Evaluation of Digital Humanities: An Interdisciplinary Approach

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Abstract. This research, now in its first phase of development, focuses upon evaluation of Digital Humanities, here indicated as the disciplines, included within the Italian Disciplinary Areas 10 and 11, innovating their research outputs through the application of technological methods. These research outputs are relevant both quantitatively and qualitatively, but do not seem to be considered of value by the current procedures of quality evaluation. The research methodology is including a comparison of the evaluation policies and quality assurance procedures in Europe regarding the different typologies of digital publications. The final product will be a KOS (Knowledge Organization System) based on the Web standards, such as RDF and Linked Open data, to represent and organize the digital products and publications as well as the related agents (persons, institutions, etc.). The KOS will include the results derived by user studies including: 1) a toolkit that will provide rich and meaningful information about the research activity and publications in Digital Humanities. The toolkit will consist of decision tools, able to analyze the content of the proposed knowledge organization system; 2) a platform for the diffusion of Project results, including digital publications, OER for training and other communication tools.

Keywords: Digital Humanities, Bibliometrics, Peer review, Digital publishing.

1 Introduction

The definition of criteria which can identify the quality of scientific production is an issue of important national and international interest. Such evaluation is necessary both for ranking by quality the competitiveness of universities and of the nations, as well as - on the individual level - for the recruitment and tenure of a single scholar. In recent years the focus on research assessment has grown exponentially in Italy, as a proportion of resources devoted to research is now allocated on the basis of the results of the national research assessment exercises. In July 2009 the Ministry of Education and Research has for the first time allocated funds to the universities referring in part to the VTR (Triennial Evaluation of Research), the first national research assessment exercise which ended in 2007 (Baccini, 2010). Italy is currently carrying out its second national research assessment exercise, called VQR (Evaluation of the Quality of Research, 2004-2010).

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Traditionally the evaluation of scientific publications in the humanities disciplines is based upon "peer review". This is coherent with the prevalent definition of "scientific base" which, as was noted by the CUN (National Unversity Council 2010), essentially rests upon the affiliation and consensus of a particular scientific community. One problem in evaluation based upon peer review is that this can be based upon "subjective" judgments, not avoiding conservative and corporate trends. Peer review also hinges upon the publishing system of scientific publications, which is completely controlled by commercial publishers, who have assumed the role of guarantors for the quality of academic publications. The accreditation of quality is done by publishers through the publishing process: the commercial publishers have the monopoly of the peer review, also if the reviewers are scholars in public institutions. The current evaluation procedure established by ANVUR (National Agency Evaluation of the University Research), continues to base itself upon peer review (effected by Experts Group Evaluation - GEV) but, in order to limit the risks of quality evaluation based upon peer review, it has added bibliometric indicators, such as h-Index and Impact Factor, to have "objective" evaluation tools for publications produced in the humanities. The ANVUR procedure however continues to consider the publisher as the only referent for the quality of the editorial flow of the scientific publications. The peer review and the impact indicators are indeed not so different as many declare: both are based on the same closed scholarly community and continue to focus on traditional publications channels.

Scholarly communication is however using alternative publishing models using the Internet as main communication channel. These online publications include Open Access publications, blogs, wiki, RSS, Twitter and other online publications. The characteristic of these parallel publications models in the humanities is that they are marked, quickly updated, multimedia and hypertextual but they do not follow the traditional editorial flow (Fig. 1).

The CUN (National University Council, 2010) established that "sono ammessi i prodotti di ricerca non aventi natura di pubblicazioni purchè corredati da documentazione atta a consentire le valutazione" ["research works which do not have the same nature as printed publications are permitted provided that they are furnished

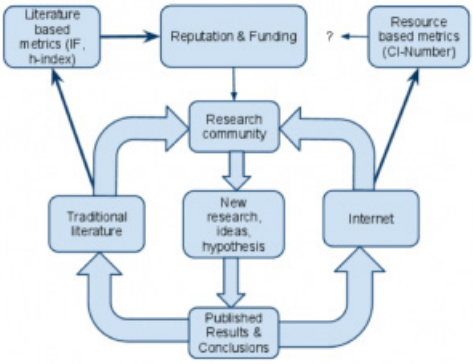

Fig. 1. Models of publication in the humanities

with documentation which permits their evaluation"]. Even the ANVUR procedures continue to ignore online publications. Regarding digital publications, ANVUR is considering only the version in PDF format of printed publications / hard copies.

Thus it would seem that the current evaluation process ignores Internet products and digital publications for evaluation both of institutions and individual. This fact can be interpreted as an overall judgment of publications without quality and thus not even worthy of being evaluated.

Digital Humanities, here indicated as the disciplines included within the Disciplinary Areas 10 and 11, are now innovating their research behaviour and outputs through the application of technological methods. The advent of digital technologies has produced a completely new scenario, starting from pioneers such as Antonio Zampolli and padre Busa, where the humanities should start to rethink one's own horizon of disciplinary products of research and the tools to use them.

Philosophers of communication and cognitive psychologists have been investigating for years now on the new semiotic system introduced by the emergence of the new digital publications (which are marked, multimedia, hypertextual), even the historians of contemporary literature and especially philologists have been called to the new challenges and to consider the fact that the digital revolution impacts on the critical analysis of texts. Digital philology, for example, gives the possibility to offer not only the text prepared by the philologist, but also variants rejected, together with the tools offered by the "computational philology" for studying the "corpora". The example shows that the research done by the Digital Humanities groups has an important characteristic: it is interdisciplinary. The interdisciplinarity however is an added particular obstacle for traditional evaluation in Italy, when it involves scholars from the humanistic Areas together with scholars from the Information Technology Area, with different quality assurance procedures: what is the Area who can better evaluate this research?

2 Aims and Objectives

The problem from which the research project gets underway is: there are new genres of publications in the humanities and new models of communication using the Internet. Can we evaluate digital products and publications with current quality indicators and the same procedures of printed publications? Do we perhaps need to have an alternative system for the evaluation of digital products and publications?

While internationally digital products and publications must be treated more or less by the same standards as printed publications, the evidence in Italy is that, by not assuming that these are a form of publication, they are not even considered (Tammaro 2002; Huang Chang 2008; OECD 2008; White 2009; Fister 2010; Hellqvist 2010). Many of these outputs have no visibility, as they are not registered in current registries, catalogues and bibliographies, starting from the Italian Research Registry (Anagrafe della Ricerca).

The aim of this research is to give transparency to criteria which are currently used in Italy and abroad for the evaluation of digital publications. The project aims to

improving international visibility of Italian scientific production in the Digital Humanities and its originality consists in trying to understand the current model of scientific communication in Italy that is taking shape for products and publications in the Digital Humanities.

The objectives are:

1. collaborating with international institutions and partners to realise an ontology, and
2. ensuring interoperability with tools developed abroad.

To achieve this goal we intend to use the methodology of the Open Linked Data and Semantic Web, proposing a tool that aggregates and classifies digital publications in the field using citations and quantitative indicators and in the same time enabling an open peer review. The first objective is to propose a tool which aggregates, classifies using Open Data such as citations and other quantitative and qualitative indicators and makes an open peer review possible.

Other objectives of the project are further enhancement of the international network of research achieved with the participation of qualified experts from Italy and different countries, and promoting advanced training for staff, academics and young researchers.

2.1 Typologies of Digital Publications

This research intends to point out the different typologies of digital publications existing in the humanities reaching their overall classification. In this research by digital products and publications we mean not only publications which have an equivalent print version, but even those which are only digital and which, in the restricted meaning adopted by CUN, might not be considered publications.

For example: is an e-learning course a digital publication? Is the documentation of a software, a database or a Web site which is continuously updated, a digital publication? Is a critical text analysis combined with different variants of text a publication? Many of the digital products are not only used for research but also for teaching, often encouraged by universities which have often made a platform for e-learning available.

The publications in Digital Humanities are the result of research and teaching and include different types, some corresponding to digitised publications with a print version, but the majority are new types, such as marked texts, data sets and dynamic databases, wikis, RSS, Web sites. In addition we must point out that the traditional system of quality evaluation does not adapt to digital publications which adopt completely different multimedial systems and editorial processes. The digital publications are hypertextual, dynamic, easily accessible, can be open and are re-usable. Digital publications do not necessarily follow a process entirely managed by the editor: many are made available in Open Access modes, in institutional repositories of universities, on the university department Web sites, in Open Access journals, in University series which are only available online. Digital publications are also stimulating an ongoing process of research, analysis and collaborative work over a final and fixed product. This creates a fundamental challenge for the review of new model scholarship.

The gap which is evident is that the traditional system of quality evaluation does not adapt to these new genres of digital products and publications, which adopt completely different multimedial systems and publishing processes. How does the evaluation of research in the digital environment change? Do the disciplinary fields which control the quality of research follow both formal and informal criteria which can also be used for digital publications? Are there cultural barriers which hinder an efficient evaluation of digital publications?

Digital products and publications are often open in the Web, but paradoxically they are not often registered in scientific bibliographies and catalogues and other finding aids. Digital publications, due to their characteristics of hypertextual and open format, are also interdisciplinary and belong to different Disciplinary Areas such as those of Area 9 related to Information Engineering, which in this Project has been included as the Area of the comparative analysis for the evaluation criteria and processes.

The purpose of this research is to understand the values and purposes of the criteria currently used in Italy and to compare them with the European context for evaluating digital publications so as to better identify the quality of these publications in the humanities disciplines. Because of their characteristics, digital products and publications offer the possibility for applying a new methodology of collective and open evaluation, which combines both the peer review and the bibliometric indexes.

3 Literature Review

These new publications and digital assets have acquired a great importance for the new opportunities that they give to advancing research and teaching in the humanities and their characteristics were discussed by the scientific community nationally and internationally (Mordenti 1987; Buzzetti 1999; Tammaro 2001; Mordenti 2001, Robinson 2005; Buzzetti, 2006; Mordenti 2006, Perrault 2006; Dyes 2007; Roncaglia, 2008; Orlandi 2010; Deegan & Tanner 2005).

In the professional literature, as well as in the evaluation procedures, it is traditionally made a very clear distinction between qualitative (peer review) and quantitative assessment (bibliometrics). Peer review and bibliometric measures are two methodologies widely used in the field of hard sciences.

With regard to the qualitative assessment, it is based on the methodology of the peer review, which in the case of publications and research projects is usually conducted ex-ante, while in the national research assessment exercises such as ANVUR is normally carried out ex-post. The quantitative methodology used for research assessment relies, on the contrary, on impact indicators. The best known are the bibliometric indicators, and among these, the most used are the citational indicators (Impact Factor, H-Index and its variants, Eigenfactor etc.). Bibliometric measures are methodologies widely used in the field of hard sciences, also if sometimes abused, and criticized for this. They are, however, less practiced in the field of the Humanities and Social Sciences, where scholars put into question their validity and applicability. Moreover in the Humanities the Impact Factor is never calculated.

Due to the specific characteristics of digital publications, the evaluation procedure of digital publications have stimulated the development and experimentation of a transparent, open and collective quality evaluation, which combines qualitative and quantitative systems evidencing the scientific base of digital content (Tammaro 2001; Reale 2008; Guerrini 2009; O Rieger 2010). Some tools that are based on the analysis of citations have been applied to the humanities as for example: SCImago. (2007). SJR1 - SCImago Journal & Country Rank is being developed by a consortium of Spanish universities (Granada, and Madrid Alcal Charles III). It 's based on data from Elsevier's Scopus database combined with the algorithm of Google's page rank. It can get a list in order of importance (visibility) of the periodic and partner countries. Latindex2 focuses on the scientific journals of Spain, Portugal and Latin America. The basic idea is to have a unique system for evaluating scientific journals regardless of the medium with the addition of some specific indicators for electronic journals. The consortium that runs it has produced research for the e-book and electronic publications in Open Access. For the comparison of large amounts of data, as for the evaluation of departments and universities, the bibliometric systems have interesting results. In 2006 the network Publish or Perish (PoP) started to offer access to a free-ware program developed by Anne-Wil Harzing, Professor of International Management at the University of Melbourne, Australia (www.harzing.com). Based on Google Scholar, this program provides in a few seconds the main bibliometric variables in all major fields of research, from management to the social sciences, through the "hard" sciences. Be considered for the evaluation of digital publishing tools that are based on specific statistical algorithms research that consider the number of accesses, downloads and views. In 2004 Alex Verstak and Anurag Acharya, two engineers working on Google have launched Google Scholar, a search engine that directs, with the agreement of the publishers, the entire text of scientific articles of a large number of scientific publications covering all disciplines. Google scholar applies the same algorithm of ranking Web pages in the work of researchers and you can then make comparisons within the same field of research. The tools of Social bookmarks such as refworks.com, zotero.org, connotea.org, mendeley.com, 2collab.com, citeulike.org, mekentosj.com, are considered as collaborative assessment tools that help in evaluation.

The limitation of these tools is that we know of each Web page the number of visits but this should not be confused with the impact. To overcome this problem, others have used the tools that combine the system of citations with the peer reviews, publishing the results online and open to the rear. Mesur (Metrics for Scholarly Usage of Resources), funded by the Mellon Foundation in 2006 has attempted to bring together bibliographic information, citations and data used to create a working model of scientific communication. In the first phase an ontology was developed that in the second phase was applied to data extracted by the project partners in collaboration with some editors and the project COUNTER (Bollen, Van de Sompel, Rodriguez 2006).

Recently, social media, such as Twitter, Mendeley, Google Groups, FriendFeed and Linkedin, have been used for analysing and filtering digital publications and informing scholarship. Impactstory and ScienceCard are Web based applications to track the impact of a wide range of research publications and of individual scholars.

However, there are obstacles for the evaluation of digital publications, which have been highlighted for example by Vanhoutte (2006) and that are related to the difficulty of identification in the catalogs and bibliographic databases (Torres Salinas & Moed, 2009: White et al., 2009) and lack of the editorial process (pre-peer review). It therefore seems to us that we need tools and registries for the identification and classification of digital publications that are supporting the assessment procedures, both pre and post-publication. These tools need to include all the measurements of impact that we have now:

Peer review, as expert judgement;

Citations as impact factors;

Usage as downloads and views;

Alt-metrics considered as bookmarks, links, conversations in blogs, Twitter.

The new tools, including usage counts and alt-metrics, have a common characteristic: they extend the evaluation and availability of digital publications to an open research community and other stakeholders. Transparency of reviewing is the added value of these tools.

4 Methodology and First Findings

To achieve its objectives, the Project has created a team composed of research units with multidisciplinary skills from research institutes, universities, publishers companies, collaborating with experts from the community of the Associazione Italiana Informatica Umanistica e Cultura Digitale (AIUCD).

The Project team is considering in particular the digital publications in Open Access institutional repositories and digital publications available in Open Access mode with commercial publishers and digital libraries, publications and products related to research and teaching, data sets and all the other types considered important by the experts participating in the Project. An in-depth examination is planned in the first phase of the specific characters of three kinds of publications: electronic scholarly editions (ecdotique and digital philology), eBooks, learning materials made available as OER (Open Educational Resources). This work has been built on top of theoretical models developed until now in the field of Digital Libraries, in particular the DELOS/DL.org and the 5S ones, and, if necessary, the Zachmann Framework, related to general information system. The Project team is collecting data from all the existing dabases, bibliographies and catalogues existing in the Area.

A benchmarking has been done of some of the examples of tools cited before, such as those developed in the United States (Mesur, MERLOT), Spain (Scimago), France (OpenEdit) and UK (JISC 2009). The methodology proposed by the project, which has been used for example in the United States for projects such as MESUR and MERLOT and in France for the Open edition, seems to have a substantial impact on current procedures and criteria for the evaluation of digital publications and products in Italy, proposing a tool that aggregates bibliographies and catalogues and classifies digital publications and citations in the field using quantitative indicators, and enabling an open peer review.

A survey of experts opinions and experiences has started during the first Annual Conference of the AIUCD, with the creation of a Special Interest Group to continue the ongoing discussion. At the end of this phase, an international report on comparative analysis of the evaluation model of digital publications in the Digital Humanities in Europe has to be produced together with a report on the ontology of scientific communication and its application in a Knowledge organisation system (KOS). The products expected from this 3 years research are:

Analysis of the typologies of digital publications and of the criteria and procedures for their evaluation in Digital Humanities disciplines;

Construction of an ontology which evidences the junctions / hubs and relationships existing between digital publications in the Digital Humanities in Italy;

Construction of a Knowledge Organisation System, as a supporting tool for the choices of quality evaluation. The project will plan, develope and implement, within the Knowledge Organization System (KOS) of the project, a conceptual scheme (ontology) defined in a formal way and related to the different types of digital publication in the humanities, with a particular interest in the disciplinary Area 10 and 11, compared with those of Area 9.

The development phase also includes a possible formalization of DELOS/DL model, so to provide both a SPARQL endpoint, in order to allow for structured queries, and a publication of the RDF data following the Linked Data principles, in order to be included in the Linking Open Data Project Cloud (LOD), which is at the moment the most important concrete development of the Semantic Web.

The project also aims to produce and distribute the following products:

1. An international report on comparative analysis of the evaluation model of digital publications in the humanities in Europe;
2. An international report on the ontology of scientific communication and its application in KOS;
3. Development of open educational resources, to be used within the activities of diffusion and dissemination of research results. The proposted OER would illustrate the main typologies of electronic publications identified by the project and the characteristics of the main research metrics considered, aiming at contributing tools able to allow external user and groups the possibility of acquiring in a guided way the necessary skills for using both the theoretical and the practical tools produced.

The Project is still in the development phase and not started until now, due to an obstacle which has been met. The Evaluation Committee of the Area 11 who has evaluated it, has not financed it, with the following motivation:

"This will certainly be research with a high impact, mostly on the sector of research policy and research assessment; indirectly, it may also contribute to changing publication habits. How it can be viewed from a purely scholarly perspective is less clear because research assessment, bibliometry etc. is an emerging field - the impression is that the more scholarly (and therefore complex) it gets, the less will it be useful for actual quality control".

It seems to the author that the problem with the evaluation of publications is in the present closed research community of reviewers using both the peer review and the bibliometric methodologies. Instead the Digital Humanities publications need an extended community of evaluators using open tools.

5 Conclusion

This Project wants to indicate that some solutions can be found to the evaluation of digital products and publications by taking advantage of information and communication technology. In this area, in fact, the European Union countries are investing resources to improve the quality and visibility of research products. In particular, the Project considers the technologies of the Semantic Web a useful tool to facilitate the access of scholarly communities to quality research and provide expert reviewers with a tool to make more consistent and informed their decision making process, speed up the review, improve the procedures of peer review.

It is important to point out how the project aims not only to identify the technologies most suitable from a technical standpoint, but the focus is on developing a series of recommendations towards organizational, legal, and training needs, to support the diffusion of Digital Humanities research in a complex environment and contrasting the trend to be refractory to innovation such as in the humanities Area in Italy. The main recommendation is the need of an open research community for the evaluation of interdisciplinary products and publications.

This Project itself is a Digital Humanites project and covers both interdisciplinary dimensions. The scientific achievement is therefore twofold:

on the one hand, there is the need to identify, analyze and propose, some technical solutions;

on the other hand, it is an essential part to analyze and propose solutions to theoretical, organizational, educational and legislative issues to ensure a virtuous cycle of knowledge production.

The Project focuses on the design, implementation and testing of some applications, each of which is used for a specific methodological approach that will produce and disseminate knowledge on the use of technology in digital products and publications in Italy and Euroepan countries and, more generally, on the relationship between technology and organization of scholarly communication.

The paper considers the evaluation of digital products and publications in Digital Humanities in Italy a strategic objective to invest for innovation and competitiveness of research: there is the evidence of the need of extending the research community involved in the reviewing process to eliminate the present obstacle of “subjectivity”of the evaluation process. The "strategic value" for the country lies mainly in the need to find solutions to the complete lack or weakness of the evaluation for digital products and publications that are produced more and more numerous in the humanities, and renewing efforts to stimulate interdisciplinarity and avoiding the lack of visibility and recognition of excellence in research carried out in Italy for the Digital Humanities.

We must also say that investments in information technology and communication that all Italian universities have undertaken to provide an adequate infrastructure for research, do not seem to have affected the evaluation of quality of research products, stressing the need for project such as this, to explore new ways to find solutions to this interdisciplinary exploitation.

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