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Letter to the Editor

There are neither “king” nor “crown” in scientometrics: Comments on a supposed “alternative” method of normalization

Observing from a distance the debate in this journal between Van Raan and his group at the CWTS on the one hand and Leydesdorff and Opthof on the other concerning the proper manner of calculating normalized citation indicators, we have until now refrained from intervening in it. However, following the presentation by Van Raan of the “New Set of indicators of the CWTS” at the latest September meeting of STI in Leiden and the recent contribution by Waltman, Van Eck, Van Leeuwen, Visser, and Van Raan (in press), we think it is time to provide a “view from afar” in order to correct some surprising affirmations made by Van Raan and his group in their responses to Opthof and Leydesdorff (Van Raan, Van Leeuwen, Visser, Van Eck, & Waltman, 2010; Van Raan, Van Eck, Van Leeuwen, Visser, & Waltman, 2010).

The first striking rhetorical trick used by Van Raan, in the name of the CWTS, to compare the method employed by his group to that suggested by Opthof and Leydesdorff is to use repeatedly the term “*alternative* normalization” to characterize the latter. Far from being innocuous, this term suggests that there is on the one hand an “established” normalization, that of the CWTS, to which is opposed an “alternative” and more recent one. The authors also write that they “compare the *old* and the *new* indicators”, the “old” being their so-called “crown” indicator. But using the catchy term “crown” to label such an obvious mathematical operation as making a ratio of two averages, should not let us forget that there is no “king” in scientometrics who could impose their method through the magic of naming. And as if to underline even more the supposedly “new” emergence of the “alternative normalization”, Van Raan, Van Eck, et al. (2010, p. 291) writes that it was “*first proposed by Lundberg (2007) and later by Opthof and Leydesdorff (2010)*”.¹

In fact, the method suggested by the latter authors is far from recent or “new” and is simply the *standard and usual* way of computing a normalized value out of a series of individual data on papers and citations: that is, normalize at the paper level and then sum up the result to get the mean. We at the *Observatoire des sciences et des technologies* (OST) at UQAM, have been doing this on a routine basis over 15 years ever without feeling the need to make a fuss about it. After all, it is the usual way to compute any normalized value. So, the debate is not really a *methodological* one but simply a *political* one arising as a consequence of evaluating an institution (here the University of Amsterdam Academic Medical Center) members of which – given the results – had interest in “opening the back box” of the CWTS indicators and finding that it was making a ratio of average instead of averaging the ratios as one would normally (and *spontaneously*) do (Opthof & Leydesdorff, 2010). It should also go without saying that the empirical fact that these two measures do correlate highly in the case of large aggregates like countries or universities, is not an argument for continuing using the wrong method of averaging. For, contrary to the analogy proposed by Van Raan at the STI conference, papers and citations are not liquids that *mix* together to average out. Citations to one paper cannot be redistributed to the other papers through averaging, even less when they are in different fields. So, what is at stake here is not a simply a technical question concerning the statistical properties of the indicator but its very meaning as an index of research practices.

In this context, the notion of “oeuvre” recently put forward by Moed (2010) looks more like a rabbit pulled out of the black box of citation theory as a last minute defense than the result of a thorough analysis of authors’ citing behavior. Given the complexity of the citation process (Bornmann, 2008) it seems far-fetched to suggest that authors aim at citing parts of *oeuvres* – of which they might in fact be completely ignorant – rather than papers and their *specific* knowledge claims. Moreover, the notion of *oeuvre* – which suggest a certain uniformity and coherence (Moed, 2010), as it is the result of a *research program* (Moed, 2005, pp. 216–218) – quickly loses sense when data is compiled for larger entities such as universities or countries. Given the fact that more than 60% of all 2009 papers have more than one institutional address, they are in fact part of *several heterogeneous groups’ oeuvres* and it becomes difficult, and in fact arbitrary, to identify the unit over which to make the average.

¹ Curiously, in another paper they write that far from being new, the method suggested by Opthof and Leydesdorff “is already being used by various bibliometric institutes and research groups around the world” (Van Raan, Van Leeuwen, et al., 2010, p. 432).

After much confused discussion of the issue, which, to be frank, looks like an operation of face-saving, the authors finally conclude that they “plan to adopt the alternative normalization method in future performance evaluation studies” (Van Raan, Van Leeuwen, et al., 2010, p. 432). Good to hear that, but it should be stressed that the so-called “new” indicators promoted by the CWTS are not in any honest way “new” but simply a return to the *normal* mathematical manner in which such a normalization should be computed. After all, bibliometrics being based essentially on papers and citations, there is only a limited number of “indicators” that can be constructed out of these numbers using the usual mathematical operators and their properties. And whatever the denominator used (mean or median number of citations), the disciplinary classification employed (NSF, Thomson, MeSH terms, etc.) or the final look of the indicator (z-score or simple ratio), the indicator has to be normalized at the paper level, as it is *individual papers* that are cited.

Though they should be obvious, these comments are worth repeating lest one gives readers not versed in bibliometric evaluations the impression that the field is just discovering through that debate basic averaging procedures, thus justifying the perception that “pseudo-science” is present in scientometrics (Spaan, 2010). Having performed research evaluations over the last 15 years, and never used the method rightly criticized by Opthof and Leydesdorff, we want to make clear that the discussion surrounding the indicators employed by the CWTS is not really representative of the evaluation methods generally in use. In fact, by changing their practice and using what they now call the “mean normalized citation rates” (Waltman, Van Eck, Van Leeuwen, Visser, & Van Raan, 2010; Waltman et al., in press), – even named “new crown indicator” – they are simply rebranding an indicator that we – and many others – have been using since fifteen years.

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