# Chapter 1
# From Open Access Publishing to Open Science:
## An Overview of the Last Developments in Europe and in France

**Christine Kosmopoulos**
*Centre national de la recherche scientifique, France*

## ABSTRACT

*By facilitating and accelerating access to knowledge, the digital revolution and the development of the internet in the 1990s constituted a "disruptive" innovation that radically transformed the models and practices of scientific information transmission. It opened the way to open access in science, a novel and promising solution that promotes the sharing of publications and data, and new modes of research assessment. The COVID-19 crisis and the spread of fake news on social networks have shown how necessary it has become to provide scientific information that is controlled by the community and freely accessible to citizens. This chapter will focus on the processes that underpin the production of Open Science by examining the development of open access scholarly publishing in Europe, particularly for the social sciences and humanities.*

## INTRODUCTION

Open Access to the results of scientific research brings promising and democratic solutions to enlighten citizens. It may contribute to upgrade the quality of scientific information and to raise the level of acceptance of common scientific representations amongst the population. However, this is far from being systematic: in the same time when huge scientific progress enabled the making of a vaccine to resist the virus, the Covid-19 pandemic generated unprecedented amounts of pseudo-scientific information on the web, distilling doubt in scientific discoveries and putting in danger the health of the world's population. It is becoming urgent to realize how Open Science models could help solve such a contradiction. Therefore,

DOI: 10.4018/978-1-7998-9805-4.ch001

this chapter will focus on the processes that are at the roots of producing Open Science through reviewing the development of Open Access publishing in Europe, especially for Social Sciences and Humanities.

## OPEN ACCESS PUBLISHING, A POLYSEMIC NOTION

Open Access appears to be a powerful incubator for the scientific community to gain autonomy by developing new scientific dissemination and publication practices, and also by allowing the sharing of a wide variety of often unknown data and works. Usually these scientific products are not published in journals or books, such as field notebooks, databases, open source tools, software, etc. They are commonly grouped under the concept of "bibliodiversity". Sharing them through data interoperability protocols creates a new ecosystem that paves the way for reproducible science without financial barriers or restrictive copyrights. At the same time, it undermines the traditional systems of disseminating work via scientific journals published by large commercial publishers.

Physicists were the initiators of this movement with the launch of the first open archive site, ArXiv, in the early 1990s, offering unprecedented and free access to the discipline's work. Subsequently, many countries and institutions have spontaneously developed open archive repositories in all disciplines to encourage scientists to self-archive their scientific work in order to promote free and rapid access to it. This model has been characterized as "green Open Access" by the Budapest Open Access Initiative (BOAI, 2002). The date of publication of results in an open archive allows for better security against plagiarism. It marks a new step in strengthening scientific integrity. Indeed, the deposit guarantees the copyright of the author.

Considering the rapid inflation of open archive sites, a collaborative European project between the University of Nottingham (UK) and Lund University (Sweden) began in 2005 to identify these directories, classified by country, institution and discipline. From just over 900 in 2008, there is now nearly 6,000 as of 2021. Europe also deployed successive census sites such as Driver with the objective to organise and build a virtual, European scale network of existing institutional repositories from the Netherlands, the United Kingdom, Germany, France, and Belgium. In 2009, OpenAire succeeded to Driver. "The Project aim was to support the implementation of Open Access in Europe. It provided the means to promote and realize the widespread adoption of the Open Access Policy, as set out by the ERC Scientific Council" (OpenAire).

With the advent of the Internet, the scientific community is also committed to the development of alternative models of independent scientific journals (Kosmopoulos, 2002), without subscription, at no cost either to the reader or to the author. In 2002, the Budapest Open Access Initiative marked Open Access journals with the color gold and grouped them under the heading "gold Open Access".

Since the launch of the Internet in the 1990s, these two models of Open Access in scientific publishing - "green Open Access" and "gold Open Access" - have coexisted while following different and even contradictory dynamics. For the record, in the early 2000s, "Open Access (OA) literature is digital, online, free of charge, and free of most copyright and licensing restrictions. Open Access removes price barriers (subscriptions, licensing fees, pay-per-view fees) and permission barriers (most copyright and licensing restrictions) (….) In addition to removing access barriers, Open Access should be immediate, rather than delayed, and should apply to full texts, not just abstracts or summaries" (Suber, 2004).

The Directory of Open Access Journals (DOAJ), created in 2003, accounted for more than 3,000 journals in 2008 and more than 10,000 in 2020. However, in 2020, the DOAJ included journals whose