Note added in proof

After the completion and acceptance of the current work, an analysis of V454 Aur was given by Yücel, Canbay & Bakiş (arχiv:2404.18171). All parameters found by those authors agree with those found in the current work, representing a useful cross-check of our results. There were two significant differences. First, Yücel *et al.* chose to identify the more massive star as the primary component. Second, the uncertainties in radius found by those authors are much larger (2–3% *versus* our 0·2–0·3%). The latter point is probably because the 120-s cadence data, and the data from sectors 71 to 73, were not available to Yücel *et al.* at the time they began their analysis. Our results should be preferred as they are based on more extensive and better-sampled photometry.

CORRESPONDENCE

To the Editors of 'The Observatory'

Future Tense?

One of the hot topics in modern cosmology is the so-called 'Hubble tension': some measurements of the Hubble constant, which tend to be based on objects relatively nearby (compared to the scale of the observable Universe), indicate a value of around 73 km/s/Mpc, while others, based mainly on the cosmic microwave background (which is almost at the distance of what is normally known as the radius of the observable Universe, though in practice the CMB itself is often that limit), give about 67 km/s/Mpc; the formal disagreement is at the four-to-six-σ level.* There is no shortage of suggestions; a recent review[1] with 1005 references gives an idea of the activity in the field, and 1095 citations indicate a fair amount of interest. The topic is now important enough for even just *one aspect* of it ('early dark energy') to have its own annual review[2]. There is no consensus as to which, if any, solution is correct. However, probably at most one is correct, otherwise there would be a (probably much stronger) Hubble tension in the opposite sense. Thus, in order to convince the community that a particular solution is correct, one needs to show that all others are wrong.

Papers which show that other papers are wrong are an essential part of science, but rewards are not high. If one does not convince the community, the effort is wasted. If one does, then perhaps people will stop citing the original

* Some of us might remember when the Hubble tension was between 50 (or even 30[3]) and 100, with a similar formal statistical incompatibility. Interestingly, proposals for new physics and so on were rarely mooted as a potential explanation. One reason for the difference might be that the current tension seems to be between different methods whereas in the days of the Sandage–de Vaucouleurs debate it was between different teams of observers. Another difference is that whether the Hubble constant turns out to be 67 or 73, something in between, or higher/lower than both (in some sense, the probabilities of the last two are the same), there will be no dramatic consequences, whereas back in the day a Hubble constant of 100 was incompatible with the then-in-vogue Einstein–de Sitter cosmological model given the (relatively certain) age of the Universe. Although Sandage favoured a low value for the Hubble constant throughout his career, later on his dislike of the cosmological constant seemed, at least to me, to reinforce his belief in a low Hubble constant (since that would allow the Einstein–de Sitter Universe with no cosmological constant with about the right age).[4] The current standard cosmological 'concordance' model of a low-density Universe with a positive cosmological constant fits well with the age of the Universe and any value of the Hubble constant still in the running.

paper, but by the same token there would be no need to cite the rebuttal. Also, in order to show that a paper is wrong, one has to know the material better than the person who wrote the original paper. (There is also the problem that if one shows that the original paper is correct, many journals won't publish such a confirmation, even though that is also an essential part of science, thus reducing the motivation for exploring a topic without knowing the outcome, which of course is the way it should be done.)

What can we expect in the future? I doubt that all of the suggestions (except perhaps the one, correct suggestion) will be shown to be wrong on their own terms (as opposed to being a good theory which is merely ruled out) on a case-by-case basis. Solutions for which some testable prediction is confirmed could be seen as more likely, and of course those with failed predictions could be ruled out. Many of the solutions are *ad hoc* in the sense that it was the Hubble tension itself which led to their proposal; that is not necessarily an indication that they must be wrong, and sometimes there is some additional justification. I'm happy to be corrected, but as far as I know there was no theory which *predicted* the current Hubble tension of about 6 km/s/Mpc (with statistical uncertainties claimed to be much smaller); while technically postdictions are just as good, predictions are more impressive.

Whether the solution turns out to involve interesting new physics or some banal explanation, perhaps the most interesting result will be that a consensus on the cause of the Hubble tension will rule out all of the other proposed explanations with one fell swoop.

Yours faithfully,
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REVIEWS

The Reinvention of Science. Slaying the Dragons of Dogma and Ignorance, by Bernard J. T. Jones, Vicent J. Martinez & Virginia L. Trimble (World Scientific), 2024. Pp. 493, 23 × 15·5 cm. Price £45 (paperback; ISBN 978 1 80061 360 7).

Most readers of *The Observatory* would be able to construct a historical timeline of our subject: perhaps by an ordered list of the kings and queens of our particular realm, and at least for the western story, the list goes something like: Babylonians, Greeks, Anaximander, Aristarchus, Ptolemy, Aristotle,