive a large number of citations after many years, and until then they are not cited or receive a small amount of citations. The famous case is "Gregor Mendel (1865) whose discoveries in plant genetics were so unprecedented that it took thirty-four years for the scientific community to catch up to it." [15].

In other words, with bibliometrics indicators we can measure the impact factor, but not the influence factor, which is far more important in SSHS.

It is also the paradox of the scientific policies that insist on open access and availability of science and at the same time use commercial databases for evaluation of national scientific production.

SSHS participation in international scientific communication can be monitored by the number of cited "foreign" literature (research shows that the citation of foreign literature in SSHS ranges from 40-60% of the total number of references). The thesis that of the greatest value are primarily ("international") papers which are published in English language, and which are cited in databases such as WoS – is a product of modern political ideology and not the logic of the original scientific value.

5 Conclusion

The contrast between natural and social (humanities) sciences arises from the nature of their object of study, but also from the sense of their use. The subject of SSHS IS determined by the social and cultural context. Their purpose is to understand the culture and society, but also to serve as a public good. They generally have no direct commercial potential and serve no profit. Research and exploitation of nature and technology, because of its commercial potential, is subject to evaluation under the criteria of productivity and competitiveness.

The application of new ICT in the monitoring and evaluation of scientific production and uncritical use of bibliometrics methods have as its consequence the imposition of evaluation system of natural science as the universal criterion. The ultimate consequence of this kind of science policy and the use of bibliometrics for that purpose would be the colonization of SSHS and their subordination to the values of globalization and profit.

Therefore it is necessary to point out again to the old settings and advocate new solutions for contemporary circumstances:

- Sciences use different communication forms because they have different uses and users. Bibliometrics methods do not evaluate
educational, pedagogical, cultural, etc. functions of communication forms

- The purpose of SSHS is to serve as a public good. That is why the papers in SSHS are not intended only for scientists, but also for the general public.
- SSHS cannot be evaluated without assessing their influence on society and culture they investigate and to which they belong.
- SSHS should be open to international scientific community.
- However, the need for international scientific communication should not be subjugated to imperial logic, either to technology or "global" language.
- We should search for such solutions which will make scientific production in "small" national languages available to the international public by using new technologies. Science policies could promote and finance:
  1. open source philosophy and finance of full text journal, that would be available on-line;
  2. in the case of Croatia, the Ministry of Science could fund the development of software for automatic translation from Croatian into world languages (so that editors can offer automatic translation of published texts in the world languages);
  3. development of National Centers for tracking citation of scientific production - so that the citation of all forms of communication (monographs, proceedings, etc.) and their impact on all categories of users, not just scientists, can be evaluated.

References:
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