

**CROATIAN SCIENTIFIC BIBLIOGRAPHY (CROSBI)**  
**- FOUR YEARS EXPERIENCE**  
<http://bib.irb.hr>

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**ABSTRACT:** The differences between traditional vs. electronic bibliography are described. There are four elements in the Croatian Scientific Bibliography (CROSBI) creation process: the bibliography itself; the Croatian Ministry of Science and Technology (MST), scientists and their institutional libraries. The main features of the web interface and functions are presented. Advantages and disadvantages of such a specific approach are discussed. Some results of four years experience, as a distribution of the bibliographic records according to document type, institution and scientific project, are presented.

“What the bibliographer is concerned with is pieces of paper or parchment with certain written or printed signs. With these signs he [she] is concerned merely as arbitrary marks; their meaning is no business of his [/hers].”

*Sir Walter Wilson Greg (1911)*

## **BACKGROUND**

Although Croatia is a very young country (since 1991) the first Croatian bibliography is very old and comprehensive: *Bibliographia Croatica (cro. Bibliografija hrvatska)* published 1860 and 1863 (all publications from 15th century to 1863), the situation in the early nineties was not promising. As in many countries also in Croatia National and University Library is being publishing the Croatian National Bibliography in traditional paper format, but this bibliography is covering only the papers published in Croatia. Scientific communication is not limited inside country borders and Croatian scientists are publishing a lot in international journals, especially in the field of sciences and biomedicine. Paper-based bibliography covering only a small percentage of scientific publications is not a reliable and accessible source of information. For that reason many academic and research institutions started to build their local or thematic bibliographies. Data about Croatian research papers has been scattered across different commercial databases also.

A comprehensive, current, accurate and accessible bibliography is even more important in small countries like Croatia, with only eight thousand scientists. Scientific research in Croatia is financed by the Ministry of Science and Technology (MST) through research projects. The most important criteria for project evaluation and subsequent funding is the

number of papers published by researchers working on various projects. That was the main reason for the Ministry of Science and Technology to initiate a concept of electronic bibliography in the network environment. The first few more or less successful initiatives were the good test bed for the CROSBİ (Croatian Scientific Bibliography) project, which started in the early 1997, and is created and maintained in the Ruđer Bošković Institute Library. Being designed to hold information about projects, researchers and bibliographic references, this electronic bibliography is expected to improve scientific communication and enable research projects to be acknowledged and properly evaluated. In addition to helping both MST and researchers, CROSBİ is a potential source of numerous scientometric analyses.

## **ELEMENTS OF THE CONCEPT**

There are four main elements in the concept of the CROSBİ electronic bibliography:

### **1. Bibliography**

From the very beginning CROSBİ was intended to solve some of the major problems and limitations of the existing traditional bibliographies:

- a) delay – the bibliographic data are entered into the CROSBİ database soon after publishing, or even immediately after being accepted for publishing;
- b) low flexibility – all types of publication can be present in the CROSBİ database, not only journal papers or books;
- c) coverage – CROSBİ bibliography is covering all publications if one of the authors is Croatian, and all publications published in Croatia;
- d) access – the database can be accessed 24 hours 7 days a week
- e) low usability – built by scientists themselves, CROSBİ database usage inside the scientific community is very high.

### **2. Librarians**

In the CROSBİ concept librarians are not creators of the database, namely professionals responsible for the input. The librarians expertise is built into the web interface, database maintenance, and statistical and scientometric analysis.

### **3. Scholars**

Having in mind motivating reasons for academics to publish, as peer recognition, leading to promotion, tenure and increase in salaries, the wish to add to the sum of human knowledge in their own academic disciplines and communication with their colleagues,

scholars in the CROSBI concept are information providers. The scientific community also has also strong demands for data about current research.

#### **4. Ministry of Science and Technology**

Scientific research in Croatia has been financed through Ministry of Science and Technology by direct financing of agreed programs implemented by public institutes and projects performed by faculties and other legal entities with a mechanism of annual monitoring of results. The most important criteria for the project evaluation and subsequent funding are the number and quality of papers published by a scientist engaged in different projects. A complete, accurate, and reliable bibliography of scientific papers is crucial for this purpose.

#### **FUNCTIONS**

What are “pieces of parchment” in a current research information system like CROSBI? CROSBI is collecting data about published and unpublished papers on all media, current projects, research fields, institution and scientist. Essential functions of the CROSBI e-bibliography are:

- Continuous creation of the knowledge base;
- Significant improvement of scientific communication and proper acknowledgment and evaluation of research;
- source for the numerous scientometric analyses of interest to the scientific community.
- CROSBI is designed to provide:
- accurate and current information about research papers (published, accepted for publishing, unpublished);
- information about current research project papers (to be browsed and retrieved by project name, institution or subject field);
- provision of a full-text document retrieval from the bibliography archive (respecting copyright agreement);
- service, which is easy to use and available 7 days a week as a source of reference;
- source of reference for different research and academic institution to ease the maintenance of their personal or local databases;
- facility to merge all existing digital records in the archive of the MST bibliographic records into one unified database at some point in future;
- an exchange of information on the international level.

#### **WEB INTERFACE**

There are several modules on the CROSBI main page providing data input and data retrieval.

*FAQ* offers answers on frequently asked questions, which are mostly connected to the additional categorisation of publications, network problems and Croatian fonts. The difference between types of publications is explained by the meaning of a particular bibliographic field.

*Browsing* module includes browsing by programs, projects, subject field and scientific institution. MST provides all of the authority files used. Limits to a publication type or time period are provided.

*Simple Search* offers a search by Author, Title or Key-word fields, which can be limited to one type of publication. *Advanced Search* is not really advanced, but includes the possibility to search by several fields at the same time (Figure1).

*Data Input* and *Data Correction* modules include complex web forms for different types of publications. One paper has to be entered into the database once and could be associated to several programs/projects at the same time. The data about different publication types have been collected (Figure 1):

1. Journal paper (journal article, review article, conference proceedings paper, letter, bibliography, news, editorial, comment, note, discussion, survey, etc.)
2. Journal paper in press
3. Book
4. Book chapter
5. Textbook
6. Doctoral thesis, master's thesis, graduate thesis
7. Conference proceedings paper
8. Patent
9. Other.

After the paper has been accepted or just prepared for publishing, the scientist has to fill in the bibliographic data into the CROSBİ database by using a user-friendly web interface, and the full-text document can be uploaded easily into the CROSBİ electronic archive.

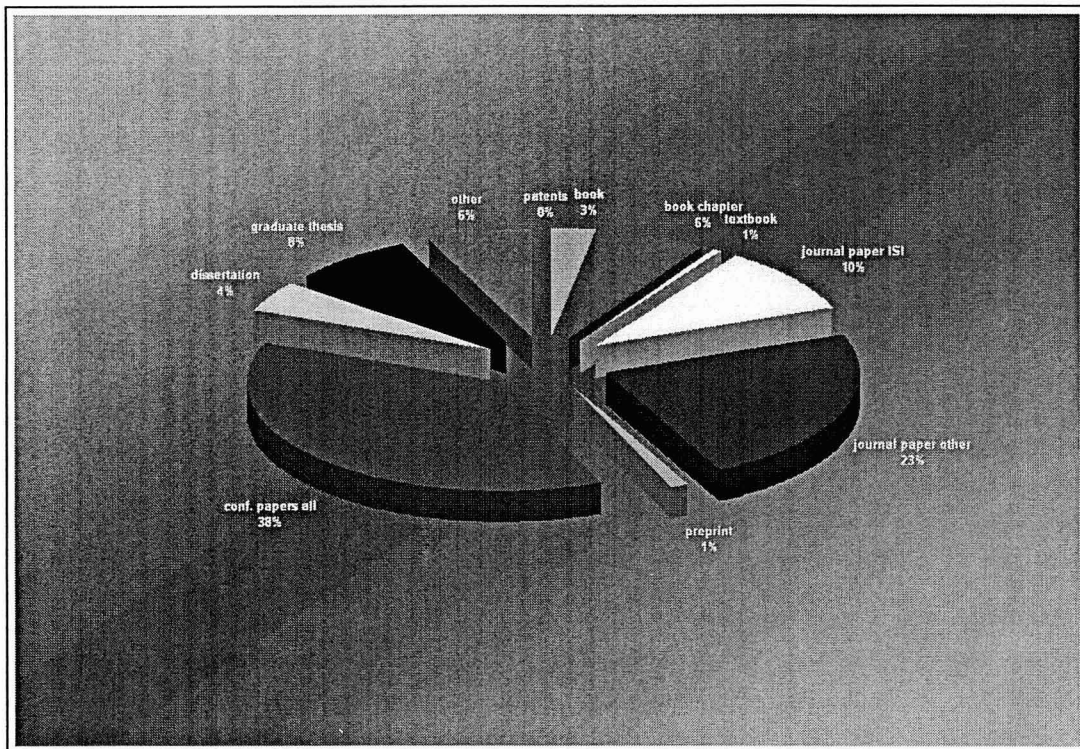


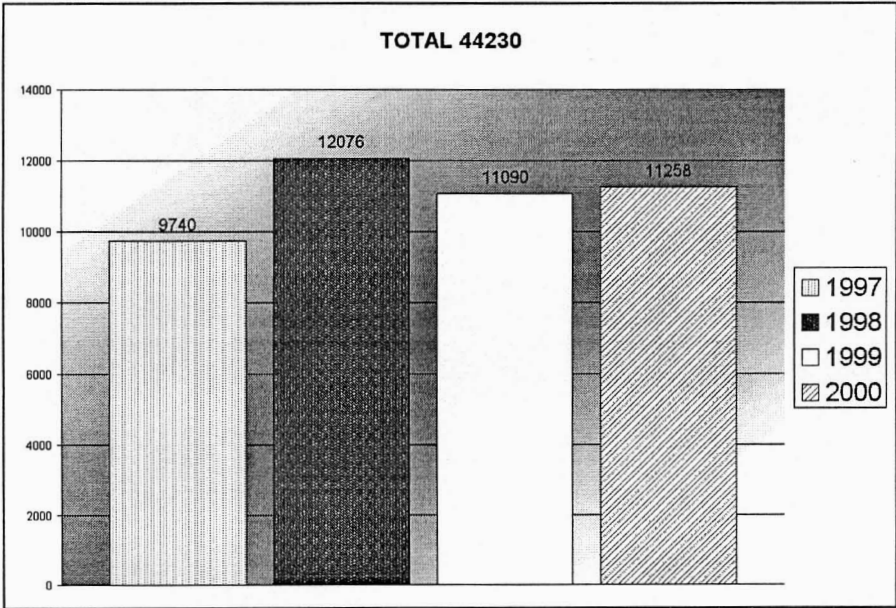
Figure 1. Different type of documents and their presence in the database

Some crucial bibliographic data are collected in English language as well (title, key words, abstract). Now, we are in the process of completing the English version interface. For each publication type, an additional categorisation is provided, e.g. a journal paper has different categories such as scientific, professional and other. The data containing information whether a journal is indexed in the *Current Contents* or other *Institute for Scientific Information* (ISI) secondary publications is included in the bibliographic description. The data about other international secondary publications is included also. For MST as a financing body, it is very important that Croatian scientists publish their papers in international journals with high impact in the scientific community.

**RESULTS, STATISTICS**

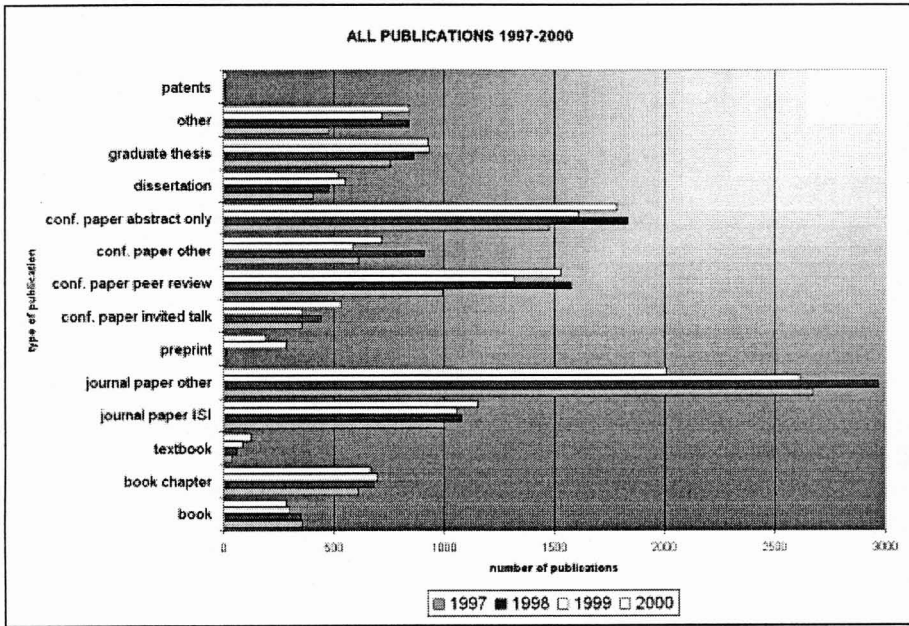
There are approx. 1,200 outgoing scientific programs and projects financed by the Ministry of Science and Technology. Figure 2 presents the scientific output from all programs and projects in the period 1997-2001.

Figure 2. Number of bibliographic records (1997-2000)



If we look at the total four-year scientific production by different type of the document, it is obvious that scientists mostly publish in journals (Figure 3). A review of journal papers has shown that 6,016 papers were published in journals indexed in ISI databases (*Current Contents*, *Science Citation Index*, *Social Science Citation Index*, *Arts and Humanities Citation Index*), 6,526 papers were published in other journals (domestic and

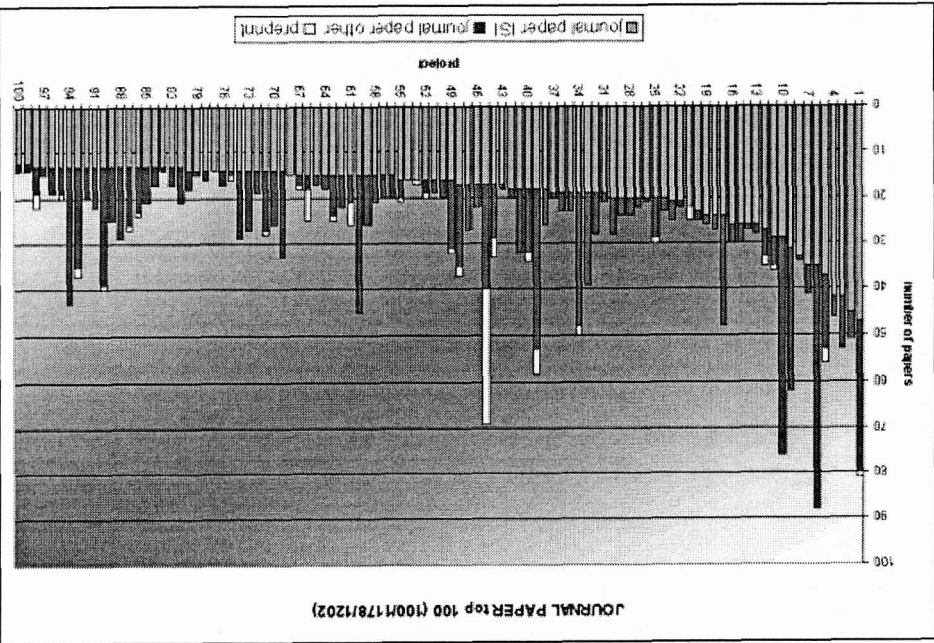
international, not indexed in the ISI publications) and 1,514 papers were accepted for publishing but have not been published yet. A significant part of journal papers (almost half) were published in the internationally recognizable journals covered by secondary publications of the Institute for Scientific Information. Their selection process, although not perfect, includes all journals with high impact in the scientific community (Garfield, 1979). The fundamental issue for scientists in small countries such as Croatia is to publish their best-quality papers in the best international journals (Figure 4).



The top 100 projects with the biggest number of conference papers are presented in Figure 5. Information about presentation tools is also collected in the database, and it is indicated which kind of presentation is behind any published paper: lecture, invited, lecture, poster, demonstration or some other.

1. Invited talks – plenary sessions, assuming the most prestigious kind of conference participation;
2. Conference proceedings papers with peer review;
3. Conference proceedings papers without peer review;
4. Conference papers published only in the book of abstracts (posters usually).

Traditional conferences are another well-established way of disseminating information, and therefore papers in conference proceedings are so high in number. Although development of Internet improved the information flow significantly and established communication channels that did not exist before, participating in traditional conferences is still very popular. Thankfully, technology has still some way to go, before it can seriously compete with the advantages of physically attending a real conference and meeting real people. We have divided conference proceedings papers into four main categories:





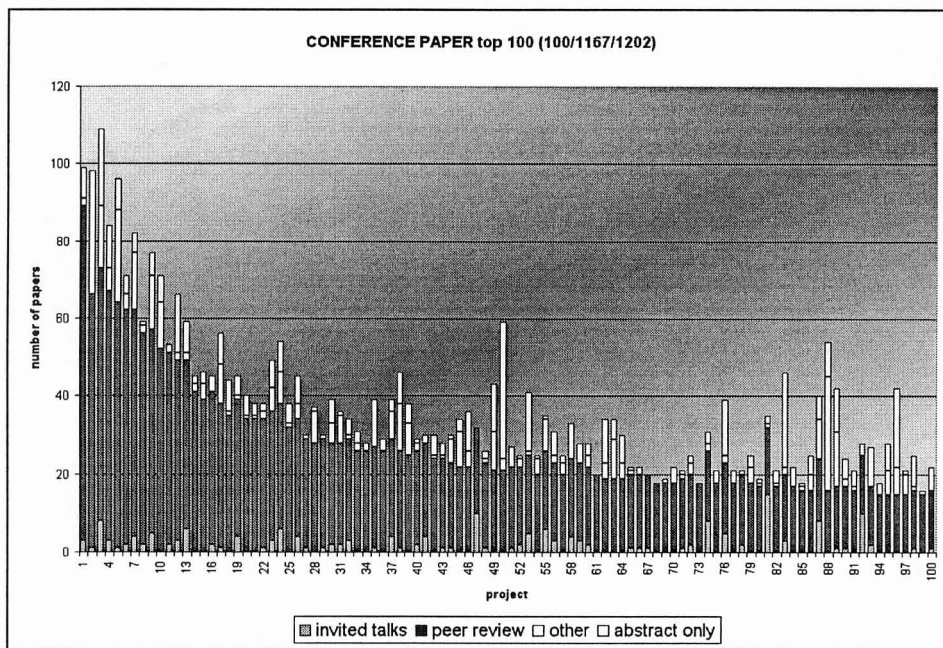


Figure 5. Top 100 projects according to conference papers

## FUTURE

There are still a lot of problems connected with the CROSBI database. We are facing human errors, duplicate entries, incomplete records, paper categorization failure, typing mistakes, lack of authority control and lack of proper indexing. The present hardware and software platform doesn't allow the appropriate level of authority control, and could be changed only with the bigger investment in the project (the CROSBI project is financed by \$10,000.00 per year).

For the future development we are planning to improve:

- retrieval facilities with sorting, printing and saving functions,
- field control (to avoid common mistakes) and authority control (authors, project names and numbers, institutions, journal titles, etc.),
- electronic full text archive with standard network formats and open public access (copyright issues),
- document exchange and network retrieval standards implementation,
- database maintenance by library professionals
- hypertext possibilities

## CONCLUSION

The electronic bibliography as described here, has not much in common with traditional bibliographic tools. Its priorities are currency, accuracy, coverage and access. Being a rapidly changing structure, it tries to implement all requests coming either from users or librarians. Bearing in mind all imperfections of the system, we find our continuous contact with scientists motivating and progressive. After all, one of the CROSBİ premises is that all works published by Croatian authors are of the greatest importance, regardless in which country they are published, in which publication or media.

The greatest importance of the whole system is not in the system itself, but in its content. Scientific output as a result of research performed on 1,200 scientific programs and projects in a four years period is certainly impressive. All scientometric studies and papers take into account just the most significant part of Croatian scientific output - journal articles from the journals indexed by the Institute for Scientific Information secondary publications. In this sense the four years of scientific output is unique and valuable. The insight into publications, their types and number shows publishing habits of Croatian scientists. A more detailed analysis could provide information on differences between scientists from different subject fields and much more.

A lot of questions are still open and it is difficult to predict how the world of scholarly publishing will change, what kind of publishing pattern scholarly authors will have in the future, and how this will be reflected in bibliography development.

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