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Grey Literature and Research Assessment exercises: from the current criteria to the Open Science models

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Scenario and Objectives

- In the recent years the application of strategies, procedures and tools to evaluate the work of researchers have become subject of interest and their application is currently matter of discussion.
- The assessment exercises are regulated at national level and carried out in different European countries, e.g. France, United Kingdom and the Netherlands.
- At the present time, two evaluation exercises of the quality of the research named *Evaluation of Research Quality* (VQR) were realized in Italy. The first one spans the years 2004 – 2010 (VQR₁); the second from 2011 to 2014 (VQR₂).
- The conceptual challenges taken on by the Open Science (OS) movement may be crucial for the evolution of these matters.

The work analyzes the VQRs objects and methods with the aim of verifying:

- *if and how* Grey Literature is involved in the research evaluation processes;
- *what will be the future* of the scholarly scientific communication according to the instances of the Open Science movement.

Organization and Methods: the VQRs environment

What is evaluated?

The research conducted in both state and private universities, public research bodies and other public and private subjects funded by the government

- ✓ Researchers, assistant professors, associate professors, full professors...

Who are the evaluators?

National Agency for the Evaluation of Universities and Research Institutes (ANVUR)



Groups of experts for the evaluation – GEV

The methodology

- Qualitative assessment
- Quantitative assessment
- Informed peer review

VQR 2004-2010		VQR 2011-2014	
Class of merit	Score	Class of merit	Score
A. Excellent	1	A. Excellent	1
B. Good	0.8	B. High-level	0.7
C. Acceptable	0.5	C. Fair	0.4
D. Limited	0	D. Acceptable	0.1
E. Not evaluable	-1	E. Limited	0
F. Plagiarism/Fraud	-2	F. Not evaluable	0

ANVUR- Quality steps

Organization and Methods: the VQRs environment

Taxonomy based on macro disciplinary areas and Scientific Disciplinary Sectors (SSD)

Macro-Areas VQR1

Area	Description
1	Computer science and Mathematics
2	Physics
3	Chemistry
4	Earth sciences
5	Biology
6	Medicine
7	Agricultural and veterinary sciences
8	Civil engineering and Architecture
9	Industrial and computer engineering
10	Antiquity, philological-literary and historical-artistic sciences
11	Historical, philosophical, psychological and pedagogical sciences
12	Legal sciences
13	Economics and Statistics sciences
14	Social and political sciences

Macro-Areas VQR2

Area	Description
1	Computer science and Mathematics
2	Physics
3	Chemistry
4	Earth sciences
5	Biology
6	Medicine
7	Agricultural and veterinary sciences
8a	Architecture
8b	Civil engineering
9	Industrial and computer engineering
10	Antiquity, philological-literary and historical-artistic sciences
11a	Historical, philosophical and pedagogical sciences
11b	Psychology
12	Legal science
13	Economics and Statistics sciences
14	Social and political sciences

It's clear the substantial overlapping between macro-areas in VQR1 and VQR2.

Scientific Disciplinary Sectors

Area 1

Computer science

Logic

Algebra

Geometry

Complementary maths

Mathematical analysis

Area 2

Experimental physics

Theoric physics, mathematical models and methods)

Physics of matter

Nuclear and subnuclear physics

Astronomy and Astrophysics

Physics for the Earth system

Area 3 ...

Organization and Methods: the VQRs “objects”

Documentary categories in VQR₁ (2004 – 2010)

- *Papers in journals*
- *Books, chapters of books, and conference proceedings provided with ISBN*
- *Critical editions, translations, and scientific comments*
- *Patents*
- *Compositions, drawings, design, performances, exhibitions and organized expositions, handwork, prototypes, artworks and related designs, databases and software, thematic maps*

Not admissible products in VQR₁

- *Editorial and curatorial activities*
- *Conference abstracts (even if published in journals)*
- *Texts or software used for educational and dissemination purpose only*
- *Routine or laboratory tests*
- *Internal technical reports*

Organization and Methods: the VQRs “objects”

Documentary categories in VQR2 (2011 – 2014)

Scientific monographs

Research monograph, Concordance, Scientific comment, Annotated bibliography, Critical editions of texts, Critical editions of excavations, Publication of unedited sources, Critical manuals (not for educational purpose only), Grammars and science dictionaries, Translations of books (upon GEV's decision).

Articles in journals

Scientific paper, Review essays, Letters, Contribution to a Forum upon invitation of the editorial staff, Case notes, Translations in journal.

Contributions to books

Scientific articles in peer-reviewed conference proceedings, Foreword and afterword in the form of essay, Curatorship of books with introductory essay, Catalogues with introductory essay, Critical entries in dictionaries or encyclopedias, Translations in book (upon GEV's decision), Catalographic records, bibliography or corpora.

Other types of scientific products

Compositions, Drawings, Architectonic projects, Performances, Exhibitions, Prototypes of art and related projects/designs, Database and software, Thematic maps, Psychological evaluations, Audiovisual material.

Patents

The category Patents is always considered as evaluable, but it may be attributed to class A or B only if internationally renowned or licensed.

Not admissible products in VQR2

- *Manuals and texts for educational purpose only*
- *Review of a single article not showing any critical analysis of the literature on the topic*
- *Short, non-original encyclopedia or dictionary entries*
- *Short, non-original case notes*
- *Short catalographic records*

Tracking the Grey Literature

The process of identification of the Grey Literature inside the various documentary typologies was based on the following considerations:

- the evaluation exercises mainly founded their bibliometric analysis on the contents of the two commercial databases Web of Science and Scopus;
- the majority of the literature indexed by the two databases is published by commercial publishing companies;
- the use of the databases restricts the contents only to the references indexed (based on ownership criteria);
- the algorithm for the assessment of *papers in journals* takes into account the number of citations of a paper and the corresponding bibliometric indicator of the journal;
- the GEVs' criteria specify that products listed in *Other types of scientific products* are evaluated making reference to their characteristics, not to their formal publication.

With specific reference to what listed above we agreed on ascribing some groups of products to the *non-conventional literature*.

Analysis of data and results

In both exercises and for each disciplinary area, the most significant numbers are referred to the entries *papers in journals*, *papers in books* e *papers in proceedings*. The *papers in journals* still represents the more widely evaluated category.

The frequency of the Grey Literature is 0.61% in VQR1 and 0.74% in VQR2. . . .

... rough estimate...

- ✓ In VQR1 the most relevant percentages are those referred to the Areas 7 - Agricultural and veterinary science, 8 – Civil engineering and architecture, and 10 – Antiquity, philological-literary and historical and artistic sciences.
- ✓ In VQR2 the Areas 8a - Architecture (mainly in 2011) and 12 – Legal science (especially in 2011 and 2014) gather the majority of the grey products.

The extension of the documentary categories in VQR2 influenced the incidence of the Grey categories in VQR2, where we find products that did not appear in the previous evaluation.

Some of the products present in both evaluations do not show significant annual variations, with the only exception of some categories such as *entries* as well as *exhibition* and *prototype*.

Open Science and Grey Literature...*a perfect marriage..*

The combination between the principles and the tools of the Open Science may represent a favorite dissemination channel for the Grey Literature, which conversely may become the primary source of the Open Science.

- The OS meets the demand of up-to-date, faster, more effective and less expensive dissemination modalities, making accessible the documentary typologies currently not publicized and unavailable.
- The OS meets the demand of new criteria for the research assessment through the use of different or complementary measures. It revolutionizes the modalities for the scientific foundation and dissemination, as well as the objectives, the models and the assessment methods.
- The OS highlights the need of making a better use of technology to share the outcomes and connect data and publications in a more effective way.
- The OS guarantees that the management and the curation of the data is attributed to the authors and not to the publishers.

The Grey Literature community formulated The Policy Development for Grey Literature Resources looking at the new principles of Open Science, and joining the new ways of creating, sharing and evaluating science (Pisa Declaration 2014).

Conclusions

The Italian Research Assessment Processes do not completely exclude Grey Literature. However, they are almost exclusively based on the analysis of commercially distributed products.

This is due to:

- The non-eligibility of some research products (e.g. *educational material, technical reports, commentary, obituary, erratum...*).
- The lack of interest in entries such as *preliminary studies, progress reports, accounts, search results, dossier, market researches, normative documents, feasibility studies, etc..*
- The disadvantage in the assessment of scientific products other than articles in journals.
- The impact of the evaluation criteria on researchers leads to the philosophy of *Public or Perish*: the researchers publish only scientific articles in prestigious journals.

The risk is to produce *fashionable* research rather than *quality* research.

Conclusions

- The Open Science models launch new criteria making visible, recognizable, identifiable and usable otherwise unavailable documentation and makes it possible to evaluate non-traditional materials.
- In an increasingly connected world, it is time for the scientific institutions and politics to interrogate, exchange experiences, build networks across national borders, allowing the growth of a new dialogue between science and society. Europe plays a key role in integrating scientific activity into the social, cultural and political economic landscape.
- Cultural, political and economic changes are necessary in order to realize the Open Science and support a wider view of the design of the research, the management of the projects, and for the dissemination of the results.

We think, in this new ecosystem of the scientific communication, that the Grey Literature *can be exposed to a wider audience, can remove the obstacles in accessing and can enhance its contents and visibility thanks to the advanced technologies and the use of social media.*