Laureates are expected to be modest and humble about their work, to dress appropriately, and generally to behave with appropriate deference to important people. Those who abuse their privileged position by making inappropriate remarks become, in James Watson's words, "a nonperson" (he had criticized the intelligence of African Americans).

So — are scientists special or are they ordinary human beings? They are both, and the Nobel Prize gives a context for balancing this uncertainty — special enough as scientists to receive the Prize, but quite normal humans in daily life. The book finishes with an epilogue, entitled 'Geniuses, Heroes and Saints — how the Nobel Prize (re)invented the public image of science', reflecting his belief that any Laureate may be seen as one of these three categories. There is also an appendix, listing all the Nobel Laureates in the sciences from 1901 to 2024.

This was a fascinating book to read, but I found it very difficult to review because of the breadth of its coverage. I can nonetheless recommend it strongly. — Robert Connon Smith.

Reference

(1) Pushpa Khare, *Nobel Prizes in Astronomy* (Springer 2023). Reviewed in these pages, **144**, 102, 2024.

Starborn: How the Stars Made Us — and Who We Would Be Without Them, by Roberto Trotta (Basic Books), 2023. Pp. 350, 24 × 16 cm. Price £22 (hardbound; ISBN 978 1 529 34608 4).

Spanning almost all the languages of Switzerland, Trotta was born in the Italian-speaking part, then obtained an MSc(Hons) in Physics from the ETH Zurich, and a PhD in Theoretical Physics from the University of Geneva, before spending a couple of decades at Oxford and Imperial College, working mainly in cosmology. After becoming Professor of Astrostatistics at the latter (where he remains a Visiting Professor) in 2019, he moved to SISSA in Trieste in 2020 to establish a new Data Science group and PhD programme (and was also Visiting Professor of Cosmology at Gresham College, 2019–2022). A recipient of many awards and member of many professional organizations, he has also been involved in university administration, not only within astronomy, and founded a consulting firm for statistics. This is his second book. He has appeared in these pages as the speaker at an RAS meeting (with the written version of his talk in the *Magazine*[1]), review author of conference proceedings on astrostatistics[2], author of an unusual book described in an unusual review[3] by one of the usual reviewers, and medal recipient[4].

This book is about how astronomy has influenced the cultural history of humanity, starting off with influences on the author, then covering how the night sky has become less important with time for most people, thoughts on life on a planet with no stars visible, early humans, clocks, navigation, the scientific revolution and its wider ramifications (in particular a good overview of various statistical measures; many mathematical innovations were made by astronomers), and astrology, before concluding with a chapter on the future.*

*That last chapter is similar to, but better than, the last chapters in two other books I've reviewed here[5–8].

At the end of all but the first chapter, there is a narrative concerning a human-like species on a world perpetually covered by clouds. That didn't really work for me* (the third chapter covers the same idea in a better fashion), but that's one of only two relatively minor points I didn't like (though it is at least debatable whether the letter Einstein signed urging that the USA develop nuclear weapons actually played a "crucial" role; even if Einstein regretted it, most historians agree that it would have happened anyway). The other point is the controversy over the name of the *James Webb Space Telescope* (*JWST*). For an alternative view, see ref. 9. Neither this review nor the book which it is about is the proper place for a detailed examination of the conflict (see ref. 9, follow the links, go down the rabbit hole, and form your own opinion), but it should at least be acknowledged that a significant fraction of astronomers (not just those making such decisions at NASA) don't think that a renaming is necessary. (Some have weakened their criticism: even if he personally did nothing wrong, Webb occupied a high position at NASA at a time during which some people were negatively affected by homophobia. Of course, one could levy the same charge against Nancy Grace Roman, his contemporary at NASA, but as far as I know, no-one has done so. Unfortunately, as was the case with Schrödinger (concerning whom exaggerated accusations have been debunked by professional historians of science[10]), many aspects of the cancellation remain, and the debunking gets less publicity than the accusations. Not only in books but also at conferences and so on it has become customary to mention one of a collection of tropes (*e.g.*, Jocelyn Bell should have been awarded the Nobel Prize); the purpose is not to stimulate discussion (quite the opposite: 'no debate'), but rather to signal to those in the know that one is on the right side of history.†)

The examples of the influence of astronomy on humanity cover not only traditional Western societies but also a variety of other ancient and modern societies. (However, one does not have to go so far afield — apart from exceptions like Chaucer and Milton — to find a male Moon and a female Sun: though it's the other way around in the Romance languages, in Germany it is the same as in Japan, Oceania, and among the Maori.) But little-known points from

*I've seen that before. For example, Harry Mulisch's *The Discovery of Heaven* (originally in Dutch, though I read it in German because it was a gift from a friend and my trepidation at reading translations (which might not be good even if the book is) was quelled since Mulisch himself, whose only native language is German, approved the translation) is a wonderful book but also contains what I find to be an annoying extra narrative at the beginning and end of each chapter. One of the main characters in the book is an astronomer (the two others are a linguist and a musician, thus covering three of my main interests) and is extremely well researched. Many readers here will know what astronomical details and people are mentioned even if the latter are not referred to by name.

†Even if the accusation is justified, I find it out of place in such a book, especially if one person is singled out. I have a similar complaint about a book[11] recently reviewed here[12], in which Feynman is the victim. The next two books I read after the one being reviewed now also take the stance that the *JWST* should be renamed. Other tropes mentioned in the book are the ideas that Ada Lovelace was the first computer programmer (see ref. 13 for a good debunking, particularly credible since the author would definitely describe himself as a feminist) and that the normal distribution implies that any deviation from the mean is somehow wrong or abnormal in the vernacular sense. (Gauss originally used the term 'normal' in that respect in connection with 'normal' (*i.e.*, orthogonal) equations. Later, probably *via* folk etymology, it was understood to mean that the distribution itself is normal because it is a very common distribution. In fact Pearson himself didn't like the name because he thought that it could create the impression that other distributions are somehow abnormal. To my knowledge no-one has ever used it in the sense which is mentioned in such criticism, but such criticism has become common through repetition; see ref. 14 for a typical example of the abuse of the term 'normal distribution' (a typical modern article in what used to be a good publication).)

Western culture are also mentioned, *e.g.*, the reason for the order of the names of the days of the week, each corresponding to a planet. Another interesting one, reversing the science-to-society direction: "Scottish physicist James Clerk Maxwell discovered social physics from a review by [John] Herschel of Quetelet's work."[15] And another: At the famous meeting between Napoleon and Laplace at which the latter allegedly said that he had no need for the hypothesis of God, also present were William Herschel and his wife.

There are only a few real typos (though 'Lippershey' for 'Lipperhey', an early telescope-maker, is presumably inspired by a misspelling in an English translation in 1831) or other goofs (*e.g.*, *Voyager 1* was launched in 1977, not 1967) and the overall style makes it a very readable book. There is a lot of information here, in that sense somewhat similar to another book[16] reviewed here recently[17]. Sometimes, though, a bit more precision would be useful; for example, whether "no one in antiquity could predict [a solar eclipse] reliably" depends on what one means by 'reliably'. Similarly, the relationship between tides, the shape of the Earth, and precession is a bit confusing, perhaps having been edited too much. Although Aristotle had the boundary between the imperfect sublunary and the perfect superlunary worlds at the orbit of the Moon, the Moon was thought of as part of the latter, not the former; when alluding to that, it is not clear whether the author agrees. Some things will probably remain speculation, for example, whether the fact that many societies, in many cases independently, consider(ed) the Pleiades to be the seven sisters, though most people can see only six and those who can see more can see more than seven, has been passed down from a time, at least a hundred thousand years ago, when seven would have been visible (proper motion having moved one of them too close to another to be resolved).

At the end of the book, after a couple of pages of acknowledgements and a shift to smaller type, are ten pages of notes, referring to passages in the text marked by superscripts, and containing further explanations (which I would prefer as footnotes), references, or both. References are in the form author, title, page, and refer to the twenty-eight-page bibliography where not only titles but also URLs (many of them for DOIs) are given. Such good references are particularly useful in a book such as this which is so wide-ranging that probably most readers will not be familiar with all of the topics. A fifteen-page index ends the book.

Apart from the two points mentioned above, which don't take up many pages, I enjoyed the book. It is very well written, better than those of many or most native speakers of English. It ranges from Neanderthals to the future and, while the astronomy is explained well, the emphasis is on its effect on humanity. — Phillip Helbig.

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Special Relativity and Classical Field Theory: The Theoretical Minimum, by Leonard Susskind & Art Freeman (Penguin), 2017. Pp. 525, 20 × 13 cm. Price £10·99 (paperback; ISBN 978 0 141 98501 5).

I bought this book (along with several others which I have reviewed recently) in 2024 August in England, mainly because I had previously read and reviewed[1] another book[2] in the series which I found to be quite good; see that review for background. Like that other book, this one is well written and is constructed with a hybrid approach: first some maths, then some physics, then more maths as needed. A frequent complaint about books on Special Relativity is the lack of distinction between purely relative effects as described by the Lorentz transformation, real effects such as the age difference between the travelling and stay-at-home twin, and the appearance of rapidly moving objects. Regarding the last, I was happy to see Terrell rotation mentioned (though I can't find it in the otherwise good ten-page small-print index). Regarding the second item, it is pointed out that the twins differ because one accelerates and one does not. That is true, but one is left with the impression that the acceleration is the cause of the difference. Regarding the first, while it is the Lorentz transformation, it is the Lorenz gauge. (That is a common mistake — and probably not a typo, since there are relatively few typos — which is so common that I don't always mention in my reviews; I usually do mention it when the author gets it right.)

The structure is perhaps a bit unusual, starting with the Lorentz transformation then moving to classical field theory, then to the Maxwell equations, then to classical physics, essentially the opposite of the historical path. However, that does adhere to the theme of the theoretical minimum. While the history of science can be interesting for its own sake, and also provide valuable insight, the historical path is usually not the shortest if the goal is to acquire a good working practical knowledge.* Interestingly, Chapter 9, which connects Susskind's with the traditional approach, is said never to have made it to the video site on which the books in the series are based. (It's still not there, so presumably the corresponding video, if it ever existed, has been lost.)

There are a few black-and-white figures scattered throughout the text, and a few footnotes; no references or suggestions for further reading. (All in all, the books in the series are similar in their structure, though the lack of punctuation and strange mode of referring to equations named after people in the other book I reviewed are not present here.) Between the main text and the index are two appendices, on magnetic monopoles and vector operators. Despite the length, the book is a breezy read, due both to the writing and the somewhat

*All the same, Susskind doesn't merely present the material, but also offers his own comments on what is important and so on. I added two such comments to my collection of quotes: "Notation is far more important than most people realize" (p. 173) and "[P]hysics is always harder without the mathematics" (p. 279). Interestingly, just a few seconds before I had added one by Feynman on the same topic: "[M]athematics is, to a large extent, invention of better notations."