How old is *Braarudosphaera bigelowii*? The evolution and acceptance of scientific claims and what the sociology of science can say

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Scientific claims are described as synthetic affirmations that directly emanate from empirical evidence. To produce them, scientists are believed to assess both previous claims and the data collected and published in the scientific literature to justify the claims. Science progresses, it is assumed, as newer claims prove more capable of withstanding the test of newly-collected evidence. The sociology of science has been defying these simplistic assumptions for over 40 years, but in-depth case-studies remain scarce.

An international and multidisciplinary database of scientific and technical documents on the species *Braarudosphaera bigelowii* was constructed that spans 83 years, in order to identify as many scientific references concerning the species as possible, and to pinpoint claims about the age of its first occurrence in the fossil record. We identified 37 claims made between 1956 and 2016 that are grouped around the four main statements that it is of: 1) Tithonian age; 2) Berriasian age; 3) Aptian age; and 4) Cenomanian age. The claims were then related to each other in a citation map. Concomitantly, data contradicting a claim published before it was made, was quantified. We found that claims are apparently oblivious to dozens of studies offering contradictory empirical evidence because they do not acknowledge or refute them. These four statements have endured over time, and persist in parallel in the literature even now.

Four hypotheses tested whether ignored contradictory data comes from: 1) marginal authors; 2) marginal regions; 3) marginal documents; and/or 4) marginal publications. All hypotheses were refuted. The results indicated that consensus is not shifted primarily by data. In fact, every major shift in consensus was associated with the publication of a reference book by a renowned scientist. The authority of textbooks and the notoriety of their authors, rather than the systematic consideration of data and the collective discussion of claims, appears to be, in this case, the best explanation for how the claims have evolved.