



REVIEW

Bringing the invisible to light: a review of “Invisible Rainbows”

Reviewed Book

Carpinetti, A. (2026).

Invisible Rainbows: The Unseen Universe Beyond Our Senses.

Wilton Square Books.

Reviewed by

Andrea Bandelli 

Abstract

Invisible Rainbows is a popular astronomy book by astrophysicist and science journalist Alfredo Carpinetti, organised around the electromagnetic spectrum and built around conversations with LGBTQIA+ astronomers from around the world. It is, at the same time, a celebration of modern astronomy and a clear argument about the relationship between science and the society that produces it. The book is rigorous and warm in equal measure, never letting one undermine the other, and offers science communicators a strong example of how popular science writing can hold technical depth and political clarity on the same page.

Keywords

Popularization of science and technology; Queer(ing) science communication; LGBTQIA+ issues in science communication

Received: 28th May 2026

Accepted: 16th June 2026

Published: 1st July 2026

1 - Bringing the invisible to light

True to its title, *Invisible Rainbows* is a book about bringing things into view. The most obvious subject is the wavelengths of light that lie beyond what the human eye can see — the gamma rays, X-rays, ultraviolet, infrared, microwaves and radio waves that together provide countless ways to observe and study the universe. But the title carries a second meaning, which Alfredo Carpineti develops gradually, and which only becomes fully explicit in the final pages of the book: invisible rainbows are also all the astronomers, astrophysicists, cosmologists and many more scientists whose lives have, for too long, been hidden from view.

Carpineti is an astrophysicist, a science journalist at IFLScience, and the chair of Pride in STEM.¹ He has written a popular astronomy book that never strays from its core subject — the night sky and how we learn to look at it — and yet, by the time the reader closes the book, has also given a remarkably clear view of how science and society are woven together, where they strengthen each other and where frictions exist. This is not a manifesto, and it is not an identity book. It is a genuine work of science writing that takes seriously the question of who is doing the science.

2 - What science chooses to see

Before the reader has reached page ten, Carpineti has already done something unusual. He has connected the discovery of the night sky with food, Italian culture, queer life, and the burning of Magnus Hirschfeld's Institute for Sexual Science by the Nazi regime in 1933 — the same regime that dismissed Einstein's general relativity as "Jewish science". The juxtaposition is deliberate, and it tells the reader something important very early on. The queer perspective in this book is not narrow. It is not only about LGBTQIA+ people. It is about the broader question of which knowledge a society chooses to allow, and which it chooses to suppress. Hirschfeld's library and Einstein's theory were attacked by the same hand, for related reasons, and remembering this is part of what it means to do science honestly.

From there, the book settles into its main work: a tour of the electromagnetic spectrum, with interviews scattered through the chapters. Carpineti's style is easy and inviting. He writes with humour, with cultural references that range from cocktails to *The Muppet Show*, and with the unmistakable enthusiasm of someone who loves the subject.

3 - Not a textbook, but a book that makes you curious

A few technical terms — leptons appear without much warning — arrive faster than a complete beginner might like, but this is a small complaint, and it is consistent with the book's intention, which is not to teach the reader astronomy from scratch. *Invisible Rainbows* is not an educational resource; it does not arrange itself in order of difficulty, it does not include exercises, and it does not pause to define every term. What it does is something more interesting, and arguably more useful: it tells you why each part of the spectrum matters, who is looking at it, what they are hoping to find, and what is at stake when they find

1. <https://prideinstem.org/>.

it. The science is presented through the people doing it and the instruments they build, not as a body of facts to be memorised.

Carpinetti is particularly good at translating the abstract language of high-energy astrophysics — black holes, absorption lines, neutron stars, gamma-ray bursts — into the very physical, very human work of designing telescopes, sending them to mountain tops or into orbit, and waiting, sometimes for years, for the photons to arrive. The cosmology never becomes weightless and the people never become invisible. Both sit on the same page.

One of the book's most appealing features is its honest description of science as a process of mistakes, surprises, and constructive failures. Carpinetti is at his best when he lets scientists be openly uncertain. In the chapter on the cosmic microwave background he takes on the Hubble tension — the awkward fact that two good ways of measuring how fast the universe is expanding give two different answers, and the uncertainty ranges do not overlap. Rather than smoothing this over, he reports it as a genuinely open problem, and lets cosmologists like Peter Coles talk through it in their own words, gossip and giggles included. Carpinetti is equally honest about the Standard Model of cosmology: it has been extraordinarily successful, and yet it rests on dark matter and dark energy, two ingredients that make up most of the universe and that nobody can yet explain. He happily admits that some of the ideas used to fill the gaps, such as the inflationary field, are “nebulous if not completely wishy-washy”, with the honesty of someone who finds the unsolved parts more exciting than the settled ones. The wider point he draws from all this is simple and important: models are useful, but they are approximations, and good science is what happens when the model and the universe disagree and the universe wins. This is, in the end, what makes *Invisible Rainbows* such an enjoyable book — not so much that Carpinetti explains what we know, but that he is visibly more interested in what we do not yet know, and his curiosity is contagious.

4 - Science and society

Carpinetti notes, in his epilogue, that he is regularly accused of “bringing politics into science”. His response is not defensive; instead, it is historical. He observes that the very word “scientist” was politicised at the moment it was coined. William Whewell invented it in 1834, in a review of Mary Somerville's *On the Connexion of the Physical Sciences*, precisely because Somerville could not possibly be called a “man of science”. The vocabulary of the profession is, in other words, the residue of a political act. To insist that science has only recently become political is to forget how it got its name.

From here Carpinetti walks the reader through other examples — Einstein and Fermi fleeing fascist Europe, Emmy Noether teaching mathematics under a male colleague's name because she was not allowed to teach as a woman — and quotes Stephen Jay Gould's line about the near certainty that people of equal talent have lived and died in cotton fields and sweatshops. The point is made with weight rather than heat. Science has never been outside politics, because the people doing science have always lived inside it.

4.1 - Naming the Webb Telescope

The clearest example of this argument appears in the middle of the book, in a section called “Something About Skeletons and Closets”. The James Webb Space Telescope was originally called the Next Generation Space Telescope, and it was designed to extend astronomy

beyond the visible, into the infrared. In 2002 NASA renamed it after James Webb, a former agency administrator, without consulting the astronomy community. Years later a campaign emerged to reverse that decision, articulated most prominently in a March 2021 opinion piece in *Scientific American* by Chanda Prescod-Weinstein, Sarah Tuttle, Lucianne Walkowicz and Brian Nord, who set out the archival case for Webb's leadership responsibility during the Lavender Scare — the systematic purging of gay and lesbian employees from the US federal workforce in the 1950s and 1960s [Prescod-Weinstein et al., 2021]. The argument was taken up by *Nature* and other outlets later that year, and in November 2022 NASA released its own internal investigation, an 87-page report by Chief Historian Brian Odom [Odom, 2022], which concluded that no direct evidence had been found linking Webb personally to the firings.

Carpinetti is not satisfied with this response, and he explains why with care. NASA's investigation, he observes, was framed around a narrow question — whether Webb personally led the purge — that conveniently sidesteps the broader question of leadership responsibility that the original petition had raised. He walks the reader through the internal NASA correspondence that *Nature* obtained and made public through a Freedom of Information Act request [Witze, 2022], and notes that the agency seemed at least as concerned with managing public perception as with answering the historical question. He discloses his own involvement as a signatory to the renaming petition through Pride in STEM. Carpinetti puts his finger on the double standard at the heart of NASA's defence. We are happy to credit Webb for the triumphs of the Mercury, Gemini and Apollo programmes, even though he did not personally build the rockets or fly to the Moon — we credit him because he led the agency that did these things. Yet when it comes to the persecution of gay and lesbian employees on his watch, suddenly the standard changes, and we are asked to excuse him because he did not personally carry out the firings. Either leadership carries responsibility or it does not. Webb cannot be praised as a leader for the achievements and absolved as a bystander for the harms.

The interesting move, for a science communication readership, is what Carpinetti is using this case to demonstrate. Science is constantly willing to revise its understanding of the universe when new evidence appears. The whole point of the discipline is the flexibility of changing established ideas when better ones come along. The argument is that this willingness to revise should extend not only to models of black holes, but also to the names on the side of the instruments that observe them. Epistemic openness and institutional openness, in Carpinetti's telling, are two faces of the same disposition.

4.2 ■ *Visibility, with restraint*

The visibility argument also runs through the interviews themselves. Across the book, Carpinetti talks with LGBTQIA+ astronomers and astrophysicists from around the world to get first-hand accounts of their research. This way of working is familiar from his earlier collection of interviews with queer scientists across the STEM disciplines [Carpinetti & O'Boyle, 2022], reviewed in this journal [Bandelli, 2022], and here he applies the same approach to astronomy. They explain what they study, what excites them, what frustrates them, what they hope the next generation of instruments will reveal. They are not asked to be spokespeople for their identity, and they do not behave as if they were.

This is the practice that follows from the principle. Visibility, in Carpinetti's framing, is not about putting queer scientists on display. It is about letting them be present, openly, while

doing ordinary scientific work. He makes the point explicitly in the epilogue: no one tells straight astronomers to hide their husbands, wives or children, yet several queer scientists are regularly asked to keep quiet about exactly that. The asymmetry between what queer scientists are still routinely asked to conceal, and what their straight colleagues are free to share, is not a neutral feature of the profession. It is something the institutions of science have actively produced, and the book is quietly insistent that it can be undone.

5 - Following virtue and knowledge

Invisible Rainbows ends on a line from Dante's *Inferno*, Canto XXVI, that many readers of this journal will recognise: *fatti non foste a viver come bruti, ma per seguir virtute e canoscenza* — “you were not made to live like beasts, but to follow virtue and knowledge”. It is the motto of SISSA, the institution that publishes JCOM. The borrowing feels less like coincidence than like confirmation. In Dante, Ulysses speaks these words to his crew as he persuades them to sail past the Pillars of Hercules into the unknown ocean. It is, first of all, an exhortation to curiosity — a refusal to accept that there is a boundary beyond which one is not meant to look.

Carpinetti's book makes the same argument in three registers at once. It applies to the wavelengths of light beyond the visible, where each new technology that allows us to detect infrared, X-rays, gamma rays, gravitational waves, and neutrinos has rewritten our picture of the universe. It applies to the scientists working at the edges of what their institutions have been willing to see, whose contributions deserve to be made visible. And it applies to the reader, who closes the book wanting to know what lies one step further out.

Invisible Rainbows is, before anything else, a wonderful science book. It pushes the imagination toward the frontiers, both literal and metaphorical, of what is known. It makes the act of following virtue and knowledge feel, as it should, like a pleasure rather than a duty. And along the way it offers science communicators a model worth studying: rigour and warmth on the same page, politics and wonder in the same argument, and a clear-eyed insistence that the universe is more interesting when more of us are allowed to look at it.

References

- Bandelli, A. (2022). Together in diversity: insights and wisdom from LGBTQ+ people working in STEM. *JCOM*, 21(06), R03. <https://doi.org/10.22323/2.21060703>
- Carpinetti, A., & O'Boyle, S. (Eds.). (2022). *The queer variable: interviews with insightful LGBTQ+ people in STEM*. <https://prideinstem.org/the-queer-variable/>
- Odom, B. C. (2022). *NASA historical investigation into James E. Webb's relationship to the Lavender Scare. Final report*. NASA. https://www.nasa.gov/wp-content/uploads/2022/11/nasa_historical_investigation_james_webb_0.pdf
- Prescod-Weinstein, C., Tuttle, S., Walkowicz, L., & Nord, B. (2021). The James Webb Space Telescope needs to be renamed. *Scientific American*, 324(5), 10. <https://doi.org/10.1038/scientificamerican0521-10>
- Witze, A. (2022). Exclusive: documents reveal NASA's internal struggles over renaming Webb telescope. *Nature*, 604(7904), 15–16. <https://doi.org/10.1038/d41586-022-00845-6>

About the author

Andrea Bandelli is chair of Woven Foundation and an international consultant and advisor in the field of science communication and public engagement. He has worked with science museums, government organisations and universities across Europe, USA, South Africa and Brazil. He was Executive Director of the Science Gallery Network, a university network dedicated to public engagement with art and science, and Head of International Relations at Vrije Universiteit Amsterdam.

✉ andrea@bandelli.com

🦋 [@maphutha](https://twitter.com/maphutha)

How to cite

Bandelli, A. (2026). 'Bringing the invisible to light: a review of "Invisible Rainbows"'. *JCOM* 25(04), R03. <https://doi.org/10.22323/411720260616113340>.



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ISSN 1824-2049. Published by SISSA Medialab. jcom.sissa.it