THE ILLUSION OF CITATIONS FOR MEASURING ACADEMIC QUALITY

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1. Introduction

In a recent ACE Discussion Paper (2012, p. 2), David Richardson argued that "citation is a huge part of the foundational paradigm of what scholarship *is*." This "huge part" is indicated by the importance citations play in universities and government agencies in ranking individual academics, departments, and universities for intellectual quality, assisted by citations registered in the annual publication, *Journal Citation Reports*. Although supporting what could be called an absolutist view of citations, Richardson concedes that "citation counts" are "an incomplete indicator of scholarly 'quality'." Nevertheless, he believes that "successful integrative work will be read with engagement — as measured by citation counts and related metrics," and, accordingly, "dependence on citations cannot be dismissed as an unduly confining criterion." This paper contests these assertions. It argues that citation counting need have little to do with academic quality. Citations can measure a range of attributes, such as impact and influence, as well as quality. What influence means in academic circles, and how it differs from quality, is explored in the context of modern Christian economics.

This paper argues also that it is not possible in any objective sense to measure the extent to which the different contributions to the literature in Christian economics measure academic quality or intellectual progress. Using citations to assess these contributions is misguided. In our view, more relevant for Christian economics is the extent to which the contributions engage with Biblical analysis. Our programme for pursuing this objective is reported elsewhere (Beed and Beed, 2012). However, other approaches exist, such as exploring the economic implications of Catholic Social Thought. Discussing how the academic quality of different contributions to the literature in Christian Economics might be assessed would be a subjective exercise. Contributions utilizing other methodologies cannot be judged as "inferior" to ours. But there is no way of comparing the relative quality of each. It is impossible and unproductive to try and determine which approach is of superior academic quality to the other.

2. What Do Citations Measure?

The problem with using citation counts to measure academic quality can be illustrated by a comparison Richardson makes between two journals, one Christian, one non-Christian. He laments (p. 2) that *Faith & Economics* (*F&E*) "over the first decade of its existence… had less than 1/3 of a citation per year." "This compares quite unfavourably — by a factor of 41/2! — to another lesser, but more venerable, journal… the *Review of Social Economy*" (*RSE*). But there is no reason why citation counts between the two journals should approach each other. The comparison is between unlike entities, oranges with apples, journals with incomparable aims and objectives. Looking just at its present aims, *F&E* aims to encourage "Christian scholars to explore the relationship between their faith and the discipline of economics" (Editorial statement, No. 59, 2012). The *RSE* contains no subject orientation guidelines. These might be gauged from its Association for Social Economics website, as the "ethical foundations and implications of economic analysis." There is nothing about Christian faith here.

The *RSE* contains virtually no articles in the last five years conforming to the aims of *F&E*. Christian faith is an element barely mentioned. Over this period, it had two articles on religious behaviour, one on "Trust in Others: Does Religion Matter?," the other on "Competition and Participation in Religious Markets: Evidence from Victorian Scotland." The remainder of its articles were firmly in a secular mode. Suppose we assume that most economists are not practicing Christians, or, even if they were, are not interested "to explore the relationship between their faith and the discipline of economics." Therefore, no reason exists why *F&E* would be cited at all in any secular journal, including *RSE*. The Christian faith is probably not something that occurs to most economists, let alone any relation it might have to economics.

From this comparison of the two journals it might be concluded that the one with the greater readership and number of subscribers (*RSA*) will have the greater number of citations to its articles. That is, journals covering a broad spectrum of topics, like *RSE*, will receive more citations than journals encompassing a more restricted domain, like *F&E*. It is possible also that its greater frequency of citations might reflect literature searches made by researchers looking for references to the topic they are investigating. They will find more meat in the *RSE* than in *F&E*. These researchers will not read *RSE* cover to cover, but its

citation strikes will be higher than if these researchers did not so refer to its articles. In sum, citation counts to *F&E* and *RSE* are likely to differ because they are directed to different audiences, contain different subject matter, and have disparate readership sizes. None of these three considerations need have anything to do with relative journal or article quality.

The significance and meaning of citations have been explored extensively. A comprehensive review by Bornmann and Daniel (2008, p. 46) argued that citations are "a function of many variables besides scientific impact." They reviewed studies that attempted to assess some of these variables. Citation numbers depend on the number of journals in a field. For example, they report (p. 46) that the chance of an article being cited was "related to the number of publications in the field," small fields attracting "far fewer citations than more general fields." This would help explain, say, why *ACE Discussion Papers,* and *F&E* are little cited in the general corpus of economics literature. Journal visibility and internationality affect citation frequency.

Citations can be manipulated by journal editors and authors. A noteworthy example of this process was the undertaking by *Folia Phoniatrica et Logopaedica* in constructing a five page article in their journal in which a citation appeared to all their sixty-six articles published from 2005-2006. They realized this exercise was "absurd," but was made deliberately to highlight the absurdity of using journal impact factors to assess article and journal quality. With this contrived article, the journal's impact factor increased by 118 percent. As the authors of the paper (Schuttea and Svec, 2007, p. 281) noted, journals with low impact factors will not be sought for submission. On the basis of journal impact factors within their field "the 'importance' of phoniatricians is considered to be lower than larynologists and much lower than that of otologists. Consequently, phoniatricians are judged as less scientifically valuable than larynologists and otologists."

Citation is biased. Bornmann and Daniel (2008, p. 65) show that " in a survey of psychology journal editors and editorial advisory board members (Cronin, 1982), more than 80 percent of the participants believed that scientists frequently fail to cite all pertinent work and that authors tend to cite those whose views support their own. The citing behavior of scientists also includes manipulated citing strategies that reflect an effort to mention the works of respected persons and to deliberately apply 'citation machinery,' i.e. to include citations with the aim of calling the attention or gaining the favor of editors, referees, or

colleagues (Vinkler, 1987).

The above are just a few of the influences that have been documented to affect citation. They do not relate to article quality, however that might be measured. In sum, citations may reflect a range of non-quality factors. They may be perfunctory or substantive, negative or positive, ceremonial, and, in the extreme, even refer to papers containing fraudulent data. In one recent survey of social science academics, coercive citation — being required by editors to cite papers in their own journal — affected 20% submitting authors who objected to it. Citations can also be made to substantiate prestige and reputation, one's own or somebody else's. Interestingly, the Internet may now be changing citation practices. Papers freely available on the Internet are cited more than those not available (Lawrence, 2001, p. 521).

Citations can be affected in further ways by the editing/refereeing process. Papers have to be published before they can be cited, and this process determines whether submissions see the light of day. The dramatic experiment by Peters and Ceci (1982) suggested that editorial decision making and refereeing are not unbiased processes, a view echoed in other studies. Reviewers/editors may be especially critical of papers that contradict their own views. Divergent and/or critical contributions can lead to referees recommending rejection. The charge has also been documented that journals associated with particular faculties or associations give preferential treatment in publication to their members. "Non-quality" factors cannot be avoided in accepting/rejecting articles for publication. These include institutional affiliation, author's name and perceived status, the theoretical/belief position of referees, editor/author connection (Beed and Beed, 1996, pp. 384-389), as well as the gender of the contributor (women are cited less frequently than men). Disaffection with these processes is reflected in the interest in open-peer review in UK, and its use by the *British Medical Journal*, and *Nature*. Shatz (2004) is an encyclopedic analysis of reported instances of abuse in editorial/refereeing processes in academic literature.

Citations might be thought to proxy quality because "a substantial body of literature has shown that the number of citations to scientists' publications are correlated with other assessments of scientists' impact or influence" (Bornmann and Daniel, 2008, p. 46). These include prizes, honors, Nobel laureateships, research grants, and departmental and individual rankings, including peer assessments. If these are determined on the basis of the social

construction of knowledge, and exhibit a high degree of intercorrelation, they may all be measuring the same thing: influence or impact within the prevailing paradigm

Take Nobel Prizes in economics. No method free from the influence of value judgements and opinion selects the shortlist of potential prize winners. It is quite possible that citation counts play a part. So do other factors, like the number of books and articles authors have published, the journals in which they have published ("higher" quality journals being measured by citation counts), the length of their contributions, the scope of their renown, the perceived influence of their work, and other factors. The circularity is that citation counts (a disputed quality) affect award of the prize; the prize increases citation counts. The self-referential nature of this mythology compounds the notion that citation counts reflect quality.

On other criteria, do Nobel Prizes measure the best in economics? A prerequisite for Nobel Prizes in other disciplines is that they have conferred the greatest benefit on mankind. No such prerequisite applies for Nobel Prizes in economics. Because of criticism in awarding Nobel Prizes in economics, it is not named in these terms, even though general usage of the term is widespread. Nobel family representatives have periodically eschewed the idea of awarding such a prize in economics, on the grounds that it was biased to Western economists (few non-English-speaking economists have won), and represented "a PR coup by economists to improve their reputation" (Nobel, 2005). A steady stream of critique continues against the concept of an economics Nobel Prize, including from the feminist fraternity (only one woman has been a winner among seventy men), and from the libertarian tradition (Gertchev, 2011). One of the critics was Hayek who castigated the prize, even while accepting the award himself. Needless to say, only two or three economists outside the mainstream have been awarded the prize, including that shared by Hayek and Myrdal.

All these considerations suggest that assessing academic quality is not a straightforward process. Quality is an immeasurable concept, not easily captured, and certainly not by one metric such as citation frequency. Academic quality measures are used extensively today, but "the choice of indicators rests with those doing the ranking" (Clarke, 2002, p. 443). As Sawyer (2012) points out, university ranking studies do not satisfy the basic precepts of metrology. They are more in the nature of opinions. Subjective judgement cannot be avoided, so that the true value of academic quality is unknown.

In relation to academic papers, the problem persists that "no assessment of a paper's

quality can be made without calling on value judgments" (Johnes, 1988, p. 56). Yet, "value judgments may differ between people making the quality assessment" (Beed and Beed, 1996, p. 378). Citation counts are not a reliable input into the process of assessing academic quality, despite the frequency to use them on this basis. As Van Raan (2005, p. 133) puts it, the "ranking of research institutions by bibliometric methods is an improper tool for research performance evaluation." Bornmann and Daniel (2008, p. 63) hold that neither their study nor similar studies "support the basic assumption of evaluative bibliometrics that scientists really cite their intellectual or cognitive influences." From the 1970s until now, this conclusion has been reiterated, an instance being Walter et al. (2003, p. 280) reorting that the method is "conceptually and technically flawed" (similarly Seglen, 1997; and Leimu and Koricheva, 2005).

From the above discussion, Table 1 condenses features that can influence the degree to which journal articles and books cite other articles and books. Academic quality is not captured by these factors. For instance, that a paper includes a summary of the existing literature in some field (item 1), does not indicate that the author of the paper doing the citing thinks that the cited papers represent the "best" or outstanding" contributions to the field. S/he might be citing them because they give a background context to the topic of the paper in which s/he cites them.

Table 1: Citations Are Made To:

1. Summarise existing literature.
2. Summarise a theoretical, methodological or philosophical approach.
3. Criticise a standard work.
4. Demonstrate how extensive the citer's knowledge is — "tokens of status, credentials, or rituals" (Bavelas, 1978, p. 161).
5. Work that is persuasive.
6. Work first in a field.
7. Support the citer's case.
8. Alert readers to forthcoming and unfamiliar work.
9. Authenticate facts.
10. One's own work (self-citation).
11. To works that are representative examples of a body of literature.

12. Work offering an imprimatur to the citer, for example by a Nobel Prize winner — the "halo effect."
13. Establish an appeal to intangible academic respectability.
14. This propriety includes meeting the demands of journal editors and referees.
15. Editors' demands may require citation from the journal to which the article is submitted.
16. Papers written by members of the same invisible college to which the submitter belongs.

Source: Beed and Beed (1996); Bormann and Daniel (2008); Arnold and Fowler (2011).

It follows that articles and books may *not* be cited on grounds counter to those in Table 1. A few of these are in Table 2

Table 2: Citations Are Not Made To:

1. Articles/books by authors working in a different school of thought, paradigm, or invisible college from the citer. For example, authors in the *American Economic Review* or the *Journal of Political Economy* do not cite articles in the *Journal of Socio-Economics*, the *Review of Social Economy*, the *International Journal of Social Economics*, and many more.
2. Your "intellectual competitor," critic, or adversary. You do not want to give her acknowledgement or encouragement, or draw attention to her criticism.
3. Journals of a different nationality from your own. Thus authors in the *American Economic Review* cite articles in the UK *Economic Journal* less than might be expected. Consequently, the *Economic Journal* is ranked low in US citation studies, and the Australian *Economic Record* even more lowly.
4. Articles not currently in a bandwagon area, such as economic methodology, and the history of economic thought, or happiness studies ten years ago. If economics is becoming more segmented into specialisms, each with its own journal(s), less inter-segment citation will occur.

Source: Beed and Beed (1996); Bormann and Daniel (2008); Arnold and Fowler (2011).

3. The Invisible College of Modern Christian Economics

A variable investigated by Bornmann and Daniel was the extent to which social networks influence citation frequency. Their findings (p. 47) show that:

> authors cite primarily works by authors with whom they are personally acquainted. Cronin (2005a) finds this hardly surprising, as it is to be expected that personal ties become manifest and strengthened, resulting in greater reciprocal exchange of citations over time.

Another dimension to this is that authors are more likely to cite those who agree with them than who disagree.

All this is related to the concept of invisible college (mentioned as point 16 in Table 1). The claim is that the frequency of citation counts is affected by the degree to which journal/book authors write within the domain of their invisible college, in the case here, of modern Christian economics. The concept of "invisible college" emerged forty years ago (Crane, 1972). It means a "social circle" (p. 14), with no formal leadership, although with its central organizing/speaking figures. Members write in their own journals, collaborate with each other, and contribute to their own conferences. Its communal state of knowledge belief obtains a "virtually universal consensus." Most adherents to their college "accept this knowledge as a given and as a starting point for their research" (Bornmann and Daniel, 2008, p. 70). Each college is a strong aid to the maintenance of solidarity within the subject area.

Table 3 suggests features of the core knowledge of the invisible college to which most US Christian economists belong. UK Christian economists are likely to subscribe to fewer of the 20 tenets than their US counterparts. Why should a US pattern be reported in a UK journal? The US orientation of Table 3 can be defended on two counts. First, Richardson's article is to be published as a chapter in the forthcoming, *Oxford Handbook of Christianity and Economics*. This book is likely to attract higher citation counts than is typical for Christian economics' work because of the breadth of its scope. Most of its authors are American, and those that are non-UK can be included in the US invisible college. Few US

contributors are outside the invisible college. Second, this article is directed to the paper of a prominent US Christian economist who overwhelmingly cites US references. On this basis, the US orientation of Table 3 seems reasonable, and British Christian economists can compare themselves with it.

Table 3: Characteristics of the Invisible College of Modern US Christian Economics

1. Orthodox economic analysis without Biblical input is the preferred *modus operandi*.
2. This is because a sphere of human activity— the economic — is regarded as autonomous and separate from the normative Biblical context dealing with comparable spheres of human activity.
3. Therefore, secular economic concepts take priority in analysing phenomena in this sphere, with which the Bible is also concerned.
4. Economic analysis untainted by Biblical input is a superior way of analysing economic activity.
5. Economic techniques/models may be pitted against the Biblical text, but the Biblical text is rarely pitted against economic techniques/models. Little attempt is made to analyse the economic implications of Scripture with potential relevance to the present day.
6. In the main, their economic investigation measures itself against the writings of theologians/church statements, not the Biblical text.
7. Biblical ethics applies only to interpersonal not impersonal relationships.
8. Biblical ethics applies only to simple agrarian economies, not to complex industrial economies.
9. Economic systems are to be judged only by the procedural rules under which they operate, not by the outcomes they produce, or by the intentions and motivations of its participants.
10. New Testament ethics apply only to the body of Jesus' followers, not to the wider world.
11. For example, Jesus' governance teachings apply only to relationships within His movement.
12. That Jesus' teachings embody the essence of the Mosaic Law that thereby has to be examined, receives little recognition.
13. By ignoring this connection, claims can be made that Jesus does not advocate a number of normative propositions, such as reduction in material inequalities; He only favors alms-giving and philanthropy.

14. The poor nowadays are to be assisted by charity, not by more systemic approaches, such as generating jobs for them.
15. It is believed that poverty nowadays is not caused mainly by oppression and exploitation, contrary to biblical explanation.
16. Poverty is not a problem in developed economies; Biblical notions of poverty are no longer relevant.
17. Their biblical analysis, where it does occur, usually involves only "plain reading" of biblical texts, not substantive textual analysis.
18. Views contrary to their own held by other Christian economists are barely mentioned or assessed.
19. Views critical of economics from within economics are not examined.
20. Citation is made only to views within the college sympathetic to their own — the Matthew effect.

Each college supporter does not necessarily subscribe to all twenty points of the table, but may to a majority of them. Because of the degree of agreement among college members, the features of college belief are no longer debated. They are believed to have been resolved in favour of the list, and therefore put to rest. Since this paper rejects the characteristics of college belief, and eschews its membership, an assumption here is that an economic analysis based on normative Biblical precepts would produce a different way of looking at economic reality. This has barely emerged in Christian economics, and there is no way of demonstrating the validity of the assumption. Nevertheless, this paper contends that the twenty features of the college do not conform to normative Biblical thought.

Accepting the twenty features offers little in the way for a Biblical or Christian ethics to inform the contemporary economy. Conversely, a dominant strain in modern Christian ethical thinking believes Biblical ethics are still relevant to guide the modern economy. In the Catholic tradition, for example, Pope Benedict XVI (2009, n. 4, 34) holds that " adhering to the values of Christianity is… essential for building a good society." If Christian economists were convinced by this claim, they would be industriously exposing Christian values necessary to develop this "good society," a process that does not seem to be occurring. In contradistinction to item 2 of the list above, Pope Benedict XVI argues that "the conviction that the economy must be autonomous, that it must be shielded from 'influences' of a moral character, has led man to abuse the economic process in a thoroughly destructive way."

Again, consider points 18 and 19. College subscribers treat economics as though it were an embodied whole, not subject to internal dissension. Orthodox fields of economics are cited, such as game theory, implying that they present the substantive truth of the fields to which they refer. Yet, the overwhelming majority of work in game theory does not relate to the real world. It concerns only hypothetical situations, with little empirical relevance. Even with its own puzzles, no evidence emerges that its mode of explanation is superior to alternative verbally-based methods. This conclusion applies also to the work of Christian economists relating economic models to Biblical material. Compared to conclusions from alternative and prevailing modes of Biblical analysis, they are not able to demonstrate that their exercises produce intellectual progress. In reality, secular academic economics is divided into divergent and competing schools of thought, of which 26 heterodox schools can be identified on the web, few of which are cited by Christian economics' college members. To suppose that economics has a sufficient unanimity in method, purpose, and result to be able to explain human behaviour, and to guide public policy, is illusory. The lack of unity within economics is ignored.

Add in point 20. This means that Christians writing about economic matters — economists, theologians, and others — who do not subscribe to the prevailing consensus or paradigm of the invisible college will not be cited. It cannot be concluded from this hiatus that their work is of inferior quality to those who are cited. The blanket of silence need not convey the judgment of poor quality, but it does imply rejection. In all probability, their articles/books are not read by college members. Perhaps this is indicated by the absence of response to their ideas.

Even work by college members can go unnoticed. Richardson regrets that "several recent high-profile American efforts along integrative lines are virtually uncited, even by fellow economist-integrators" (p. 3). He notes that nearly 20 papers published in *F&E*, and the *Journal of Markets and Morality* "on the integration of the Christian faith and scholarship in economics," in 2003, and the subsequent book from them, have received minimal citation. Richardson speaks highly of Barret's *The Social Economics of Poverty*, but this too is barely cited elsewhere. As Richardson observes (p. 2), "something discouraging can be learned when research contributions are rarely or never cited." He is loath to say what this is. Perhaps he thinks it reflects poor scholarship. But one could say also that such research is too

challenging to the prevailing paradigm or consensus in orthodox economics. Even Richardson accepts that economics is dominated by particular modes of thought and technique (p. 20). He cites Marglin approvingly (p. 20) that economics contains a "center of gravity," "a mainstream so dominant that the other streams have become mere trickles."

This phenomenon applies as much to the field of secular economics as to the Christian college. It is most obviously recognized in the division between orthodox and heterodox economics. Richardson might think heterodox economics is "incoherent" (p. 20). But it still manages to produce a steady stream of books, and articles in its own journals (like the *Journal of Post-Keynesian Economics*, *Journal of Economic Issues*, *Review of Radical Political Economy*, and *Real World Economics Review* with over 20, 000 subscribers, even the *Cambridge Journal of Economics*). It has its own international associations and conferences. Needless to say, few articles in these journals are cited in the orthodox mainstream literature. Richardson's only reference to this issue is mention of heterodox, Tiemstra's 2009 article. On principles for a new economics, it has received no citations (p. 20).

Biblical analysis is the main missing quality from college belief. This is evidenced by Richardson (p. 1; original emphasis; p. 3) in his assessment of "recent attempts to *integrate* faith and economics," deciding to omit "economic interpretations of Scripture." A survey of explorations of the relationship between faith and the discipline of economics, as the US Association of Christian Economics puts it, cannot reasonably leave out "economic interpretations of Scripture." If "it is hard to think of any Christian principle or value that is irrelevant to economic activity" (Claar and Klay, 2007, p. 21), then what Scripture infers about economic activity needs to be explored in relation to modern economic life. To call this type of work non-integrative is to let secular economics drive the ship.

Scriptural analysis can be distinguished from theology. This means "reflection upon the God whom Christians worship and adore," "systematic analysis of the nature, purposes and activity of God" (McGrath, 1994, pp. 117, 118). The focus of theology in the last three hundred years has progressively detached itself from the Bible. The upshot is that "modern theologians… make little reference to the Bible in their works" (Lunn, 2011, p. 4). One might say the same about Christian economist college members. Where they do respond to theologians, it turns out that the theologians to whom they are responding make little

reference to the Bible either. One exception to this statement is theologians who undertake Biblical analysis in relation to contemporary theories in social science, mainly social anthropology. This context group, however, is wedded to rooting its analysis in terms of the socio-cultural-historico context of the New Testament, and rejects extending its findings to the contemporary world.

4. Conclusion

According to Bornmann and Daniel (2008, p. 69), citations can be viewed as a "complex, multidimensional and not a unidimensional phenomenon." Their multidimensional nature is contained within a broader assertion, "that the cognitive content of articles has little influence on how they are received" (p. 49). In their view, the role of the invisible college, of schools of thought and paradigms is reflected in that "at the micro-level (local knowledge outcome) we can agree with the position of the constructivists that the content of solutions to scientific problems is developed in a social context and through a series of social processes. In this sense, the content of science is socially constructed" (p. 70). On this view, citations are rhetorical persuasive tools to make articles look scholarly.

Arnold and Fowler go further (2011, p. 434) in deriding the manner in which citation frequency is used to assess the academic quality of universities, university departments, individual academics and journals/books, and the way in which journals trumpet their impact factor based on citations. For the latter, they demonstrate the manner in which impact factors can be contrived. As they put it, "the cumulative result of the design flaws and manipulation is that impact factor gives a very inaccurate view of journal quality. More generally, the citations that form the basis of the impact factor and various other bibliometrics are inherently untrustworthy" (p. 437).

Criticism of citation counting has continued for the last four decades. The conclusions above are similar to those made by Chubin and Moitra (1975, p. 438) that researchers into citations have become "more suspicious" about their "use and intellectual content." A comment on citations made fifty years ago is still pertinent: "if your knowledge is meager and unsatisfactory, the last thing in the world you should do is make measurements. The chance is negligible that you will measure the right things accidently" (Miller, 1962, p. 79).

The literature criticizing citation use as a proxy for intellectual quality, embodying experiments to justify this conclusion, has a long history, but citation users today take little notice of it.

If citations were straightforwardly revealing quality, it might be possible to gauge how Richardson made his selection of the nearly one hundred references for his paper. Yet because citations are not of this nature, the picture becomes less obvious. Of the Christians cited, all (except Tiemstra) were from those adhering to the invisible college of Christian economics. Those at the margins of membership were omitted, such as Robert Nelson. Also left out were those outside the college, such as Michael Naughton, Helen Alford, Charles Clark, and Charles Wilber in the Roman Catholic tradition. But why stop at citations to measure supposed intellectual quality? Why not add in whether academic libraries possess the texts cited by Richardson. Are we to suppose that libraries not possessing the literature have made the decision that the missing books are below some threshold of academic quality. Half a dozen recent books in Richardson's reference list are not contained in the two major university libraries of a major city in Australia, Melbourne. Yet, this is not how their absence is likely explained. Instead, ordering librarians do not know of the books, and, apparently, no academics exist who want them.

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