



Scientific credibility

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Abstract

Judging the credibility of information from the point of view of the reader is generally indirect and involves vicious cycles. It is possible to achieve direct judgements, but this requires special attention and preparation.

1 Introduction

In their responsible role, scientists must *trust* their information. Among various considerations (Perdicoúlis, 2012), this means they must know and *recursively* trust their sources of data, information, and generally knowledge. The sources that are meant to be *credible* in the scientific milieu are specialised publications, including books and serial publications commonly known as ‘journals’ or ‘periodicals’ — although their implied periodicity is questionable (Perdicoúlis, 2014c). So, how is the *credibility* of scientific information from the point of view of the reader to be judged? Or, even deeper, how is this credibility created?

2 Network

To facilitate the recognition of the credible (or not credible) sources in the scientific marketplace (Perdicoúlis, 2015), *brands*¹ are used in the same way as in the rest of the markets — for example, representing the credibility of the publishers and/ or the publications. From the perspective of the common² scientific reader, the way that credibility of information is established (or judged) is through other ‘credibilities’ — for instance, the credibility of the source, which is partly determined by the credibility of the source’s author, and that by the author’s institution. Thus, a whole ‘credibility network’ is established (Figure 1, ‘ \longrightarrow ’ pathways), although no *common* scientific reader is likely to ever question this — one just ‘knows’ the journals and the publishers to be trusted in every field. But are these perfect? Always? Can it be safely assumed that ‘once trusted, always trusted’?

¹From *brennen* [D], to burn; a mark of ownership made by branding — i.e. marking with a hot iron, as used for the identification of cattle; also known as ‘marque’ — from *marquer* [Scand], to brand.

²This is a generalisation, but captures the mainstream trend of current times — for instance, as evidenced in the hiring criteria for scientific jobs.

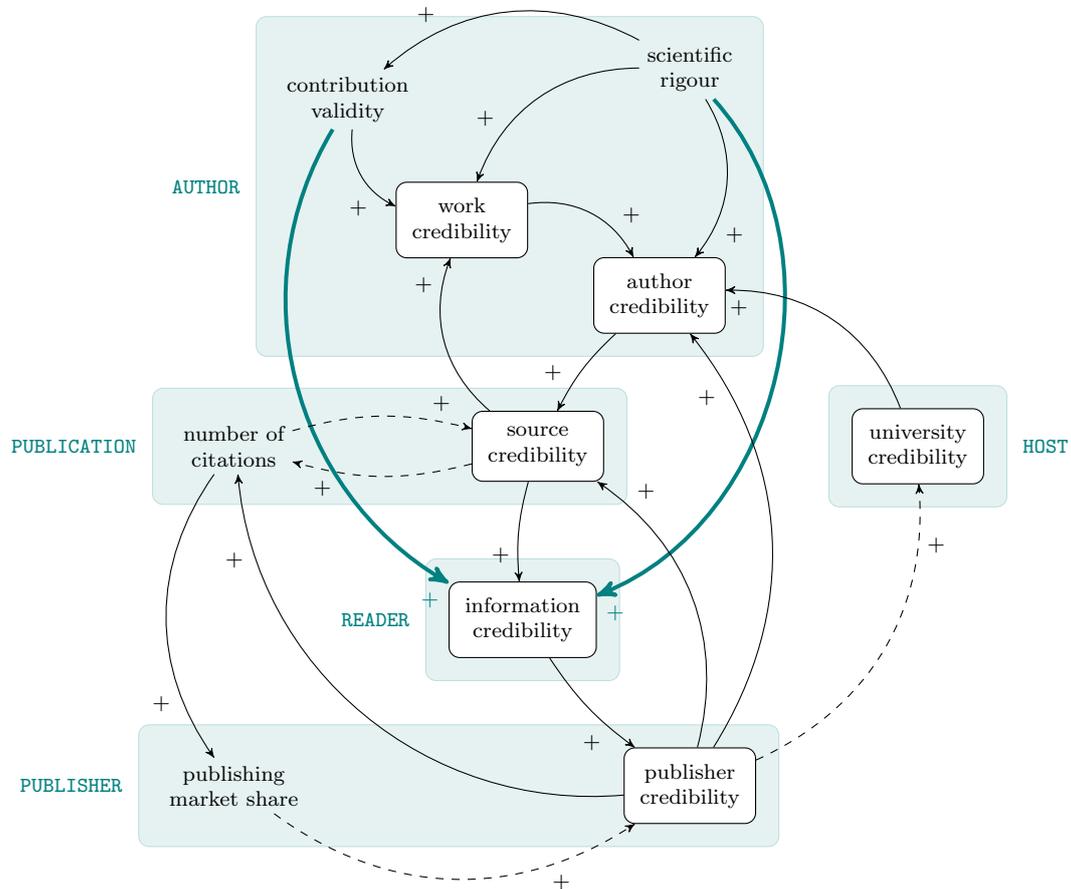


FIGURE 1 The credibility network around scientific information: forthright (→), innocuous (→), and questionable (---→) pathways; ‘credibilities’ in white rectangles; facts and values in plain lowercase text; stakeholders in uppercase text

Some *direct* relationships can be drawn from the actual work of the author to the credibility of the information conveyed to the reader (Figure 1, ‘→’ pathways). In such cases, the credibility of information depends directly on values (e.g. validity, rigour), but it is not influenced by other ‘credibilities’ and thus avoids the propagation of bias.

The reinforcing feedback loop between the credibility of a source and the corresponding number of citations — a ‘technical fact’ — deserves some attention. The relationship between popularity and credibility is rather naïve (Perdicoulis, 2013a, 2014b,c, 2015), and thus doubtful regarding truth or validity (‘---→’ pathway). Other questionable pathways include, for instance, the assumption that the credibility of a university depends (partly) on the credibility of the publishers chosen by its faculty, or that the credibility of a publisher depends (partly) on its market share. Such statements can be defended by stakeholders such as academic institutions and science publishers, but they do not seem to be immediately or irrefutably convincing.

3 Practicality

The credibility of information (Figure 1) may be sought either by direct pathways, in the domain of ‘proof’ (Perdicoulis, 2013b), or by indirect pathways (e.g. involving publisher credibility), in the domain of trust or belief. While giving credit³ is always ambivalent, there are good motives to choose the more objective pathways (i.e. closer to proof than belief) for their practical implications: scientific information is expected to contain low systematic and random errors (Perdicoulis, 2014a) — Figure 2.

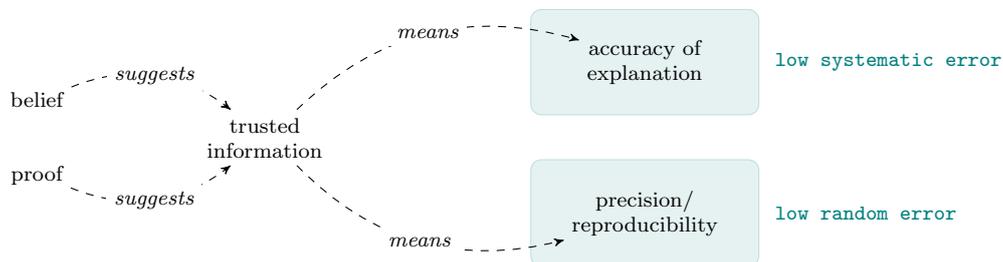


FIGURE 2 Trusted information is better judged for its practical implications

4 Discussion

It is generally assumed that scientists operate on judgement rather than prejudice. As professional thinkers under the scientific paradigm, they contract the obligation to judge objects and situations *per se* through reason, plausible references, and their own experience. Concerns are raised when judgement is made by *meta-information* proxy, and particularly when making judgements based on ‘image’ or ‘prestige’.

Beyond the scientific marketplace (Perdicoulis, 2015), two kinds of consumers can be distinguished: (a) those who judge the actual object they consider purchasing — for instance, by taking it for a ‘test drive’ — and (b) those who ‘buy by the brand’ because it is fashionable or ‘prestigious’. Who is better served? Who makes a smarter choice? And who is more responsible in their purchasing act? Somewhat more abstractly (i.e. philosophically), which of the two ways of purchasing involves an actual *judgement* about the (qualities of the) object of interest, and which one is made with *prejudice* — i.e. a preconceived opinion that is not based on reason or actual experience?

While in social contexts prejudice is confounded with trust (e.g. choosing friends from ‘good families’), in professional conduct it is rejected as bias — e.g. judging someone not by their acts, but by their ‘image’ created by their choice of ‘friends’ and ‘brands’: clothes, cars, and clubs. So, what will the choice of scientists be when it comes to selecting ‘credible sources’: judgement or prejudice? It would be disappointing if scientists were found to be opting for prejudice, and collectively that would be serious enough to question the current scientific paradigm — an opportunity for revolution (Kuhn, 1996).

³From *credere* [L], to believe, to trust.

5 Challenges

The mainstream thinking regarding the credibility of scientific information appears to have two signs of malpractice. The first sign is indirectness. To judge the scientific information directly, the judges must be appropriately educated, and the judgement becomes open to discussion — i.e. it is not an ‘one-off’ pronouncement of authority with perennial validity (Perdicoulis, 2013a). The second sign of malpractice is that ‘chained credits’ form vicious cycles (Figure 1). The ‘popularity breeds popularity’ thinking (Perdicoulis, 2013a, Figure 1) is quite common in the scientific circles, and one wonders why — especially after so much scientific training worldwide.

References

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