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# Some Critical Notes on Citation Metrics and Heterodox Economics

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## Abstract

This article investigates citations metrics as an institutional phenomenon from two perspectives: first it tries to articulate the role of citation metrics within a Gramscian framework; second it compares citation patterns from orthodox and heterodox economic journals to gain insights on the current economic discourse. Complementary to this general question the role of the *Review of Radical Political Economics* within citation metrics will be discussed.

**JEL classification:** A14, B50, B51

## Keywords

heterodox economics, citation metrics, *RRPE*

## 1. A Gramscian Perspective on Citation Metrics

Citation metrics have become a powerful institutional mechanism within the scientific community. Evaluation by using citation data today often replaces evaluation by content; the evaluating authority solely looks at the citations gathered, or, even worse, at the impact factors of the relevant outlets,<sup>1</sup> instead of judging the intrinsic quality of the relevant contributions directly. Thus, citation metrics are often decisive when it comes to decisions on tenure, grants, or teaching loads<sup>2</sup> and heavily influence departmental hierarchies, hiring decisions, and the distribution of prestige among scientists.

When discussing citation metrics it has to be kept in mind that they can easily be criticized on various levels: in many cases they are not reliable, since they promote strategic actions among their evaluation-items – the individual researchers – and they are not valid, since most calculations of impact factors and their sort suffer from the exclusion of important variables (like circulation or number of authors) and outlets (selection bias; e.g. books are often missing in those

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<sup>1</sup>Judging the quality of publications by looking at the impact-factor of their outlets is misleading at best, because the citations to individual articles within a certain journal are far from equally distributed, but exhibit a power distribution (see Adler et al. 2008). Consequently even Thomson Scientific recommends refraining from such an evaluation procedure (TS 2008a).

<sup>2</sup>As recently experienced in Australia; see King and Kriesler (2008).

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assessments). From a methodological perspective many indices and practices in citation metrics are superficial at best (see Kapeller 2010; Reedijk and Moed 2006), or to put it in other words, their intrinsic capability is often inversely related to their institutional influence.

Before delving deeper into this general discussion of the institutional and intellectual (and thus hegemonial) influence associated with citation metrics, a short look at the most important institution in this field seems appropriate: Thomson Scientific (TS), the former Institute of Scientific Information (ISI) and now part of the Thomson Reuters Corporation, was created by a kind of academic entrepreneur (originally a librarian), Eugene Garfield. He established ISI as a profit-oriented enterprise, which eventually became an intransparent monopolist. TS is “intransparent” because of frequent problems regarding the availability of data and the reproducibility of results (see Rossner et al. 2007, 2008; TS 2008b) and it is a monopolist since TS has become by far the most influential player within the field of citation metrics. This monopolistic power is derived mainly from its database, in which most journals want to be included, and, therefore, figures as a main reference case in this paper.

So far we have seen that citation metrics are relevant for the distribution of “influence,” be it institutional or intellectual, within a certain field. The logic of recognition within scientific communities is still coined by what Robert K. Merton (1968) called the “Matthew Effect in Science,” i.e. that “more reputation” will lead to “higher reputation gains” in the future and vice versa. The crux with citation metrics is now that they exactly resemble this pattern and eventually measure their own effect; they do not only distribute “influence within a certain field,” but they also measure, not at least due to the methodological errors indicated above, exactly the same variable, namely “influence within a certain field,” instead of the quality of scientific contributions.

Impact factors, as one citation measure, are useful in establishing the influence journals have within the literature of a discipline. Nevertheless, they are not a direct measure of quality and must be used with considerable care. (Amin and Mabe 2000: 6)

Thus citation metrics incorporate a kind of self-fulfilling prophecy leading to a scientific elite, which is able to reproduce its position via the mechanics of citation ranking. Consequently citation metrics make the redistribution of intellectual prestige much more difficult, by assigning “influence” primarily to those already “influential.”

From a Gramscian perspective citation metrics are an interesting phenomenon. Their complementarity to the traditionally conservative habits of prestige-distribution in science – as expressed by the Matthew-Effect (see also Dobusch and Kapeller 2009a) – makes them a “hegemonial amplifier,” an institution directly associated with the strengthening of an influential intellectual elite, a dominant paradigm, or a prevailing mode of thought.

This does not imply, of course, that citation metrics were invented for reasons of conspiracy. Quite the contrary, one should argue that their complementarity to existing interests and habits lead to a relationship of mutual readjustment and reinforcement between scientific elites and citation metrics. In Gramscian terms one should view citation metrics as an “organic institution” analogous to the famous “organic intellectual” (see Gramsci 1994 [1927-35]: 1,497-1,503), where the former subsequently stabilizes the societal position of the latter. Hence citation metrics evolved accidentally and have survived partially because of their usefulness with regard to specific dominant interests and elites.

This story fits well in a Gramscian picture, since science can be understood as a powerful, if not decisive, element of what Gramsci called the “civil society,” i.e. the part of society producing “consent” among the population by influencing “public opinion”; thereby it relieves the “political society,” whose primary *modus operandi* of ruling consists in “force” (Gramsci 1994 [1927-35]: 916). Few scientific disciplines fit into this picture of the Gramscian “organic

intellectual” as well as economics, which is politically relevant, occupies a powerful role in public discourse, and has a paradigmatically dominant mainstream theory with a clear pro-market stance. In this sense mainstream economists can even be viewed as an archetype of an “organic intellectual” of the capitalist class, resembling the Marxian proverb of “the ruling ideas,” which are always “the ideas of the ruling class” (Marx 2004 [1845]: 64). By strengthening mainstream economics, citation metrics also amplify and stabilize (e.g. in face of a financial crisis) the intellectual prestige and reputation of mainstream economists vis-a-vis the public. Therefore, citation metrics are not only a conservation mechanism within science, but also have a societal role by indirectly influencing the public discourse and thus making them a *hegemonial device*.

## 2. Citation Metrics and Institutional Power in Economics: Some Empirical Evidence

If citation metrics are a hegemonial device positioned within the scientific institutions, they necessarily also have a paradigmatical dimension, which can be assessed through the usage of citation data. Thereby analyzing citation data offers valuable insights into the structure of a discipline’s internal discourse. Since “talking with each other” in science implies “citing each other,” one can trace, by looking at citation data, which lines of conversation exist within economics and where ignorance prevails. In what follows I will give a short overview of the most important results of a series of studies based on various data-sets and dedicated to different aspects of the economic discourse (see Kapeller 2010; Dobusch and Kapeller 2009b; Dobusch and Kapeller 2009c). However, as already indicated, the main data source utilized in this paper is TS’s main database: the *Web of Science*. Despite the obvious limitations of this database (see Kapeller 2010) it is interesting to observe how the most important institution (that is the central *hegemonial device*) in quantitative evaluation depicts heterodox citation patterns.

### 2.1 The role of pluralism

To gain a broad picture on the discourse in economics, especially between orthodox and heterodox journals, I tried to compare orthodox and heterodox journal groups within my studies. The overall finding was basically that – when compared “en bloc,” i.e. heterodoxy and orthodoxy understood as two distinct paradigms – heterodox journals are *externally pluralist* (they import citations from mainstream journals, i.e. talk to them), while orthodox journals are not *externally pluralist* (they do not import citations from heterodox journals, i.e. ignore them). But when looking at the internal discourse within these two paradigms one reaches the inverted result: while orthodox journals are *internally pluralist*, i.e. they primarily cite other orthodox journals, indicating an active conversion within their paradigm, heterodox journals are not *internally pluralist*, i.e. their main sources of citations are mainstream journals and journal-self-citations (in contrast to citations of *other* heterodox journals). The following table illustrates this basic result by analyzing the citation patterns of 26 economic journals (13 “orthodox” and 13 “heterodox”) in 20 years (1989-2008) as depicted by TS’s *Web of Science*. Thereby all citations to articles published after 1989 have been counted.<sup>3</sup> The concrete selection of journals is based on the

<sup>3</sup>I obtained the data for this table from TS’s *Web of Science*, which suffers from a rather idiosyncratic understanding of “citations.” Since *Web of Science* does not deliver direct reference data, but only the total amount of “citing articles,” double or triple citations of another journal in a single article (e.g. an article in the *Cambridge Journal of Economics*, citing two articles from the *Journal of Post-Keynesian Economics*) count as single citations. The concrete selection of journals is shown in Appendix A.

**Table 1.** Citation networks constituted by 26 leading orthodox and heterodox journals (based on data from the *Web of Science* 1989-2008)

	percentage of citations from top 13 heterodox journals	percentage of citations from top 13 orthodox journals	percentage of intra-network (heterodox/orthodox) citations excluding self citations
in top 13 heterodox	52.42% (intra-network)	47.58% (inter-network)	13.46% (intra-network)
in top 13 orthodox	2.85% (inter-network)	97.15% (intra-network)	68.79% (intra-network)

*Journal Citation Report 2007 (JCR 2007)*, which is basically a ranking of journals according to the impact factor in 2007. The first 13 journals in this ranking are considered as “top 13 orthodox,” while the “top 13 heterodox” journals have been identified in accordance with Frederic S. Lee’s “Heterodox Directory” (Lee 2009b), which collects journals which are *open* to heterodox research (although they might not identify themselves as “heterodox”).

Table 1 shows that orthodox journals cite mainly themselves (columns 1 and 2), thereby emphasizing the importance of their citation network (column 3), while heterodox journals cite heterodox and orthodox articles in fairly equal shares (columns 1 and 2), deemphasizing the role of other heterodox journals (column 3). This result is problematic because of three reasons. First, a lack of internal discourse within heterodoxy implies a lack of conversation and understanding, a gap that diminishes the breadth of ideas normally associated with heterodox economics. Second, it is therefore questionable whether heterodox economics constitutes a single competitor to mainstream economics, which seems to be a necessary precondition for paradigmatic change in economics (see Dobusch and Kapeller 2009a and Sterman and Wittenberg 1999 for a more thorough investigation of this claim). Third, the citation practice sketched above leads inevitably to strategic disadvantages in terms of citation metrics.

## 2.2 Heterodoxy versus orthodoxy within citation metrics

Since the methodology of TS favors big paradigms, the heterodox economics’ potential for success within citation rankings is small. A common finding in all the data-sets is that heterodox journals relatively strengthen orthodox journals in terms of citation rankings, not least because citations set to criticize mainstream articles are counted in their favor within the content-blindness of simple citation counting.

The reason for this is a striking difference between the citation habits of orthodox and heterodox economists, which is implicitly contained in Table 1 and illustrated in the following table.

The frequent finding that heterodox journals import much more citations from mainstream journals than they export to them is no surprise, but simply a manifestation of the “strategic disadvantages” arising from the patterns in citation behavior as depicted in Table 2.

## 2.3 Specificities of tradition and method

My analysis also showed that there are partially significant differences in the citation patterns for different traditions or methodological orientations. Basically, these differences can be found on three levels: (1) the orientation of a journal (general vs. specific), (2) the specific school of thought a journal is related to, and (3) the methodological orientation of the article in question.

**Table 2.** Citation behavior of an average orthodox or heterodox economist (based on Table 1)

	Orthodox	Heterodox
Cite first	Your paradigmatic allies (68.79%)	Your paradigmatic enemies (47.58%)
Cite second	Yourself <sup>4</sup> (28.36%)	Yourself (38.96%)
Cite last	Your paradigmatic enemies (2.85%)	Your paradigmatic allies (13.46%)

Regarding the journal-orientation I found that general journals have a higher degree of internal pluralism (i.e. the discourse with other heterodox journals is more intense) and perform better in a citation-trade-balance analysis (interpreting heterodox and mainstream journals as two distinct countries) as compared to specialized journals *in the same tradition*. The most striking differences between schools of thought was that journals devoted to a radical point of view cited much less mainstream articles than the other heterodox branches (the *RRPE* will be examined in the next section). Regarding the methodological orientation I found that post-Keynesian journals (the *Journal of Post-Keynesian Economics [JPKE]* and the *Cambridge Journal of Economics [CJE]*) cite more mainstream articles when their own work relies on formal model-building or econometric techniques (Dobusch and Kapeller 2009c).

Since the current editions of the *RRPE* are not part of the TS database, it is only marginally represented in the above analysis. But as it is a central outlet for both – radical economics in particular and heterodox economics in general – I examined the citation behavior of the *RRPE* from 2007-2008 to complement this overview with some specific information on the *RRPE*.

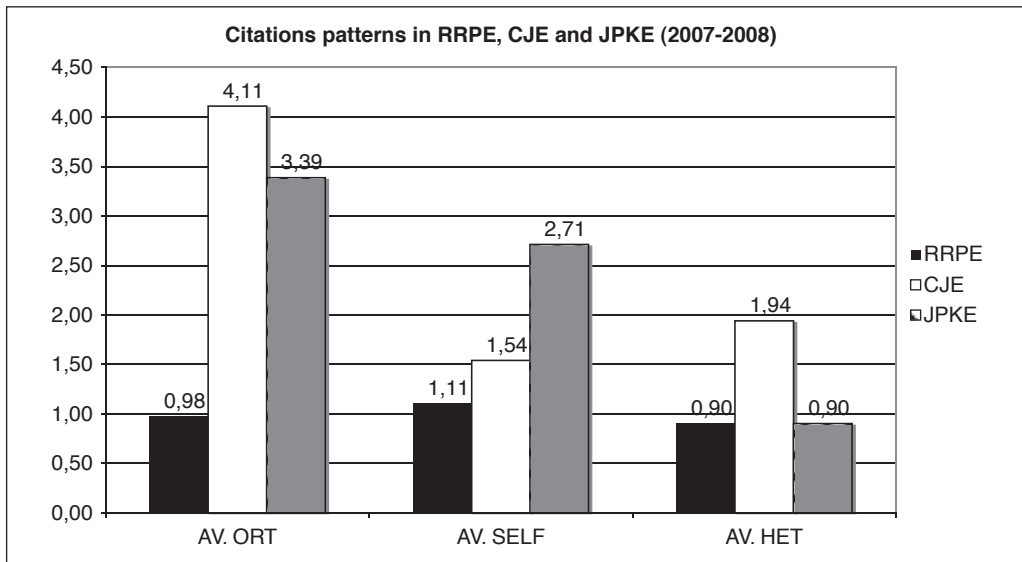
### 3. Some Comments on the Citation Habits in the Review of Radical Political Economics

Past research – as conducted by Cronin (2008) and Lee (2008) – attributes a high value of centrality (Cronin), respectively a highly (internally) pluralist orientation (Lee), to the *RRPE*. This indicates that the *RRPE* communicates a lot with other heterodox journals and serves as a kind of “node,” when the citation behavior within heterodox economics is viewed from a network perspective. To illustrate this trend I manually counted citations to the thirteen leading orthodox and thirteen leading heterodox journals utilized in Table 1 appearing in the *RRPE* between 2007 and 2008. Additionally I compared this data with a perfectly compatible dataset (citations to the same 26 journals counted; same time span) of citation patterns in the *CJE* and the *JPKE*, two journals with a strong relation to the *RRPE* (see Lee 2009a: 53, 153-154).

Figure 1 demonstrates that the citation pattern in the *RRPE* differs from the other two journals mainly because it cites fewer orthodox sources: less than a third of *JPKE* and less than a fourth when compared to the *CJE*. On the other hand, its role as a node within heterodoxy – while being partially supported by the low amount of self-citations – is hardly confirmable within this sample.

Thus, we may cautiously conclude that the *RRPE* would perform well even in a trade-balance analysis, since it does not resemble the fatal routine most heterodox economics journals practice; on the contrary the *RRPE* cites mainstream journals, itself, and heterodox journals in fairly equal shares. There is, of course, the question how much the heterodox network in the *SSCI* would benefit from an inclusion of the *RRPE*.

<sup>4</sup>“Yourself” stands for a *journal*-self-citation, i.e. citing the journal one is submitting to.



**Figure 1.** Citation patterns in the *RRPE*, the *CJE* and the *JPKE*

**Table 3.** All changes in journal impact-factors of the “top 13” heterodox journals in 2007 and 2008 triggered by a hypothetical inclusion of the *RRPE* within TS’s *Web of Science*

Journal	Year	2- or 5-year IF	Without <i>RRPE</i>	Including <i>RRPE</i>	change
<i>Cambridge Journal of Economics</i>	2007	2	0.7	0.709	0.009
<i>Cambridge Journal of Economics</i>	2007	5	0.767	0.784	0.017
<i>Feminist Economics</i>	2007	5	1.23	1.26	0.03
<i>Journal of Economic Issues</i>	2007	2	0.47	0.478	0.008
<i>Journal of Economic Issues</i>	2007	5	0.445	0.451	0.006
<i>Cambridge Journal of Economics</i>	2008	2	0.767	0.777	0.01
<i>Cambridge Journal of Economics</i>	2008	5	0.948	0.956	0.008
<i>Journal of Economic Issues</i>	2008	2	0.627	0.634	0.007
<i>Journal of Post Keynesian Economics</i>	2008	5	0.389	0.406	0.017

However, since the *RRPE* is currently not present within the *Web of Science* (while it was included from 1970 to 1989) but alleged to work as a node within the heterodox discourse, other heterodox journals might benefit overproportionally from the presence of the *RRPE*. To examine this question Table 3 depicts the hypothetical changes in Thomson Scientific’s famous “Journal Impact Factor” (there are two variants of the IF, one based on a two- and one based on five-year time span) for some core heterodox journals, if the *RRPE* had been included in the *SSCI*, for 2007 and 2008.

While it is clear from Table 3 that the *RRPE* makes a difference, we also see that this difference is not very big; it actually stems from one to a climax of four citations of one of these journals in the *RRPE*, which would have been relevant for the calculation of the respective impact factor. Thus, the question arises why the *RRPE* would not be of greater “benefit” (in terms of the impact-factor, of course) for the heterodox community when included in TS’s *Web of Science*. According to the data and the impression I got, when manually working through the *RRPE*’s reference lists, the answer to this question is at least twofold. First, articles cited from other heterodox

journals are often “outdated” in terms of the impact factor, which only includes citations to articles published within the two (five) years prior to calculation. Recognizing this limitation would urge heterodox authors to (additionally) cite *more recent* literature even if this is not absolutely necessary for their argument. Second, the *RRPE* cites a lot of heterodox material, which is not included in the *Web of Science* (thus also its role as a node within heterodoxy may be understated by Figure 1 and Table 3). This point nicely illustrates the fact that the *Web of Science* discriminates against heterodox economics by including only a small part of their journal network within its database.

Furthermore, the small numbers of citations needed to trigger a significant change in the impact-factor also indicates a possibility for improvement. As much as one would hope that the accustomed evaluation standard changes over time, in the short run there could be significant strategic gains from encouraging heterodox scholars to conscientiously cite each others’ recent published work, as this would enable heterodoxy to demonstrate “impact” according to prevailing standards of measuring scientific value.

## Appendix A

### *Journal selection Table 1 (impact factor in brackets):*

Top 13 orthodox:

*Journal of Political Economy* (4.19), *Journal of Economic Literature* (3.973), *Quarterly Journal of Economics* (3.688), *Journal of Accounting and Economics* (3.034), *Journal of Financial Economics* (2.988), *Econometrica* (2.972), *Journal of Economic Perspectives* (2.831), *Journal of Economic Geography* (2.679), *Review of Economic Studies* (2.539), *Journal of Economic Growth* (2.292), *American Economic Review* (2.239), *Economic Geography* (2.065), *Journal of Econometrics* (1.99).

Top 13 heterodox:

*Economy and Society* (1.678), *Ecological Economics* (1.549), *Work, Employment and Society* (1.051), *Review of International Political Economy* (1), *Journal of Economic Behaviour and Organization* (0.772), *New Political Economy* (0.702), *Cambridge Journal of Economics* (0.7), *Journal of Development Studies* (0.686), *Journal of Evolutionary Economics* (0.562), *Feminist Economics* (0.541), *Journal of Post-Keynesian Economics* (0.493), *Journal of Economic Issues* (0.47), *Economics & Philosophy* (0.444).

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## Bio

**Jakob Kapeller** is a young economist who accidentally became a philosopher. He is working as a university assistant in the Department of Philosophy and Theory of Science at the University of Linz. His research interests include the epistemology of the social sciences, the history of political and economic thought, and heterodox economics. Currently Jakob is working on his Ph.D. thesis which analyzes mainstream economics from an epistemological perspective.