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Where is the trust in the peer review dynamic?

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The motto of the Royal Society is “nullius in verba”, which translates roughly as “take nobody’s word for it”, and this motto is furthermore emblematic of the conduct of science. We want facts and not opinions, verified results and not conjecture. From the time that we first started communicating scientific results, it has been recognized that scientific claims must be verified by someone who is not the maker of those claims, and who furthermore has no stake in the matter, in other words, a claim needs to be evaluated objectively. Peer review as a method of evaluation can be thought of as akin to an experiment, where the review process tests the hypothesis of a submitted paper. Peer review is however also a social process with human actors: authors, referees, and editors. As a process, peer review depends on trust, but in what way does that manifest? There are many agents in peer review: in addition to the human actors, there is also the institution that is the journal, as well as the publisher (e.g. APS) that stands behind the journal. People can also have trust in the very concept of peer review. If we accept as a proposition that publications are witnesses to science in the same way that people who attend scientific demonstrations are witnesses of an experiment, then how much do we trust this witness? A few further questions arise:

- If referees (and sometimes authors) are anonymous, what does this do to the mechanisms of trust?
- Is trust only possible between human agents, or can you trust a process or a journal in a similar way to trusting a certain car brand?
- Is an absence of trust the same as distrust?
- Is trust rational, or cognitive, or is it a practice?

In this paper I will attempt to locate the trust and ask how trust is earned, and, conversely, how it can be lost, using peer review as example.

¹I have a joint affiliation with Stony Brook University and APS and would like both listed, in that order, in the abstract