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Proposal for a new methodological approach to the study of 20th century Bibliography¹

Introduction

The constant technological revolution that we have been witnessing for decades has affected all forms of communication and, consequently, has also involved the ‘recorded communication’ that pertains to bibliographic thought and action. Since the end of the nineteenth century and especially since the first decades of the twentieth century, this process led to a change in the structure of all scientific disciplines, including Bibliography.

This process has had two fundamental consequences for Bibliography: on the one hand, it has meant that bibliography as a meta-discipline is endowed with new instruments of investigation; on the other,

¹ All the authors have cooperated in the redaction and revision of the article. Nevertheless, each author has mainly authored specific sections and subsections of the article: Carlo Bianchini: *A double research approach: qualitative and quantitative and Conclusions*, Fiammetta Sabba: *Introduction and A disciplinary metamorphosis for Bibliography*; Lucia Sardo: *Methods and materials and Needs for investigation on the current conceptual and terminological domain of Bibliography in Italy*.

it changed the disciplinary scope of Bibliography itself, where it has found itself specialised in a number of other derived disciplines.

The need to clarify what happened is particularly felt in Italy, where even in the last century the documentary and bibliographical disciplines had an important development and debate, but it is also widely felt in the rest of the European context and beyond, as demonstrated by recent occasions of international scientific and conference comparison and as highlighted by some of the recent Italian studies of Bibliography and Information Sciences.

A disciplinary metamorphosis for Bibliography

In the Latin phrase “Bibliographia subiectat scientiam”, the verb “subiectat” (“subjects”) referred to Bibliography has the double meaning – on the one hand – of assigning cultural and semantic value to a document (through a description, a keyword, a classification, etc.) in order to make available the knowledge it contains and – on the other hand, by doing so for all the documents of a disciplinary field – also of submitting, subjecting an entire discipline to its analysis and interpretation for the use of readers and scholars. For this reason, Bibliography is both a discipline, with its objects, instruments and methods of study, and a ‘meta-discipline’ that investigates the development of any other discipline. Indeed, since aims and methods of Bibliography apply to any scientific field and any other science, it ensures the permanence, accessibility, dissemination, and use of all sciences in the scientific community and in the society as a whole.

However, in the last 150 years, the disciplinary boundaries and identity of Bibliography shifted due to changing perspectives related to culture, the way society communicates and learns, and technological evolution. All these factors led it to become – perhaps only apparently – a new discipline.

Thus, the original practices of Bibliography diversified, giving rise

to a variety of disciplinary sub-areas that developed specific methods and principles and strengthened over time, claiming their own disciplinary independence.

This ‘disciplinary metamorphosis’ was already identified by the Italian scholarly community between the end of the 19th century and the early years of the 21st century and, in the last decade, has been increasingly recognised, both by specific contributions and by an international dialogue.

Bibliography works as a natural mirror – diachronic and synchronic – of the whole of the cultures of a society, and, therefore, it is a complex tool. In fact, the bibliographical mirror makes it possible to interpret those cultures in the present and to mediate them for lasting transmission. Moreover, flexibility and complexity are the theoretical and methodological characteristics that today allow Bibliography to be open to the new themes and problems of scholarly communication and justify its contribution to the debate and reflections on personal, institutional, and collective memories.

From the organisation of print production in the 16th century to the understanding of the interweaving of textual typologies on the Web, Bibliography has always pursued its fundamental objectives while facing and overcoming numerous difficulties. Throughout its history, it has developed new heuristic interpretations, influenced and conditioned by different historical, geographical, cultural, social, and professional contexts and by the changing systems of organisation and dissemination of knowledge and their technical requirements (related to traditional and new media).

It was rightly noted that in the last decades of the twentieth century, a great divide was introduced in the field of study of Bibliography “between the disciplinary practices developed for the book in its traditional Gutenbergian configuration and those whose object of study is mobile, liquid, ubiquitous digital information” (Vivarelli 2013, p. 11).

The digital environment transformed recorded communication

both qualitatively and quantitatively, but often in academic analyses one or the other aspect prevailed.

It is therefore clear how the introduction of digital technologies in recent decades profoundly influenced the whole scenario of knowledge communication in which Bibliography pursues its goals (changing contents, methods, tools, and objects). Digital media opened a seemingly unbridgeable gap between the traditional disciplinary fields of study – centred on the Gutenbergian book tradition – and the new ones – centred on the investigation of digital documents and networked knowledge dissemination. The gap is supported by the different objects of study but also by new research methods and tools.

For instance, the appearance of digital documents invested and transformed scholarly communication, through the introduction of a new model of communication, some of which became more free, dis-intermediated, rapid, and open. It has also profoundly altered models of editorial production and distribution, highlighting the importance of editorial metadata as an integral, qualified and key part of documents. Moreover, the Open Access movement is taking a new form: open data. Here, openness concerns not only access to research results (such as papers, reports, books, etc.) but also the availability of research data on the semantic web in a totally new and fruitful way (Linked Open Data).

Methods and materials

Bibliography is involved twice: as a discipline, for the dissemination of open access bibliographic journals, and as a metadiscipline, for the need of new research methods and tools.

Luciano Floridi noted that we are experiencing a revolution in the way we understand our world and ourselves: “ICTs have made the creation, management, and utilization of information, communication, and computational resources vital issues, not only in our under-

standing of the world and of our interactions with it, but also in our self-assessment and identity” (Floridi 2010, p. 8). Indeed, the availability of ICT and web facilities has introduced new modes of academic communication: since the end of the last century, open access has developed as a broad international movement seeking to ensure free and open online access to academic information, both as publications and data (Suber 2004).

Consequently, new bibliographic tools have been developed to subject and index these new forms of knowledge dissemination, such as the Directory of Open Access Repositories (OpenDOAR)² and the Directory of Open Access Journals (DOAJ)³.

The dematerialisation of bibliographic objects implies deep changes not only in the essence of the digital document but also modifies the very condition of Bibliography, which ontologically is increasingly presented in the form of metadata. Indeed, in the web environment, a document only exists if it has its own metadata, without which it cannot even be indexed, i.e. retrievable and accessible. For this reason, an enhanced idea of document is developing that requires the publication of data and metadata, where metadata is to be understood as the ‘new material form’ of the digital document. This phenomenon opens up a wide-ranging disciplinary problem with regard to the issue of how to describe documents bibliographically, in which iconic, linguistic, and informational descriptions tend to converge and merge (Serrai 1994, pp. 173–176). Furthermore, Bibliography must clearly change its methods and adopt technological tools more suited to the changes taking place in the essence of the document and in the forms of its circulation, availability and accessibility if it is to truly guarantee the possibility of its traditional functions: to locate, identify, and census ancient and new documentary forms.

² <https://v2.sherpa.ac.uk/opensoar/>

³ <https://doaj.org/>

Needs of investigation on the current conceptual and terminological domain of Bibliography in Italy

Since the history of Bibliography shows that changes in the media, content, and means of recording, organising, and transmitting knowledge, as well as in cultural and social contexts, always led to profound disciplinary evolutions and innovations, recent phenomena also call for investigations to analyse and understand which transformations are taking place in the disciplinary field of Bibliography to investigate and to investigate their theoretical and methodological implications within and outside of Bibliography.

From the methodological point of view, an investigation on the current conceptual and terminological domain of Bibliography in Italy in order to assess how (and if) it has changed under the effects of the constant technological evolution of the media – especially the ‘recorded’ ones – should be undertaken.

Today, Bibliography has many problems to face. Firstly, to recognise the ongoing evolution in the manifold system of academic communication; secondly, to develop new methods of investigation based on tradition (such as qualitative analysis of reference authors) and on innovative tools (such as quantitative analysis of large amounts of data); finally, to reconsider and expand its disciplinary area, identifying possible new disciplinary sub-areas and relating them to traditional ones. In summary, by studying its most recent history and discovering its past fundamental crossroads and analysing their reasons, Bibliography needs to identify and understand emerging trends and provide innovative approaches and solutions to its central long-term goal: identifying, subjecting and indexing recorded knowledge.

It would therefore be appropriate to investigate whether the current disciplinary organisation of Bibliography as a science is suitable and satisfactory to address the emerging issues in the new scenario of knowledge communication.

To do so, five converging study paths should be implemented:

1. to outline the main lines of development of bibliographic studies since the beginning of the 20th century;
2. to investigate which changes are taking place in Bibliography due to the current phenomena of scientific communication;
3. to ascertain whether, as is typical for Bibliography, it is evolving along past lines and patterns;
4. to identify and define what are the current branches of Bibliography with reference to their specific object of study, disciplinary content, and methods;
5. to identify, develop and test more advanced tools of bibliographical investigation for the study of the development of a discipline to be applied to areas of humanistic and social studies other than Bibliography.

A double research approach: qualitative and quantitative

In order to carry out these study activities, from a methodological point of view it is necessary to provide for the coexistence, comparison and synthesis of the results of two different research methodologies, which have a long tradition and have always been inherent to Bibliography as a science. The first is a qualitative approach, based on the study of available sources, in which Bibliography is understood as the History of Bibliography, as *historia literaria*; the second is a quantitative approach, based on the analysis, description, and representation of the entire cultural production of a discipline, in which Bibliography is understood as an enumerative Bibliography.

As far as the qualitative approach is concerned, it would be essential to analyse the most influential and convincing Italian authors of the 20th century and of the first part of the 21st century in order to identify the people, concepts, terminology, and disciplinary sub-areas useful to outline the development trends of the Bibliography. In this way, Bibliography would be interpreted as a meta-discipline of itself,

through the comparative study of its history, contents, concepts, and terminology.

The results of the first approach should lead to the identification of bibliographical concepts and terms in order to create a critical glossary, useful on its own but also to be used as a tool for the second phase of the investigation.

The second approach, quantitative, would instead be based on a traditional bibliographical approach but realised with advanced technological tools: the representation of Bibliography as a discipline and of its different disciplinary sub-areas would take place through the investigation, description, organisation, and indexing of their cultural production, but by means of new technological tools capable of managing large amounts of data.

Ultimately, the quantitative approach could include the analysis of some major journals of bibliographic interest from the last century to the present day (journals being a more suitable bibliographic tool to capture the emerging nodes of a discipline). The conceptual organisation of the bibliographic data in this phase would make use of the results of the critical glossary developed in the first phase.

The investigation of the effectiveness of new quantitative bibliographic survey methods could also include text mining techniques applied to textual analysis and identification of key concepts: for this approach, which could lead to stimulating results, an experiment on a sample journal chosen among those that make their articles available in a suitable format (full text searchable) would be appropriate.

The concepts and keywords obtained from the glossary could be used, in addition to the original ones contained in the publications, for the classification of the articles and for the identification of disciplinary areas and sub-areas. Feedback from sample text mining could be used both for comparison with the results obtained and to improve consistency in the indexing of items.

After classification, the bibliographic data could be arranged in the three basic bibliographic orders (alphabetical, chronological, and sy-

stematic).

Finally, the classified data thus obtained could then be recorded and published in the form of Linked Open Data. The choice of this technology, among the many available, depends substantially not only on the promising potential offered by Linked Open Data, but also on the fact that the bibliographic metadata itself is, or can be found, published in this form. Metadata, in particular as LOD, are the basic material, the building blocks of Bibliography as a representational construct for the communication of a subject area.

Data could also be presented in other visualisation modes, to facilitate the understanding and analysis of large and complex bodies of information. For instance, quantitative data can be easily visualised by bar charts or bubble graphs. Moreover, chronological data can produce a picture of the timeline of the events involved, making overlaps and gaps visible. Furthermore, the cross-referencing of different data – for example, disciplinary classification, number of articles and dates – enables to produce graphs representing the historical and quantitative development of a specific disciplinary area (duration, start, development, current status, peak, etc.).

Conclusions

A first result in terms of new knowledge would be to gain a better understanding of Bibliography in all its areas, and especially in its more recent history. In fact, although some studies are available for the 20th century, none of them is thorough and complete, and none is available for the last 25 years, i.e., the most changing and challenging period of knowledge transmission.

Analysis of the status, achievements, main arguments and open questions of a discipline is traditionally possible when a discipline is mature and has a clear shape. However, today scientific disciplines evolve much more rapidly than in the past and bibliographic analysis

must therefore be developed more frequently, more rapidly and possibly with a new approach.

For these reasons, the testing of a new research method based on both a qualitative and quantitative approach would be particularly interesting for the study of Bibliography as a specific object of study and for the methodological development of Bibliography as a metadiscipline. Furthermore, a better understanding of Bibliography should lead to an improvement in the quality of studies and to a more coherent approach to the subject matter and transmission of knowledge.

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Abstract

The constant technological revolution that we have been witnessing for decades has affected all forms of communication and, consequently, has also involved the ‘recorded communication’ that pertains to bibliographic thought and action. Since the end of the nineteenth century and especially since the first decades of the twentieth century, this has led to a process of change in the structure of all scientific disciplines, including Bibliography. This process has had two fundamental consequences for bibliography: on the one hand, it has meant that bibliography as a meta-discipline is endowed with new instruments of investigation; on the other, it changed the disciplinary scope of bibliography itself, to the point where it has found itself specialised in a number of other derived disciplines.

The need to clarify what happened is particularly felt in Italy, where even in the last century the documentary and bibliographical disciplines had an important development and debate, but it is also widely felt in the rest of the European context and beyond, as demonstrated by recent occasions of international scientific and conference comparison and as highlighted by some of the recent Italian studies of Bibliography and Information Sciences. In this contribution we discuss a methodological hypothesis to investigate the problem. In particular, it is argued that the solution to the problem is to be searched in a new methodological approach that includes both a qualitative survey of the main sources of the discipline in the Italian context – i.e., the traditional survey method of Bibliography – and a quantitative investigation necessarily conducted with the decisive help of the application of Linked Data technology to the most recent production of the discipline. The twofold approach would allow to give a concrete start to this disciplinary arrangement, reconstructing the most recent process of metamorphosis, identifying the junctions and the forms (methodologies, tools, and objectives) both in diachronic and synchronic terms.

Bibliography; Library Science; Metadata; History of Bibliography

La costante rivoluzione tecnologica a cui stiamo assistendo da decenni ha interessato tutte le forme di comunicazione e, di conseguenza, ha coinvolto anche la “comunicazione registrata” che attiene al pensiero e all’azione bibliografica. A partire dalla fine dell’Ottocento e soprattutto dai primi decenni del Novecento, ciò ha determinato un processo di cambiamento nella struttura di tutte le discipline scientifiche, Bibliografia compresa. Questo processo ha avuto due conseguenze fondamentali per la Bibliografia: da un lato, ha fatto sì che la Bibliografia come meta-disciplina si dotasse di nuovi strumenti di indagine; dall’altro ha mutato l’ambito disciplinare della Bibliografia stessa, al punto da trovarsi specializzata in una serie di altre discipline derivate.

L’esigenza di fare chiarezza su quanto si è verificato è particolarmente sentita in Italia, dove anche nel secolo scorso le discipline documentarie e bibliografiche hanno avuto un importante sviluppo e dibattito, ma coinvolge molto anche il resto del contesto europeo e non solo, come dimostrato da recenti occasioni di confronto scientifico e congressuale internazionale e come evidenziato da alcuni dei recenti studi italiani di Bibliografia e Scienze dell’Informazione. In questo contributo discutiamo un’ipotesi metodologica per indagare il problema. In particolare, si sostiene che la soluzione del problema sia da ricercare in un nuovo approccio metodologico che comprenda sia un’indagine qualitativa delle principali fonti della disciplina nel contesto italiano – ovvero il metodo di indagine tradizionale della Bibliografia – sia un’analisi quantitativa condotta con il decisivo ausilio della tecnologia Linked Data applicata alla produzione più recente della disciplina. Il duplice approccio consentirebbe di dare un concreto avvio a questo riassetto disciplinare, ricostruendo il recente processo di metamorfosi, individuandone gli snodi e le forme (metodologie, strumenti e obiettivi) sia in termini diacronici che sincronici.

Bibliografia; Biblioteconomia; Metadati; Storia della Bibliografia