

Flying in the face of illusion. A comparative study of the variables that interact in English-language scientific journals publishing translations.

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Abstract

Gabriel García Márquez joked that if you say you've seen an elephant flying, nobody will believe you. But if you say you've seen four hundred and twenty-five flying elephants, people probably will believe you. The "Illusion of Precision" is a perception shared by statisticians and translators alike. Holmes sought to add precision to Translation Studies by mapping out the territory. He placed practicing translators within an academic sphere that seeks to shed light on an all-too-obscure practice in which academics can employ empirical (statistical) measures but "naïve" translators are still confounded by the "illusion" that their labours count for something. What Holmes termed "function-oriented descriptive translation studies", or socio-translation studies, has to do with the 'influence exerted' as a consequence of the texts that are translated in a given context. In the world of science, English is the *lingua franca* and authors whose texts are translated and accepted for publication by the Anglophone gatekeepers of scientific knowledge often owe much to the translators that goes unrecognized. The decision to translate a journal from its original language into English has had mixed results (Robinson 2010, 2013) yet translators working into English feel they must be contributing to the "success" of their clients. The present study describes the major variables—access, author geographical location, authorship practices, citation practices, editorial board, editorial strategy, the Impact factor with its limitations and possible "manipulation", the Immediacy Index, internationality, journal geographical location, language, marketing, peer-review, and quality—that interact in the reception of scientific publications and the statistical methods used to assess the relative value of each in an attempt to determine whether academics or translators can empirically demonstrate the value of translations. Our conclusions are disappointing. Such is the complexity of the interrelations between variables that translators' illusions, despite the application of much statistical precision, remain illusions. It would seem that a translation's worth can, as yet, be quantified only in terms of sentiment and common sense rather than through solid, statistical evidence.

Keywords: Scientific publications. Impact. Scientific, technical and medical translation. Translation profession.

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Introduction

It is our naïve hypothesis that professional translators' work is worth something. And, if we accept Gabriel García Márquez's proposition that if you say you've seen an elephant flying, nobody will believe you, but if you say you've seen four hundred and twenty-five flying elephants, people probably will believe you (Dante 1981. Available at <http://sololiteratura.com/ggm/marquezvogue.html>), then the "illusion of precision" might lead us to think that the innumerable translations which populate prestigious scientific journals have a value at least equal to the weight of four hundred and twenty-five flying elephants. Holmes's map of Translation Studies included the precise niche in which to lodge this illusion when he defined function-oriented descriptive translation studies as the area concerned not with which texts were or were not translated but with "what influences were exerted in consequence" (1988:72). As naïve professional translators, we have a right to investigate the influences exerted in consequence of the publication of our translations.

To this end, we have formulated the hypothesis that

Scientific articles published in translation exert an influence greater than that achieved by the same articles in their source language.

To test our hypothesis, we first compared (Robinson 2010, 2013) a case study of the *Annales de l'Institut Pasteur* (AIP) (Bracho-Riquelme, Pescador-Salas et al. 1997, 1999) with the experience of the *Revista Española de Cardiología* (REC)*. By different means, the editors of these non-English language journals decided to introduce translations into English in order to enhance the influence exerted by their publications (Bosch, Villacastín et al. 2002:2). Our comparison is based in the use of a single variable to measure their success: the *Journal of Citation Reports* (JCR) Impact factor (IF). The editors of AIP had limited success as they could attribute only 11% of variation in IF to the translations into English. On the other hand, REC recorded an 87.9% increase when translations were first introduced (IF=0.959 vs. IF=1.802) (Alfonso, Bermejo et al. 2005:1239) and we concluded these had opened the journal to a wider readership and contributed to this unprecedented success (Alfonso, Bermejo et al 2005). We could say we had convinced ourselves we had seen an 87.9% increase in the number of flying elephants. However, the complexity of this issue is far greater than such a precise illusion.

Context

The illusion of reality extends far beyond Translation Studies. Martin (1986) argues the case for a "method of converging partial indicators" to be applied in the evaluation of basic research. He defines research as multidimensional and affirms that stakeholders' interests would be best

served by the analysis of multiple indicators together with peer review. He recognizes overlaps exist but suggests that despite this, if the analytical process is sufficiently rigorous, the convergence of results will provide satisfactory data for decision-making. In his analysis of scientific production in the form of publications, Martin discusses impact—defined as the actual influence exerted by a publication—and states it can be empirically assessed in terms both of citation counts, which are relatively easy and cheap to obtain, and of author- and journal-related factors: for example, author affiliation and/or geographical location are available to readers as are data on the journal such as the languages of publication and its availability in terms of the format of publication and distribution. However, his study of articles published within the field of scientometrics demonstrates that in reality the cost:benefit ratio is decisive and that empirical studies are discipline-based and tend to focus on one or two indicators: citation counts appear to be more appealing than the other indicators. Inevitably this leaves language of publication low on the list of priorities.

In the evaluation of basic scientific research, English plays a role as the *lingua franca* of scientific communication—the means by which results, the products of scientific investigation, are disseminated—but the concept of a language barrier clearly exists. Eugene Garfield, the “father” of the Impact factor, pointed to the danger of mutual exclusion (Garfield and Welljams-Dorof 1990) and *American Scientist* (Gibbs 1995) labelled the language barrier as its cause, preventing the English-speaking scientific community from learning about the non-English speaking developing countries’ research and closing the latter off from access to financial resources. The ethics of this exclusion were clearly questioned. At an anecdotal level, the language barrier has been described in internationally prestigious journals like the *British Medical Journal* (Vandenbrouke 1989), *Nature* (Bakewell 1992) and *American Psychologist* (Ardila 1982).

Empirical research of the issue largely centres on citation analysis with the focus placed either on the study of Science Citations Index (SCI) data, whether from the limited English-language journals index or the extended index, which includes non-English publications, or on author citation practice or journal choice. There is, however, a substantial literature on different aspects of bias. Analysis of the extended SCI confirms Garfield and Welljams-Dorof’s earlier warning that publication in non-English journals is prejudicial as they achieve lower IF scores than competing English-language publications (van Leeuwen, Moed et al 2001). In contrast, the value of non-English-language publications for their language communities is underscored (Reyes, Kauffman et al 1998; Bunout and Reyes 1998) and the move from the extended SCI to the English-language SCI, much sought after by editors, is criticized in relation to Spanish-language journals as putting at risk the journals’ reader-base (González-Alcaide 2010). The tensions between editorial ambitions and the readership are felt in all contexts (Chew, Villanueva et al 2007).

Research into authorial practice reveals that self-citation extends to languages and that authors tend to cite works published in their own language (Garfield 1990, Garfield and Welljams-Dorof 1990, Campbell 1990, Bookstein and Yizhak 1999) and in languages that are geographically and/or culturally closer to them (Lundberg, Brommels, et al 2008). Citation behaviour may be connected to choice of journal with some authors selecting national citations for domestic journals and international citations for international journals (Bekavac,

Petrak et al 1993). Although when seen in a historical context, making the transition from a national to a transnational science model is considered an indicator of growth and is found not to correlate with impact (Zitt, Perrot et al 1998), which coincides with the view that a preponderance of national language citations indicates a degree of “insularity” (Muñoz-Soler, Flores-López et al 2007:71). One citation analysis study of Chinese medicine finds a strong correlation ($r = 0.978$) between the citation of articles in other languages and the subsequent translation of these articles (Liu 1997).

Research into the nature and causes of the language barrier is abundant but authors and editors—human beings after all—vary in their perception of its nature: to some, it represents a threat, to others a challenge; all will find their position along this scale. Although it is difficult to quantify, the influence actually exerted by language can be seen in the impact achieved by the publishing journal and the editors of non-English-language journals clearly believe there is much to be gained by adopting English. Achieving publication in the English-language SCI is apparently based on the academic merit of contributions as “no significant correlation” exists between author affiliation/geographical location and citation of US or European publications (Luwel 1999:549).

Despite many criticisms of individual indicators, Martin (1986:351) suggests that “selective and careful use of such [quantitative measures of research] is surely better than none at all”. His hypothesis is that bibliometric indicators and peer-evaluated results should converge, even though he recognizes the degree and nature of the overlap between specific indicators and peer-review, and favours an approach that combines the two: “the method of converging partial indicators”. However, while illusion would have us believe this could work, the reality of the cost:benefit ratio means that many scientific studies are based on one or two indicators alone. The difficulties of gathering data to enable us to study multiple indicators means researchers tend to use the cheapest options. Citation counts are relatively economical to obtain and are considered sound enough because they are susceptible to empirical analysis. Language of publication is an accepted reality and as such its impact is seldom quantified (although Garfield 1990; Garfield and Welljams-Dorof 1992 are exceptions that prove the rule).

The Impact factor

Citation analysis has enabled researchers to produce rankings based on the frequency and impact of citations. Since the earliest days of its existence, academics have been aware that while frequency of citation reflects journal value and use, many other author- and journal-related variables are also involved: reputation; the degree of controversy or innovation the subject matter entails; the value of research funds available to the author(s); journal circulation; availability in terms of access online, via early-online editions, libraries, reprints; the submission-to-publication time lag; the number of articles published per issue; and others. Furthermore, the IF of a journal can only ever indirectly reflect on authors and serves no purpose in cross-disciplinary studies because it takes no account of the idiosyncrasies of each academic field.

The IF is calculated for the journal, not the articles and is simply the product of a formula that can be intentionally or unintentionally biased or influenced (Garfield 1972, Seglen 1997, Kurmis 2003). Itself a product of citation counts, the IF of a journal for a given year is

calculated on the basis of the number of citations of articles published in the two previous years divided by the number of citable articles published in those two years:

$$\text{IF for 2009} = \frac{\text{Total citations in 2008 and 2009}}{\text{Total citable articles published in 2008 and 2009}}$$

Total citable articles published in 2008 and 2009

Both the numerator and the denominator in this equation are open to intentional or unintentional influence. Chew, Villanueva et al (2007) identified a comprehensive list of the factors involved which largely coincide with those described by Seglen (1997) and Kurmis (2003) (Tables 1 and 2).

Table 1 Editorial strategy and factors that can influence IF calculations: Citation count

Citation count
<i>Active recruitment of 'high-impact' articles</i>
COURTING RESEARCHERS
HIRING EDITORIAL STAFF
<i>Improving services to authors</i>
SPEEDING UP SUBMISSION-TO-PUBLICATION TIME
ONLINE EARLY PUBLICATION
<i>Finding niches</i>
<i>Marketing</i>
PRESS RELEASES
ATTENDANCE AT INTERNATIONAL CONFERENCES
<i>Article selection</i>
THEME ISSUES
COLLEGIALLY WITHIN EDITORIAL GROUPS
<i>Online edition</i>
FREE FULL ACCESS
<i>Citation practices</i>
SELF-CITATION
COLLEAGUE-CITATION

Table 2 Editorial strategy and factors that can influence IF calculations: Citatable articles

Citable articles
<i>Reduce the number of citable articles</i>
<i>Publish longer articles</i>
<i>Redesign journal layout</i>
<i>Changing article type definitions</i>
<i>Negotiating citable articles with Thomson-Reuters</i>

Journal of Citation Reports citation counts are based exclusively on those journals included in the database. So, if editors decide to actively recruit authors it is in their journal's best interests that these should be authors with a track record of publishing in JCR journals. The strategic appointment and deployment of associate editors or other staff can help identify potential authors and topics leading to invitations for them to submit manuscripts. Improving the quality of services offered to authors also makes a journal more attractive. The submission-to-publication time lag is a notorious problem for authors, particularly in more dynamic fields, and any tangible advantage authors might gain by choosing one journal over another is important. The advanced "early online" publication of what are considered keynote articles is

also attractive as authors can be cited even before their manuscript has been 'officially' published. Editors can concentrate on publishing review articles and other manuscripts that are likely to increase citations (e.g. letters to the editor that comment on articles published in the same issue). They can attempt to pinpoint specific topics that, they hope, will encourage quality submissions on a new or controversial subject matter and journals published by large editorial groups or looser editorial 'clubs' can take advantage of this to ensure manuscripts are 'directed' to the most appropriate publications. Online access greatly enhances accessibility and free full text rather than subscription-only access guarantees readership. Advantageous citation is explicitly solicited by some editors: while self- and colleague-citation are recognized as common practice, these account for an unintentional 30% bias in favour of English-language journals, and flaws in the mechanics of calculating the IF lead to incoherencies such as duplicate publications of source language and English-language translations of articles—as in bilingual journals—being counted twice.

The number of citable articles can be limited and minimum/maximum article length established. Changes to the paper edition format can intentionally or unintentionally influence page numbers and, hence, length. The definitions of article types can be refined to tailor them to exclude less-citable contents. Moreover, while the decision as to which articles are considered citable is solely that of Thomson-Reuters, definitions are public and journals can negotiate with Thomson-Reuters over which documents are considered citable. All of these practices cause concern to some editors but are openly practiced by others (Chew, Villanueva et al 2007).

Nonetheless, Seglen can only propose peer-review in place of the IF (1997:502) and Kurmis concludes that there is "no obvious alternative" (2003:2453). The editors who collaborated with Chew, Villanueva et al "would not be unhappy if the IF no longer existed but felt that it served a purpose..." (2007:148). Where, then, does quality stand? And where is the language of publication?

From the perspective of the author, the IF is an institutionally-approved benchmark with significant repercussions that can affect an individual researcher in professional and economic terms. But it is not synonymous with journal quality. In a fairly crude way, the IF can serve as a yardstick by which to evaluate journals and, as such, help librarians judge which publications to subscribe to and which to ignore (Garfield 1972, Dombrowski 1988). In more empirical terms, using regression analysis, Minnerup et al (2010) established that research design complexity was a clear predictor of journal IF, not methodological quality: the 'best' articles in scientific terms, did not achieve publication in the 'best' journals. Quality is more closely linked to less tangible indicators such as the panel of reviewers, the manuscript rejection rate, the number of subscribers, multiple authorship, and the increasingly non-domestic origins of submissions (Benítez-Bribiesca 2002). The number and range of variables is such that the value of language of publication while clearly of importance becomes extremely difficult to measure.

Peer review

Whether we consider peer review as a complement or an alternative to other more statistically amenable indicators the complex nature of its relation with citation analysis is unquestionable. Citation analysis is based on the articles published in peer-reviewed journals

and the IF itself is indirectly a product of the peer-review process. So, we must carefully consider its possible flaws and limitations too. Unintentional bias in the process has been detected. A comparison of US and non-US reviewers' assessments of submissions to one journal showed that both tended to favour US manuscripts over non-US manuscripts—US reviewers significantly so (Link 1998). Scandinavian referees demonstrated a similar preference for English-language manuscripts over those presented in their national languages even when the quality of their content had been manipulated to ensure it was demonstrably inferior (Nylenna et al 1994). The peer review process is an essential component of editorial strategy. The initial selection of an internationally reputable panel of reviewers and the manuscript-by-manuscript decision-making as to who should review each text are key parts. Submission-to-publication times are of great importance to authors, and editors know that cutting the time lag enhances a journal's reputation. Policies that seek to reward reviewers may also influence all aspects of the process encouraging prestigious but overworked academics to participate and speeding up the process (Alfonso, Bermejo et al 2007). Peer-review is subjective, and experienced authors are fully aware that it is at times less than coherent.

An integrated approach

Yue and Wilson (2004a, 2004b) present a structural equation modelling analysis of journals in the field of clinical neurology in which their statistical analysis uses a regression technique. The authors gathered data on four groups of external factors that affect journal citation impact—“defined as a forceful consequence or strong influence” (2004a:309). These are: journal characteristics, journal accessibility, journal visibility, and journal internationality. Language of publication is included within the third group and they simply distinguish between English-language and multiple-language publications. Their results indicate that 78.5% of journal citation impact can be explained by the four composite external factors and that “language contributes little” [3%] to the formation of journal accessibility, which as a whole contributes only 29.6%. Their explanation is simply that over 95% of the journals in their sample were English-language publications.

The Internationality Index

A different and intellectually less-satisfying approach to the combined measurement of indicators (Zych and Buena-Casal 2009, 2010) considers all to be equal and calculates internally weighted scores for the components of each. From multidisciplinary psychology journals data is gathered on eleven indicators—language of publication, online access, international standards of publication, inclusion in the JCR, inclusion in databases, countries of affiliation of members of the editorial board, free online access, IF, countries of affiliation of authors, affiliation of the journal to “international” associations, and whether or not the journal's name includes the word ‘international’—chosen in a survey of over 16 000 scientists. Language of publication is scored against a weighted scale of the nine publication languages in the sample and first-placed English scores 4.2, third-placed Spanish, 1.8; a journal publishing in both languages scores 6.0 (2009:404). Binary indicators receive an “all or nothing” score (2009:405). These scores construct an Internationality Index rank table of the discipline.

The complexity we have seen throughout our reading has to a certain extent been reduced by the practice of grouping together indicators and while we do not necessarily agree with the details of these two studies, we consider this a more viable approach.

Variables

On the basis of our review of the literature we consider the major variables can each be defined and measured in a specific way (Table 3) and that the relevant data on each can be gathered. We have ordered the variables in groups which we consider more appropriate for our purposes, specifically separating languages of publication from the other indicators.

Table 3 Quantifiable variables that influence journal citation impact grouped for analysis. (EN = English-language)

Variable	Defined as..	Quantified as...	Obtained from..
<i>Access</i>			
FORMAT	The formats in which the journal appears	Binary measure: paper; online; free full text access online	Journals; http://ulrichsweb.serialsolutions.com/
CIRCULATION (BY FORMAT)	Copies per issue; visits to website; downloads of pdf files	Numbers	Journals; http://ulrichsweb.serialsolutions.com/
<i>Citation practices</i>			
SELF-CITATION	Explicit editorial encouragement for authors to cite other publications in the same journal	By default 0; scored +1 per year	Manual search of journal
<i>Editorial strategy</i>	The conscious adoption of any specific measures (included in Tables 1 and 2 but not elsewhere in this list)	By default 0; scored +1 per year	Manual search of journal
<i>Geographical location</i>			
JOURNAL	Geographical location	Recorded as EN or Non-EN	Journal
AUTHOR	Geographical location of individual authors	Recorded viz journal location: National (non-EN); National (EN); Non-national (non-EN); Non-national (EN)	Journal database of affiliations and/or correspondence addresses
EDITORIAL BOARD	Geographical location of individual members	Recorded viz journal location: National (non-EN); National (EN); Non-national (non-EN); Non-national (EN)	Journal database of affiliations and/or correspondence addresses
<i>Citation indices</i>			
IF (IMPACT FACTOR)	A measure of the frequency with which the average article in a journal has been cited in a particular year or period	IF scores	http://thomsonreuters.com/products_services/science/science_products/az/journal_citation_reports/
II (IMMEDIACY INDEX)	A measure of how quickly articles are cited after publication	II scores	http://thomsonreuters.com/products_services/science/science_products/az/journal_citation_reports/

Variable	Defined as..	Quantified as...	Obtained from..
<i>Language of publication</i>	Language(s) the journal is published in	EN only; Non-EN only; Bilingual (+ EN); Multilingual (including EN)	Journal
<i>Visibility</i>	The online and print abstracting and indexing services that list the journal	Numbers, recorded as EN or Non-EN	Available from http://ulrichsweb.serialsolutions.com/

A number of pertinent factors—bias, authorship practices, quality—are not susceptible to quantification but cannot be ignored.

Further research: Partial Least Squares (PLS) Regression

The statistical analysis conducted by Yue and Wilson (2004a 2004b) is commonly used in the social sciences and in applied and pure sciences as a means of predicting dependent variables from a large number of indicators. As we have seen, the complexity of the multiple indicators that influence journal impact is difficult to understand and we believe that this is a tool that could clarify the relative position of language with respect to the other indicators (Tobias 1999 [Available at <http://www.ats.ucla.edu/stat/sas/library/pls.pdf>], Abdi 2007, Núñez, Steyerberg et al 2011). Currently, statistical packages facilitate research enormously and it is our intention to proceed to a micro-study of *Revista Española de Cardiología* followed by a broader study of the bilingual English-Spanish cardiology journals listed in the JCR.

Conclusions

We can say that our initial hypothesis that

Scientific articles published in translation exert an influence greater than that achieved by the same articles in their source language

has minimal support from quantitative (van Leeuwen, Moed et al 2001) and qualitative (Muñoz-Soler, Flores-López 2007) studies but that the evident complexity of the topic and the necessarily discipline-oriented analysis of citation data make it difficult to reach sound conclusions—as difficult as sighting flying elephants, perhaps. The relative weight of language of publication reported by Yue and Wilson (2004a:327) was only 3% due, in their opinion, to the fact that over 95% of production in clinical neurology is in English. Nonetheless, just like translators, we flying-elephant spotters are stubborn creatures by nature and the conviction that in certain instances the 3% barrier must have been surpassed remains. Further research of the origins of citations may lead us to re-examine our beliefs and postulate a stronger relationship between language of publication and circulation than between language and impact. This remains to be seen. The methodological approach of grouping indicators and applying regression analysis do, however, seem essential to our making further progress.

*Conflict of interests

Since 2003, Bryan J. Robinson has collaborated with Elsevier España S.L. as a translator of articles published in *Revista Española de Cardiología (English Edition)* by virtue of a contract with the Fundación General Universidad de Granada-Empresa.

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