2.5 Bibliometrics in the Humanities, Arts and Social Sciences

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Abstract: Bibliometric methods are used in many evaluation procedures. They have been developed in the so-called Science, Technology, Engineering and Medicine (STEM) disciplines but are increasingly applied generally, thus also in the Humanities, Arts and Social Sciences (HASS). However, the bibliometric methods do not reflect research practices in the HASS disciplines and their use is therefore challenged. This chapter gives an overview on the issues of the use of evaluative bibliometrics in the HASS disciplines, outlines the value of bibliometric analysis for the HASS disciplines and discusses the potential of bibliometrics in informed peer review.

Keywords: humanities, arts and social sciences, altmetrics, informed peer review, coverage, citation practices, performance-based research funding, language, societal impact.

Introduction

Bibliometric indicators are an established tool for the evaluation of research in the so-called Science, Technology, Engineering and Medicine (STEM) disciplines. Bibliometric indicators have been deemed more objective, comparable, less burdensome and costly, and more responsive to current trends than the different forms of peer review that have been dominant in evaluation procedures. They help to monitor research performance over time and are an important steering tool for science administrators (KNAW, 2011). The application of bibliometrics concerned first the STEM fields but in the last decade the Humanities, Arts and Social Sciences (HASS) were also subject to bibliometric evaluation (Guillory, 2005; Ochsner, Hug and Daniel, 2016). However, in the HASS disciplines, the idea of parametrically steering research is challenged (KNAW, 2011) and bibliometric performance assessment for these disciplines is seen as problematic (Nederhof, 2006). Therefore, several bottom-up procedures have been initiated by HASS scholars (Ochsner, Hug and Galleron, 2017). In the following, an overview of the issues of the use of bibliometrics in the HASS disciplines will be given, the value of bibliomtetric analyses for the HASS disciplines will be presented and the potential of bibliometrics in informed peer review will be discussed.

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Issues of Bibliometrics in the Arts and Humanities

The use of bibliometrics for the disciplines falling under the HASS umbrella has been challenged not only by the HASS scholars themselves but also by bibliometricians. Below, a short overview of the more technical issues with the use of bibliometrics in the HASS disciplines identified by bibliometricians is followed by a focus on more fundamental criticism by HASS scholars.

The Bibliometric Issues with the HASS Disciplines

In his seminal review on bibliometric monitoring in the social sciences and humanities, Nederhof (2006) points to five main differences in publication behaviour leading to problems using the same bibliometric methods as in the STEM fields: the first point, national or regional orientation, reflects that many HASS disciplines address issues that are relevant in a restricted geographical area. Language plays a crucial role as English does not serve as a lingua franca in all disciplines. Most HASS scholars therefore publish in more than one language (Kulczycki et al., 2020) and internationality is seen as being multilingual; moreover, international languages differ between disciplines and are not limited to English (Sivertsen, 2016a).

Second, the STEM disciplines mainly publish in English journals reflecting a hierarchical communication structure where a limited set of important journals cover the majority of highly cited articles (Bonaccorsi, 2018; Nederhof, 2006). The HASS disciplines publish in a diverse range of publication types; journal articles are not the most prestigious output but rather monographs or books (Hicks, 2004; Engels et al., 2018; Kulczycki et al., 2018). These are not covered by the dominant publication databases Web of Science and Scopus, even though both made considerable efforts to cover books. However, coverage remains low and technical deficiencies hinder the use for evaluative bibliometrics (Gorraiz, Purnell and Glänzel, 2013).

Third, bibliometricians identified a different pace of theoretical development, as Nederhof (2006) puts it. This diagnosis stems from the insight from bibliometric analyses that HASS publications contain an important fraction of citations older than five, ten or even fifteen years, and also that the obsolescence of articles, i. e. when an article is not cited anymore, is reached much later (Cole, 1983; Thomson, 2002).

Fourth, whereas in the STEM fields, research projects and teams are the dominant form of scientific inquiry (Thompson, 2002), research in HASS disciplines is often centred around the idea of a single scholar. While co-authorship increases also in the HASS disciplines, co-authored articles still have relatively few authors and often still follow the idea that each individual adds its own perspective; moreover, single-authorship remains important (Ossenblok, Verleysen and Engels, 2014).

Fifth, the HASS disciplines publish more outputs directed at a non-scholarly public because of a more direct interchange with society (Hicks, 2004; Nederhof, 2006). Contrary to patents or other interactions with industry, interactions with soci-

ety do not lead to citations that can be harvested by bibliometricians. Often, boundaries between scholarly and non-scholarly work are not clear (van Gestel and Lienhard, 2019).

These five issues pose problems for the application of standard bibliometric measures. The main issue is the coverage of data. Not only is the coverage of all output massively lower in the relevant scientific citation databases, there is also a language bias to the coverage (Hug and Brändle, 2017; Sivertsen and Larsen, 2012); and worse, the internal coverage, i. e. the citations detected in the indexed articles referencing other articles indexed in the database, is very low in the HASS disciplines, rarely going beyond fifty per cent, pointing to the fact that many relevant articles are not indexed (van Leeuwen, 2013). Also, common indicators, like the Impact Factor, need to be adapted to the slower citation pace in the HASS disciplines as the two years citation window is too small (Nederhof, 2006).

If coverage is the main problem of bibliometric analysis in the HASS disciplines, the solution seems rather simple: databases have to increase coverage. Many countries have adopted such a strategy and have created a centralised national publication database containing all scholarly publications (Sivertsen and Larsen, 2012; Sīle et al., 2018). Different ways of knowledge production, however, do not only affect publication types but also citation practices, which are more diverse in the HASS fields, while citations are not always explicit (Bonaccorsi, 2018). Thus, bibliometric approaches to monitoring research performance are still contested among HASS scholars who put forward additional reservations about bibliometrics.

The Problems HASS Scholars have with Bibliometrics

Hug, Ochsner and Daniel (2014) summarise arts and humanities scholars' reservations about quantitative assessments of research performance into four main points. The first point states that bibliometric methods stem from the STEM fields, on which the social studies of sciences focused for a long time. Methods for identifying research performance are not easily transferable. For example, the language and coverage issues are not only of technical nature but also reflect the fact that scholarly discourses can differ not only between STEM and HASS fields but also between communities publishing in different languages, leading even to (or reflecting) epistemological differences within disciplines across regions (Bonaccorsi, 2018; Keller and Poferl, 2017). This concerns especially the arts (Lewandowska and Smolarska, 2019), which are understudied (Lewandowska and Stano, 2018). While the STEM fields largely follow the idea of a linear progress of knowledge, the HASS disciplines are based on interpretations, and knowledge is produced complementary, segmented or even alternative to each other (Bonaccorsi, 2018; Mallard, Lamont and Guetzkow, 2009). Citations thus take different functions and the number of citations is not meaningful as it depends on the subject matter (Bonaccorsi, 2018): a study on Mozart receives more citations than one on an unknown local composer. Second, humanities

scholars are less open towards quantification as it is perceived as an unacceptable simplification (Hammarfelt and Haddow, 2018; KNAW, 2011) and that a focus on numbers neglects the important intangible and social benefits of HASS research (Hellström, 2010; McCarthy et al., 2004). Third, HASS scholars fear that the reductionist focus on numbers comes with negative steering effects, such as favouring spectacular research, citation cartels, goal displacement, neglect of societal interactions or academic freedom in the sense of serendipity (van Gestel and Lienhard, 2019; Hellström, 2010). Citations and numbers of publications do not measure the relevant object of interest, research performance or quality, which is much more complex (Ochsner, Hug and Daniel, 2012). Fourth, there are different standards of quality and a single measure of scientific merit is highly questionable against the background of epistemological diversity (Bonaccorsi, 2018; Ochsner, Hug and Daniel, 2014).

Altmetrics as a Better Option?

Given the critics on bibliometric indicators regarding their narrow focus on one of several possible ways of practicing and disseminating research, scholars suggested indicators taken from the social web as an alternative, the so-called altmetrics, such as Twitter mentions, libcitations (library holdings), good reads, or the altmetric doughnut (Konkiel, 2016; Zuccala et al., 2015). However, similar problems apply: first, it is not clear what those indicators measure (Bornmann, 2016), and second, there are severe technical problems such as reliability and reproducibility (Gumpenberger, Glänzel and Gorraiz, 2016).

Use of Bibliometrics in Evaluation Procedures

Despite the issues pointed out by the scientific communities, bibliometric measures are used in many evaluation situations, also for the HASS disciplines. Ochsner, Kulczycki and Gedutis (2018) identify five types of national evaluation systems, three of which rely on bibliometrics. One type represented by seven Eastern European countries is of particular concern for the HASS disciplines as it does not take HASS specificities into account but uses data from the international citation databases favouring English publications. In some other cases, the use of bibliometric indicators is adapted to SSH publication patterns by using national publication databases and/or involving the scientific community in the definition of which outputs or publishers are more prestigious than others (Sivertsen, 2016b). Independently of the evaluation systems in place, HASS scholars call for a shift of perspective on evaluations, from accountability to valorisation of research (Galleron et al., 2017), especially when it comes to arts (Hellström, 2010).

Effects on Scholarly Behaviour

Pointed out as a main reservation about the use of bibliometrics by HASS scholars, the risk of negative steering effects is widely discussed, especially when the methods do not correspond to research practices in the respective fields. Such negative steering effects have been discovered for the HASS in the sense that in contexts where journal publications are highly valued, certain research approaches are favoured over others (Lewandowski and Stano, 2018) and create tensions for young scholars who are pushed by their national system to publish English journal articles, while in their field monographs are important (Hammarfelt and de Rijcke, 2015; Xu, 2020). In their review, de Rijcke et al. (2015) found evidence for goal displacement, strategic behaviour, task reduction and focus on monodisciplinarity across STEM and HASS fields. Negative effects do not only concern behavioural changes of researchers; university administrators also might take decisions to improve rankings instead of enhancing the quality or the mission of the institution (Johnston and Reeves, 2017).

A "Bibliometrics for the Arts and Humanities"

Given all the issues mentioned above, should bibliometrics be banned for the HASS disciplines? Such a conclusion would be throwing the baby out with the bathwater. Bibliometric indicators are not only useful for evaluative purposes. Indeed, they have not been developed for such purposes; rather, they are a tool to study how research is conducted. Hammarfelt (2016) thus suggests developing a "bibliometrics for the arts and humanities". As knowledge production and dissemination is different in HASS fields and STEM fields and bibliometric research focused rather on the latter than the former, much has yet to be studied. Bibliometrics can help describe and understand differences in research and dissemination practices across (sub)disciplines. Thanks to bibliometric analyses, we have insights on the importance of multilingualism (Kulczycki et al., 2020) or the persistence of the importance of books (Engels et al., 2018), despite the claims that it will disappear (Thompson, 2002).

Research Quality and Bibliometrics or the Opportunity of Informed Peer Review

Even if research quality in HASS is a very complex construct that is not adequately represented by publication numbers and citations (Ochsner, Hug and Daniel, 2012), bibliometrics can still enhance evaluation procedures. Peer review also has its problems and is seen as subjective and having a low reliability. These deficits could be amended with the so-called informed peer review where the different aspects of quality are judged by the peers who can take indicators linked to these aspects as

information to guide their judgement. The results from the studies by Ochsner, Hug and Daniel (2014) suggest that such a procedure will find more acceptance among HASS scholars.

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