

HPS&ST

NEWSLETTER



HPS&ST NEWSLETTER

NOVEMBER 2021

The HPS&ST NEWSLETTER is emailed monthly to about 9,500 individuals who directly or indirectly have an interest in the contribution of history and philosophy of science to theoretical, curricular and pedagogical issues in science teaching, and/or interests in the promotion of innovative, engaging and effective teaching of the history and philosophy of science. The NEWSLETTER is sent on to different international and national HPS lists and international and national science teaching lists. In print or electronic form, it has been published for 40+ years.

The NEWSLETTER seeks to serve the diverse international community of HPS&ST scholars and teachers by disseminating information about events and publications that connect to concerns of the HPS&ST community.

Contributions to the NEWSLETTER (publications, conferences, opinion pieces, etc.) are welcome and should be sent direct to the editor: Michael R. Matthews, UNSW (m.matthews@unsw.edu.au).

The NEWSLETTER, along with RESOURCES, OBITUARIES, OPINION PIECES and more, are available at the website: <http://www.hpsst.com/>

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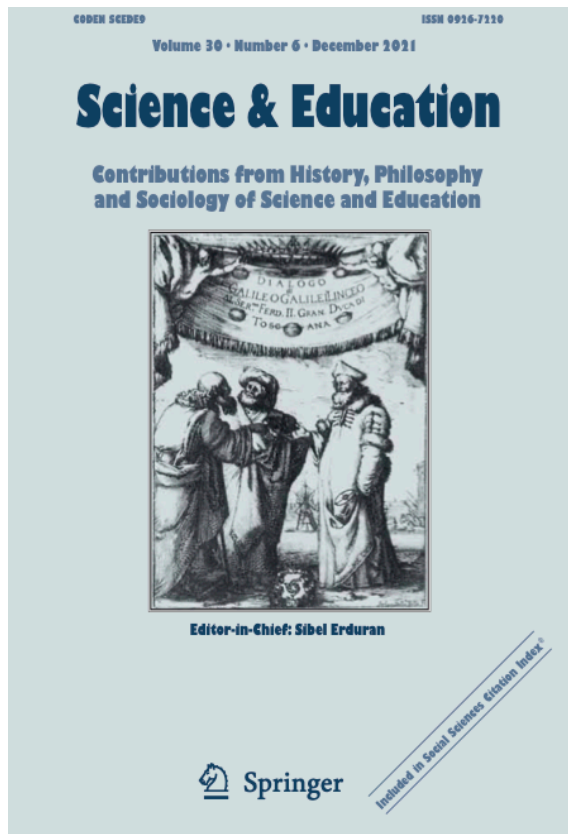
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Feng Shui: Philosophical, Cultural and Educational Considerations

Science & Education, Volume 40, Number 6, December 2021



Editorial: *Feng Shui in Science Programmes – Philosophical, Cultural and Educational Considerations*, M.R. Matthews

SI: Feng Shui

Feng Shui and the Demarcation Project, D. Fenarndez-Beanato

The Universality of Science and Traditional Chinese Medicine – A philosophical survey, Í.O. de Felipe

Science and *Fengshui*: The Concept *shi*, Rationality and Emotion, and the Ritualisation of Knowledge, M.J. Paton

Why People Trust Something Other than Science – Cases of Acupuncture and Four Pillars of Destiny in Korea, J. Song, J. Chun and & J. Na

A Virtue Epistemological Approach to the Demarcation Problem – Implications for Teaching about Feng Shui in Science Education, S. Bhakthavatsalam & W. Sun

Teaching Traditional Chinese Science as a Part of a NOS Curriculum in Hong Kong, K.M. Kiang & W.M. Szeto

The Theoretical Foundations of Feng Shui and Science Education in China – The Debate on the Benchmark for Scientific Literacy of Chinese Citizens, M. Zhang & B. Liu

Full text of individual articles available [here](#).

The 16th Biennial International History and Philosophy of Science and Science Teaching Group (IHPST) Conference, Calgary, Canada. 3-7 July, 2022

Conference Theme: Energising Education with the History, Philosophy, and Sociology of Science

The province of Alberta is the oil-sands energy centre of Canada. It has been the locale for debate about fossil fuel usage, environmental impacts, renewal energy production, First Nations relations and much else.



Plenary Speakers:

- [Dr. Alison Wylie](#), of the University of British Columbia, is a philosopher of social and historical sciences. She is currently President of the Philosophy of Science Association, and Past-President of the American Philosophical Association, Pacific Division. Dr. Wylie works on philosophical issues raised by archaeological practice, and by feminist research in the social sciences.
- [Dr. Carol Cleland](#), of the University of Colorado Boulder and current Director of UC Boulder's Center for the Study of Origins, focusses her research on issues concerning scientific methodology (historical science vs. experimental science, the role of anomalies in scientific discovery), biology (microbiology, origins of life, the nature of life, and astrobiology), and the theory of computation. She is the inventor of the term 'shadow biosphere,' a subject on which she has written and lectured extensively.
- Optional field trips to [Burgess Shale](#), [Royal Tyrell Museum](#), and [Frank Slide/Bellevue mine](#)
- Original dramatic production, *Formations*, about four important women earth scientists, their discoveries and their experiences of being a woman in a male dominated career

field. Written by [Meg Braem](#) and directed by [Christine Brubaker](#)

- Graduate student [Summer School](#) session
- Undergraduate virtual poster presentation
- Practicing teacher symposium
- Conference dinner at [Heritage Park](#)

First call for abstract submission for early decision- 31 October 2021–15th December 2021

Last call for abstract submission - 28 February 2022 - decision until 30th March 2022

Please visit www.ihpst.net for submission instructions and further information.

Science & Literature Commission

It is a great pleasure to inform you that finally two thematic volumes have been published as e-books based on papers presented in our previous conferences and workshops. We may find, download freely and distribute them as widely as you wish [here](#) and [here](#).

We would like to thank everybody related to these publications and especially the contributors.

For 2022 we plan also a number of activities, which we expect to take place in person if the pandemic conditions will be improved.

The main event we organise is our 4th International Conference on Science and Literature which will take place in Girona, Spain, 30 June-2 July 2022.

We would like to thank a lot our colleague Carlos Manuel Gamez Perez for all his efforts and we in-

vite you all to participate in this promising Conference which will be held also in a wonderful town.

For any issue and assistance concerning the Conference and your trip to Girona you may contact directly Carlos at cgamez@xtec.cat

We plan also our 5th Workshop in Syros 18-20 July 2022. The theme of the Workshop will be announced by the end of the year.

At the beginning of September 2022 we plan to organise an international summer school on science and literature in the framework of science communication. The venue will be on Andros Island. More information will be available also by the end of the year.

Last but not least we would like to inform you that we are going to coorganise in Athens, 19-23 September 2022 the 41st Symposium of the Scientific Instrument Commission.

George N. Vlahakis
National Hellenic Research Foundation
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University of Pittsburgh, Center for Philosophy of Science

Adolf Grünbaum 2022 Memorial Lecture

Speaker: James Weatherall (Department of Logic and Philosophy of Science, UC Irvine)

Title: The Philosophy Behind Dark Matter

Date/Time: Friday, December 3 at 3:30PM Eastern Time

Location: Cathedral of Learning 1001 or join via Zoom More Information (including abstract and Registration Link) are available [here](#).



Applications

The Center is accepting applications for 2022-2023 Visiting Fellows and Postdocs until December 12, 2021.

Visiting Fellows, learn more [here](#).

Apply [here](#).

Postdoctoral Fellows, learn more [here](#).

Apply [here](#).

YouTube Channel

View recordings of past talks [here](#). [Newsletter](#)

Stay up to date with the Center by signing up for our weekly newsletter. You can sign up by visiting our homepage [here](#). Center for Philosophy of Science

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Linda Hall Library Fellowships

The [Linda Hall Library](#) is now accepting applications for its 2022-23 fellowship program. These fellowships provide graduate students, postdoctoral researchers, and independent scholars in the history of science and related fields with financial support to explore the Library's outstanding science and engineering collections. Fellows also participate in a dynamic intellectual community alongside in-house experts and scholars from other Kansas City cultural and educational institutions.



The Linda Hall Library holds nearly half a million monographs and more than 43,000 journal titles documenting the history of science and technology from the 15th century to the present. Its collections are exceptionally strong in the engineering disciplines, chemistry, and physics. The Library also boasts extensive resources related to natural history, astronomy, earth science, environmental studies, aeronautics, life science, infrastructure studies, mathematics, and the history of the book.

The Linda Hall Library is offering three types of fellowships during the 2022-23 academic year:

- Residential fellowships (1-4 months) support scholars who travel to Kansas City to conduct research in the Library's collections.

- The History of Science and Medicine fellowship (1 month) supports a doctoral student who travels to Kansas City to conduct research at the Linda Hall Library and the Clendening History of Medicine Library at the University of Kansas Medical Center.
- Virtual fellowships (1-4 months) support scholars working remotely using resources from the Library's digital collections. Virtual fellows receive personalised research assistance from reference staff and may request complimentary scans of Library resources in accordance with our in-house digitisation policies.

In each case, fellowship funding is offered at a rate of \$3,000 per month for doctoral students and \$4,200 per month for postdoctoral researchers.

The Linda Hall Library is committed to fostering a diverse and inclusive research environment and encourages members of any groups that have traditionally been underrepresented in academia to apply for fellowship support.

Please share this announcement with graduate students, colleagues, or anyone else who might be interested in the Library's fellowship program. All application materials are due no later than **January 21, 2022**. For further information, visit [here](#) or email fellowships@lindahall.org.

Benjamin Gross, PhD

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Linda Hall Library of Science, Engineering and Technology

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Wilhelm Weber Main Works on Electrodynamics Translated into English

The following four Aperion Books are available as free pdf files.

Volume 1: Gauss and Weber's Absolute System of Units.

Volume 2: Weber's Fundamental Force and the Unification of the Laws of Coulomb, Ampere and Faraday.

Volume 3: Measurement of Weber's Constant c , Diamagnetism, the Telegraph Equation and the Propagation of Electric Waves at Light Velocity.

Volume 4: Conservation of Energy, Weber's Planetary Model of the Atom and the Unification of Electromagnetism and Gravitation.



They are freely available in PDF format at:

[Volume 1](#)

[Volume 2](#)

[Volume 3](#)

[Volume 4](#)

These translations include Weber's 8 major Memoirs on Electrodynamic Measurements. There are also English translations of 5 papers by Carl Friedrich Gauss, translations of part of the correspondence between Gauss and Weber, one paper by Weber and Friedrich Wohler, 2 papers by Weber and Rudolf Kohlrausch, 1 paper by Gustav Theodor Fechner, 1 paper by Johann Christian Poggendorff, 1 paper by François Felix Tisserand, 2 papers by Carl Neumann, and 3 papers by Gustav Kirchhoff.

Most of these works had never been translated before. They allow a broad overview of the main original publications related to Weber's Electrodynamics.

The translators include Laurence Hecht, David H. Delphenich, Peter Marquardt, Hermann Haertel, Jonathan Tennenbaum, Peyman Ghaffari, Joa Weber and Urs Frauenfelder.

The printed versions are available through Amazon:

[Volume 1](#)

[Volume 2](#)

[Volume 3](#)

[Volume 4](#)

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HPS&ST in Latin America

- Call for papers The *Revista Brasileira de História da Ciência* (Brazilian Journal of History of Science) calls for papers about "Sciences

and the Independences of Brazil". More information (Portuguese and English) is available [here](#).

- Call for proposals of special issues The *Revista Brasileira de História da Ciência* (Brazilian Journal of History of Science) calls for proposals of special issues related to History of Science and other interdisciplinary themes that dialogue with History of Science. More information (only in Portuguese) is available [here](#).
- 2021 *Simpósio Nacional de Ensino de Física* (2021 National Symposium of Physics Teaching) In July 2021 the National Symposium of Physics Teaching in Brazil was held. The event was dedicated to different themes in Physics teaching, also encompassing History and Philosophy in Physics Teaching. Information about the event and the link to speeches (including the speech of the Nobel Laureate Carl Weiman) may be found [here](#).

Science & Education Open Access Articles

Science & Education journal currently has 73 HPS&ST articles available gratis as Open Access. These can be seen and individually downloaded [here](#).

One article available [here](#) is Damian Fernandez-Beanato 'Feng Shui and the Demarcation Project'. This is a contribution to a coming (December 2021) 8-article thematic issue of the journal on 'Feng Shui: Philosophical, Cultural and Educational Perspectives'.

The thematic issue addresses the subject matter of the book: *Feng Shui: Teaching About Science and*

Pseudoscience (Springer 2019).

Material related to Feng Shui and the thematic issue are available [here](#).

Nuncius Prize 2022

The 2022 *Nuncius* Prize, which is supported by Brill Publishing and Museo Galileo in Florence, will be awarded to the best original essay related to the material and visual history of science, technology and medicine in any period.

The prize is intended for those who are currently graduate and doctoral students, or have been awarded their PhD (or equivalent) within the past six years.

The opening date for entries is 00.01 (CET) on 15 September 2021. The closing date of the Prize is 23.59 (CET) on 30 April 2022. Authors should submit their manuscript via the Editorial Manager (EM) online submission system [here](#).

Essays must be:

- unpublished and not submitted to any other competition at the same time
- written in English
- no more than 9,000 words in length (including footnotes)
- referenced in accordance with *Nuncius* guidelines

The winner will receive a cash prize of €500 and the open-access publication in *Nuncius*. Three honourable mentions (€100 of Brill book tokens each) will also be provided.

Non-winners may be invited to publish their work

in *Nuncius*, if the judges of the essay award and the journal consider them to be suitable for publication.

More information available [here](#).

Further queries: Prof. [Elena Canadelli](#), at elena.canadelli@unipd.it

Opinion Piece: Coronavirus responses highlight how humans are hardwired to dismiss facts that don't fit their worldview

Adrian Bardon, Wake Forest University Professor of Philosophy

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Bemoaning uneven individual and state compliance with public health recommendations, top U.S. COVID-19 adviser Anthony Fauci [recently blamed](#) the country's ineffective pandemic response on an American "anti-science bias." He called this bias "inconceivable," because "science is truth." Fauci compared those discounting the im-

portance of masks and social distancing to "anti-vaxxers" in their "amazing" refusal to listen to science. It is Fauci's profession of amazement that amazes me. As well-versed as he is in the science of the coronavirus, he's overlooking the [well-established science](#) of "anti-science bias," or science denial.

Americans increasingly exist in highly polarised, informationally insulated ideological communities occupying their own [information universes](#).

Within segments of the political blogosphere, [global warming](#) is dismissed as either a hoax or so uncertain as to be unworthy of response. Within other geographic or online communities, the science of [vaccine safety](#), [fluoridated drinking water](#) and [genetically modified foods](#) is distorted or ignored. There is a [marked gap in expressed concern](#) over the coronavirus depending on political party affiliation, apparently based in part on partisan disagreements over factual issues like the [effectiveness of social distancing](#) or [the actual COVID-19 death rate](#).

In theory, resolving factual disputes should be relatively easy: Just present strong evidence, or evidence of a strong expert consensus. This approach succeeds most of the time, when the issue is, say, the atomic weight of hydrogen.

But things don't work that way when scientific advice presents a picture that threatens someone's perceived interests or ideological worldview. In practice, it turns out that one's political, religious or ethnic identity quite effectively predicts one's willingness to accept expertise on any given politicised issue.

"[Motivated reasoning](#)" is what social scientists call the process of deciding what evidence to accept based on the conclusion one prefers. As I explain

in my book, “[The Truth About Denial](#),” this very human tendency applies to all kinds of facts about the physical world, economic history and current events.

Denial doesn't stem from ignorance

The interdisciplinary study of this phenomenon has made one thing clear: The failure of various groups to acknowledge the truth about, say, climate change, is [not explained by a lack of information about the scientific consensus on the subject](#).

Instead, what strongly predicts denial of expertise on many controversial topics is simply one's political persuasion.

A [2015 metastudy](#) showed that ideological polarisation over the reality of climate change actually increases with respondents' knowledge of politics, science and/or energy policy. The chances that a conservative is a climate science denier is [significantly higher](#) if he or she is college educated. Conservatives scoring highest on tests for [cognitive sophistication](#) or [quantitative reasoning skills](#) are most susceptible to motivated reasoning about climate science.

Denialism is not just a problem for conservatives. Studies have found [liberals are less likely to accept](#) a hypothetical expert consensus on the possibility of safe storage of nuclear waste, or on the effects of concealed-carry gun laws.

Denial is natural

The human talent for rationalisation is a product of many hundreds of thousands of years of adaptation. Our ancestors evolved in small groups, where [cooperation and persuasion](#) had at least as much to do with reproductive success as holding accurate factual beliefs about the world. Assimilation into one's tribe required assimilation into

the group's ideological belief system – regardless of whether it was grounded in science or superstition. An instinctive bias in favour of one's “[in-group](#)” and its worldview is deeply ingrained in human psychology.

A human being's very sense of self is [intimately tied up with](#) his or her identity group's status and beliefs. Unsurprisingly, then, people respond automatically and defensively to information that threatens the worldview of groups with which they identify. We respond with rationalisation and selective assessment of evidence – that is, we engage in “[confirmation bias](#),” giving credit to expert testimony we like while finding reasons to reject the rest.

Unwelcome information can also threaten in other ways. “[System justification](#)” theorists like psychologist [John Jost](#) have shown how situations that represent a perceived threat to established systems trigger inflexible thinking. For example, populations experiencing economic distress or an external threat have often turned to [authoritarian leaders](#) who [promise security and stability](#).

In ideologically charged situations, one's prejudices end up affecting one's factual beliefs. Insofar as you define yourself in terms of your [cultural affiliations](#), your attachment to the social or economic status quo, or a combination, information that threatens your belief system – say, about the negative effects of industrial production on the environment – can threaten your sense of identity itself. If trusted political leaders or partisan media are telling you that the COVID-19 crisis is overblown, factual information about a scientific consensus to the contrary can feel like a personal attack.

Denial is everywhere

This kind of affect-laden, motivated thinking explains a wide range of examples of an extreme, evidence-resistant rejection of historical fact and scientific consensus.

Have tax cuts been shown to pay for themselves in terms of economic growth? Do communities with high numbers of immigrants have higher rates of violent crime? Did Russia interfere in the 2016 U.S. presidential election? Predictably, expert opinion regarding such matters is treated by partisan media as though evidence is itself inherently partisan. Denialist phenomena are many and varied, but the story behind them is, ultimately, quite simple. Human cognition is inseparable from the unconscious emotional responses that go with it. Under the right conditions, universal human traits like in-group favouritism, existential anxiety and a desire for stability and control combine into a toxic, system-justifying identity politics.

Science denial is notoriously resistant to facts because it isn't about facts in the first place. Science denial is an expression of identity – usually in the face of perceived threats to the social and economic status quo – and it typically manifests in response to elite messaging.

I'd be very surprised if Anthony Fauci is, in fact, actually unaware of the significant impact of politics on COVID-19 attitudes, or of what signals are being sent by [Republican state government officials' statements](#), [partisan mask refusal in Congress](#), or the recent [Trump rally in Tulsa](#). Effective science communication is critically important because of the profound effects partisan messaging can have on public attitudes. Vaccination, resource depletion, climate and COVID-19 are life-and-death matters. To successfully tackle them, we must not ignore what the science tells us about science denial.

From: [The Conversation](#).

Adrian Bardon, [The Truth About Denial: Bias and Self-Deception in Science, Politics, and Religion](#) (Oxford University Press, 2020).

Adrian Bardon, [A Brief History of the Philosophy of Time](#) (Oxford University Press, 2013).

Invitation to Submit Opinion Piece

In order to make better educational use of the wide geographical and disciplinary reach of this HPS&ST NEWSLETTER, invitations are extended for readers to contribute opinion or position pieces or suggestions about any aspect of the past, present or future of HPS&ST studies.

Contributions can be sent direct to [Michael Matthews](#) or [Nathan Oseroff-Spicer](#).

Ideally, they might be pieces that are already on the web, in which case a few paragraphs introduction, with link to web site can be sent, or else the pieces will be put on the web with a link given in the NEWSLETTER.

They will be archived in the OPINION folder at the HPS&ST web site: <http://www.hpsst.com/>.

PhD Theses in HPS&ST Domain

The HPS&ST NEWSLETTER is the ideal medium for publicising and making known submitted and awarded doctoral theses in the HPS&ST domain.

The following details should be submitted to the editor at m.matthews@unsw.edu.au:

- Candidate's name and email
- Institution
- Supervisor
- Thesis title
- Abstract of 100-300 words
- Web link when theses are required to be submitted for open search on web.

Recent HPS&ST Research Articles

Science & Education (December 2021, issue 6)

Topic: Feng Shui: Philosophical, Cultural and Educational Perspectives

Editor: Michael R. Matthews

Mediterranean Journal of Education (Volume 1, Number 2)

Topic: Papers accepted from the 'SIEST 2021- Education scientifique et technologique dans l'espace méditerranéen'

Allchin, D. (2021). Who Speaks for Science?. *Sci & Educ*, 1-18.

doi:[10.1007/s11191-021-00257-4](https://doi.org/10.1007/s11191-021-00257-4) online first

Aylward, A. (2021). R.A. Fisher, eugenics, and the campaign for family allowances in interwar Britain. *The British Journal for the History of Science*, 1-21. doi:[10.1017/S0007087421000674](https://doi.org/10.1017/S0007087421000674) online first

Demetrio, G.R., Jacobina, U.P. & Barão, K.R. (2021). The Impact of Life Philosophy and Major Field of Study on Brazilian Students' Knowledge of Biological Evolution. *Sci & Educ*, 1-18. doi:[10.1007/s11191-021-00286-z](https://doi.org/10.1007/s11191-021-00286-z) online first

dos Santos, G.B.S., Mello, D.A.T. & Neves, M.C.D. (2021). Our Friend the Atom: An Imagery Analysis of Disney's Science Book. *Sci & Educ*, 1-25. doi:[10.1007/s11191-021-00284-1](https://doi.org/10.1007/s11191-021-00284-1) online first

Fernández, N., Benitez, F. & Romero-Maltrana, D. (2021). Social Character of Science and Its Connection to Epistemic Reliability. *Sci & Educ*, 1-20. doi:[10.1007/s11191-021-00290-3](https://doi.org/10.1007/s11191-021-00290-3) online first

Ferreira, E.B., Toti, F.A. (2021). Multivariate and Longitudinal Profile of Brazilian Journals on Science Education from 2013 to 2019: What Is the Role of Physics Education?. *Sci & Educ*, 1-20. doi:[10.1007/s11191-021-00279-y](https://doi.org/10.1007/s11191-021-00279-y) online first

Goodwin, W. (2021). Gaining traction: Foothold concepts and exemplars in conceptual change. *Studies in History and Philosophy of Science Part A*, 90, 145-152. doi:[10.1016/j.shpsa.2021.09.010](https://doi.org/10.1016/j.shpsa.2021.09.010)

Kamphorst, F., Vollebregt, M.J., Savelsbergh, E.R. et al. (2021). An Educational Reconstruction of Special Relativity Theory for Secondary Education. *Sci & Educ*, 1-44. doi:[10.1007/s11191-021-00283-2](https://doi.org/10.1007/s11191-021-00283-2) online first

Lohse, S., Canali, S. (2021). Follow *the* science? On the marginal role of the social sciences in the COVID-19 pandemic. *Euro Jnl Phil Sci*, 11, 99. doi:[10.1007/s13194-021-00416-y](https://doi.org/10.1007/s13194-021-00416-y)

Medori, B. (2021). The American Society for the Control of Cancer in the Portuguese Institute of Oncology's Bulletin: Rethinking nationalism. *Centaurus*, 1- 25. doi:[10.1111/1600-0498.12413](https://doi.org/10.1111/1600-0498.12413)

Meulendijks, M. (2021). Eclipsing the Eclipse?:

- A Neo-Darwinian Historiography Revisited. *J Hist Biol*, 1-41.
doi:[10.1007/s10739-021-09650-9](https://doi.org/10.1007/s10739-021-09650-9) online first
- Öberg, G., Campbell, A., Fox, J. et al. (2021). Teaching Science as a Process, Not a Set of Facts. *Sci & Educ*, 1-31.
doi:[10.1007/s11191-021-00253-8](https://doi.org/10.1007/s11191-021-00253-8) online first
- Penn, M., Ramnarain, U. (2021). South African Grade 12 Science Students' Understandings of Scientific Inquiry. *Sci & Educ*, 1-22.
doi:[10.1007/s11191-021-00259-2](https://doi.org/10.1007/s11191-021-00259-2) online first
- Siderer, Y. (2021). Translations of Roscoe's Chemistry Books into Japanese and Hebrew – Historical, Cultural and Linguistic Aspects. *Substantia*, 5(2), 41 - 54.
doi:[10.36253/Substantia-1187](https://doi.org/10.36253/Substantia-1187)
- Storni, M. (2021). Denis Papin's digester and its eighteenth-century European circulation. *The British Journal for the History of Science*, 1-21.
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- Sun, F., Ye, R. (2021). Moral Considerations of Artificial Intelligence. *Sci & Educ*, 1-17.
doi:[10.1007/s11191-021-00282-3](https://doi.org/10.1007/s11191-021-00282-3) online first
- Tamborini, M. (2021). The Material Turn in the Study of Form: From Bio-Inspired Robots to Robotics-Inspired Morphology. *Perspectives on Science*, 29(5), 643–665.
doi:[10.1162/posc_a_00388](https://doi.org/10.1162/posc_a_00388)
- Trpin, B. (2021). Against Methodological Gambling. *Erkenn*, 1-21.
doi:[10.1007/s10670-021-00386-w](https://doi.org/10.1007/s10670-021-00386-w) online first
- Upegui, D., Coiro, J., Battle, S. et al. (2021). Integration of the Topic of Social Justice into High School Biology Curricula. *Sci & Educ*, 1-19.
doi:[10.1007/s11191-021-00287-y](https://doi.org/10.1007/s11191-021-00287-y)
- Valladares, L. (2021). Post-Truth and Education: STS Vaccines to Re-establish Science in the Public Sphere. *Sci & Educ*, 1-27.
doi:[10.1007/s11191-021-00293-0](https://doi.org/10.1007/s11191-021-00293-0) online first
- Vázquez-Bernal, B., Jiménez-Pérez, R. (2021). Modeling a Theoretical Construct on Pupils' Difficulties in Problem Solving. *Sci & Educ*, 1-31. doi:[10.1007/s11191-021-00289-w](https://doi.org/10.1007/s11191-021-00289-w) online first
- Yıldız-Feyzioğlu, E., Kiran, R. (2021) Investigating the Relationships between Self-efficacy for Argumentation and Critical Thinking Skills. *Journal of Science Teacher Education*. doi:[10.1080/1046560X.2021.1967568](https://doi.org/10.1080/1046560X.2021.1967568)
- Waizbort, R.F., da Luz, M.R.M.P., Edler, F.C. et al. (2021). The First Brazilian Thesis of Evolution: Haeckel's Recapitulation Theory and Its Relations with the Idea of Progress. *J Hist Biol*, 1-35. doi:[10.1007/s10739-021-09651-8](https://doi.org/10.1007/s10739-021-09651-8) online first
- Wei, B., Jiang, Z. & Gai, L. (2021), Examining the Nature of Practical Work in School Science Textbooks: Coverage of the Diversity of Scientific Methods. *Sci & Educ*, 1-18.
doi:[10.1007/s11191-021-00294-z](https://doi.org/10.1007/s11191-021-00294-z) online first
- Winkelmann, J. (2021). On Idealizations and Models in Science Education. *Sci & Educ*, 1-19. doi:[10.1007/s11191-021-00291-2](https://doi.org/10.1007/s11191-021-00291-2) online first

Recent HPS&ST Related Books

Busch, U. (Ed.) (2021). *Wilhelm Conrad Röntgen: A Shining Life for Science*. Dordrecht: Springer. ISBN: 978-3-030-72245-6 [Soft Cover]

“It was one of the great moments of humanity when

Wilhelm Conrad Röntgen (1845– 1923) discovered a new kind of radiation on 8 November 1895. He himself modestly called them “X-rays”. Röntgen’s name and his rays became world famous. On 10 December 1901, Röntgen received the first Nobel Prize in Physics. X-rays have lost none of their appeal since then. They still permeate all areas of science, technology and medicine and accompany us in our everyday lives.

“However, Röntgen’s scientific work cannot be reduced to this one great discovery alone. He was an excellent natural scientist, and his spirit of research is still an example for many scientists today. Röntgen’s very special interest in precision physics is also more topical than ever.

“This carefully curated volume offers a multifaceted view of an outstanding natural scientist and provides insights into his personal legacy.” (From the Publisher)

More information is available [here](#).

Choi, T. Y. (2021). *Victorian Contingencies: Experiments in Literature, Science, and Play*. Redwood City, CA: Stanford University Press.

ISBN: 978-1-503-62928-8

“Contingency is not just a feature of modern politics, finance, and culture—by thinking contingently, nineteenth-century Britons rewrote familiar narratives and upended forgone conclusions. *Victorian Contingencies* shows how scientists, novelists, and consumers engaged in new formal and material experiments with cause and effect, past and present, that actively undermined routine certainties.

“Tina Young Choi traces contingency across a wide range of materials and media, from newspaper advertisements and children’s stories to well-known novels, scientific discoveries, technological innovations. She shows how Charles Lyell and Charles Darwin reinvented geological and natural histories

as spaces for temporal and causal experimentation, while the nascent insurance industry influenced Charles Babbage’s computational designs for a machine capable of responding to a contingent future. Choi pairs novelists George Eliot and Lewis Carroll with physicist James Clerk Maxwell, demonstrating how they introduced possibility and probability into once-assured literary and scientific narratives. And she explores the popular board games and pre-cinematic visual entertainments that encouraged Victorians to navigate a world made newly uncertain.

“By locating contingency within these cultural contexts, this book invites a deep and multidisciplinary reassessment of the longer histories of causality, closure, and chance.” (From the Publisher)

More information is available [here](#).

Halpern, S. A. (2021). *Dangerous Medicine: The Story behind Human Experiments with Hepatitis*. New Haven, CT: Yale University Press.

ISBN: 978-0-300-25962-9

“From 1942 through 1972, American biomedical researchers deliberately infected people with hepatitis. Government-sponsored researchers were attempting to discover the basic features of the disease and the viruses causing it, and to develop interventions that would quell recurring outbreaks. Drawing from extensive archival research and in-person interviews, Sydney Halpern traces the hepatitis program from its origins in World War II through its expansion during the initial Cold War years, to its demise in the early 1970s amid an outcry over research abuse.

“The subjects in hepatitis studies were members of stigmatised groups—conscientious objectors, prison inmates, the mentally ill, and developmentally disabled adults and children. The book reveals how researchers invoked military and scientific imperatives and the rhetoric of a common

good to win support for the experiments and access to recruits. Halpern examines the participants' long-term health consequences and raises troubling questions about hazardous human experiments aimed at controlling today's epidemic diseases." (From the Publisher)

More information is available [here](#).

Hunter, M. (2021). *The Decline of Magic: Britain in the Enlightenment*. New Haven, CT: Yale University Press. ISBN: 978-0-300-26095-3

"In early modern Britain, belief in prophecies, omens, ghosts, apparitions and fairies was commonplace. Among both educated and ordinary people the absolute existence of a spiritual world was taken for granted. Yet in the eighteenth century such certainties were swept away. Credit for this great change is usually given to science – and in particular to the scientists of the Royal Society. But is this justified?

"Michael Hunter argues that those pioneering the change in attitude were not scientists but free-thinkers. While some scientists defended the reality of supernatural phenomena, these sceptical humanists drew on ancient authors to mount a critique both of orthodox religion and, by extension, of magic and other forms of superstition. Even if the religious heterodoxy of such men tarnished their reputation and postponed the general acceptance of anti-magical views, slowly change did come about. When it did, this owed less to the testing of magic than to the growth of confidence in a stable world in which magic no longer had a place." (From the Publisher)

More information is available [here](#).

Hutchings, D., & Ungureanu, J. C. (2021). *Of Popes and Unicorns: Science, Christianity, and*

How the Conflict Thesis Fooled the World. Oxford, UK: Oxford University Press.

ISBN: 978-0-190-05309-3 [Hardback]

"Renowned scientist John William Draper (1811-1882) and celebrated historian-politician Andrew Dickson White (1832-1918) were certain that Enlightened Science and Dogmatic Christianity were mortal enemies—and they said as much to anyone who would listen. More than a century later, their grand and sweeping version of history dominates our landscape; Draper and White's "conflict thesis" is still found in countless textbooks, lecture series, movies, novels, and more.

"Yet, as it would later be discovered, they were mistaken. Their work has been torn to shreds by the experts, who have declared it totally at odds with reality. So how, if this is the case, does their wrong-headed narrative still live on? Who were these two men, and what, exactly, did they say? What is it about their God-versus-Science "conflict thesis" that convinced so many? And what—since both claimed to love Science and love Christ—were they actually trying to achieve in the first place?

"In this book, physicist David Hutchings and historian of science and religion James C. Ungureanu dissect the work of Draper and White. They take readers on a journey through time, diving into the formation and fallacy of the conflict thesis and its polarising impact on society.

"The result is a tale of Flat Earths, of anesthetic, and of autopsies; of Creation and Evolution; of laser-eyed lizards and infinite worlds. It is a story of miracles and mathematicians; souls and Great Libraries; the Greeks, the scientific method, the Not-So-Dark-After-All Ages... and, of course, of popes and unicorns." (From the Publisher)

More information is available [here](#).

Jorgensen, T. J. (2021). *Spark: The Life of Electri-*

city and the Electricity of Life. Princeton, NJ: Princeton University Press. ISBN: 978-0-691-19783-8

“When we think of electricity, we likely imagine the energy humming inside our home appliances or lighting up our electronic devices—or perhaps we envision the lightning-streaked clouds of a stormy sky. But electricity is more than an external source of power, heat, or illumination. Life at its essence is nothing if not electrical.

“The story of how we came to understand electricity’s essential role in all life is rooted in our observations of its influences on the body—influences governed by the body’s central nervous system. Spark explains the science of electricity from this fresh, biological perspective. Through vivid tales of scientists and individuals—from Benjamin Franklin to Elon Musk—Timothy Jorgensen shows how our views of electricity and the nervous system evolved in tandem, and how progress in one area enabled advancements in the other. He explains how these developments have allowed us to understand—and replicate—the ways electricity enables the body’s essential functions of sight, hearing, touch, and movement itself.

“Throughout, Jorgensen examines our fascination with electricity and how it can help or harm us. He explores a broad range of topics and events, including the Nobel Prize-winning discoveries of the electron and neuron, the history of experimentation involving electricity’s effects on the body, and recent breakthroughs in the use of electricity to treat disease.

Filled with gripping adventures in scientific exploration, Spark offers an indispensable look at electricity, how it works, and how it animates our lives from within and without.” (From the Publisher)

More information is available [here](#).

Krüger, O. (2021). *Virtual Immortality – God,*

Evolution, and the Singularity in Post- and Transhumanism. Transcript Publishing.

ISBN: 978-3-837-65059-4

“In recent years, ideas of post- and transhumanism have been popularised by novels, TV series, and Hollywood movies. According to this radical perspective, humankind and all biological life have become obsolete. Traditional forms of life are inefficient at processing information and inept at crossing the high frontier: outer space. While humankind can expect to be replaced by their own artificial progeny, post-humanists assume that they will become an immortal part of a transcendent superintelligence. Krüger’s award-winning study examines the historical and philosophical context of these futuristic promises by Ray Kurzweil, Nick Bostrom, Frank Tipler, and other posthumanist thinkers.” (From the Publishers)

More information is available [here](#).

Leistert, O., & Schrickel, I. (eds.) *Thinking the Problematic: Genealogies and Explorations between Philosophy and the Sciences*. Bielefeld, Germany: Transcript Publishing.

ISBN: 978-3-837-64640-5 [Open Access]

“The notion of “the problematic” has changed its meaning within the history of power and knowledge since the early 20th century, leading up to today’s performative, neocybernetic fascination with generalised management ideas and technocratic models of science. This book explores central scenes, conceptual elaborations, and practical affiliations of what historically has been called “the problem” or “the problematic”. By way of considering modes of problematisation as modes of inhabitation, intervention, and transformation the contributions map its current conceptual-political uses as well as onto-epistemological challenges.

Thus, “problematization” is positioned as a critical concept that links, often in intricate ways, several currents from speculative philosophy to the formation of interdisciplinary fields. The “problematic”, as it turns out, has been the source of change in philosophy and the sciences all along.” (From the Publisher)

More information is available [here](#).

Miracle, E. G. (2021). *Coenraad Jacob Temminck and the Emergence of Systematics (1800–1850)*. Leiden: Brill. ISBN: 978-9-004-44149-1

“*Coenraad Jacob Temminck and the Emergence of Systematics (1800–1850)* is the first study to examine in detail the life and work of Coenraad Jacob Temminck (1778–1858), the Dutch naturalist who was the first director of ’s Rijks Museum van Natuurlijke Historie (National Museum of Natural History) in Leiden, The Netherlands. This study situates Temminck’s activities in the context of European natural history during the early to the mid-nineteenth century. Three issues which defined the era are discussed in more detail: the growing European colonial territories, the rise of scientific meritocracy, and the emergence of systematics as a discipline. Temminck’s biography elucidates how and why systematics developed, and why its status within the natural sciences has been a matter of discussion for more than a century.” (From the Publisher)

More information is available [here](#).

Narayanamurti, V., & Tsao, J. Y. (2021). *The Genesis of Technoscientific Revolutions Rethinking the Nature and Nurture of Research*. Cambridge: MA: Harvard University Press.
ISBN: 978-0-674-25185-4 [Hardcover]

“Research is a deeply human endeavour that must be nurtured to achieve its full potential. As with tending a garden, care must be taken to organise, plant, feed, and weed—and the manner in which this nurturing is done must be consistent with the nature of what is being nurtured.

“In *The Genesis of Technoscientific Revolutions*, Venkatesh Narayanamurti and Jeffrey Tsao propose a new and holistic system, a rethinking of the nature and nurturing of research. They share lessons from their vast research experience in the physical sciences and engineering, as well as from perspectives drawn from the history and philosophy of science and technology, research policy and management, and the evolutionary biological, complexity, physical, and economic sciences.

“Narayanamurti and Tsao argue that research is a recursive, reciprocal process at many levels: between science and technology; between questions and answer finding; and between the consolidation and challenging of conventional wisdom. These fundamental aspects of the nature of research should be reflected in how it is nurtured. To that end, Narayanamurti and Tsao propose aligning organisation, funding, and governance with research; embracing a culture of holistic technoscientific exploration; and instructing people with care and accountability.” (From the Publisher)

More information is available [here](#).

Rawson, M. (2021). *The Nature of Tomorrow: A History of the Environmental Future*. New Haven, CT: Yale University Press.
ISBN: 978-0-300-25519-5

“For centuries, the West has produced stories about the future in which humans use advanced science and technology to transform the earth. Michael Rawson uses a wide range of works that include Francis Bacon’s *New Atlantis*, the science fiction novels of Jules Verne, and even the speculations of

think tanks like the RAND Corporation to reveal the environmental paradox at the heart of these narratives: the single-minded expectation of unlimited growth on a finite planet.

“Rawson shows how these stories, which have long pervaded Western dreams about the future, have helped to enable an unprecedentedly abundant and technology-driven lifestyle for some while bringing the threat of environmental disaster to all. Adapting to ecological realities, he argues, hinges on the ability to create new visions of tomorrow that decouple growth from the idea of progress.” (From the Publisher)

More information is available [here](#).

Treusch, P. (2021). *Robotic Knitting: Re-Crafting Human-Robot Collaboration Through Careful Coboting*. Columbia, NY: Columbia University Press. ISBN: 978-3-837-65203-1 [paperback]

“As a reaction to typically dead-end debates on future human and robot collaboration that tend to be either dismissive or overly welcoming towards “cobot” technologies, this book provides a technofeminist intervention. Pat Treusch not only shows how both the fields of technofeminism and robotics can engage in a practical exchange through knitting, but also contributes a tangible example of coboting dynamics. Robotic Knitting re-negotiates the boundaries between formalisation and embodiment, craft and high-tech as well as useful and dysfunctional machines. It re-crafts the nature of collaboration between human and robot. This finally entails an alternative mode of relating – a mode that enables an account of careful coboting.” (From the Publisher)

More information is available [here](#).

Wiedenmann, R. N., & Fisher, J. R. (2021). *The Silken Thread: Five Insects and Their Impacts on*

Human History. Oxford, UK: Oxford University Press. ISBN: 978-0-197-55558-3

“Diseases vectored by insects have killed more people than all weapons of war. Fleas are common pests, but some can transmit illnesses such as the bubonic plague. In fact, three pandemics can be traced back to them. Epidemics of typhus have been caused by lice. Conversely, humans have also benefited from insects for millennia. Silk comes from silkworms and honey comes from bees. Despite the undeniably powerful effects of insects on humans, their stories are typically left out of our history books.

“In *The Silken Thread*, entomologists Robert. N. Wiedenmann and J. Ray Fisher link the history of insects to the history of empires, cultural exchanges, and warfare. The book narrows its focus to just five insects: a moth, a flea, a louse, a mosquito, and a bee. The authors explore the impact of these insects throughout time and the common threads connecting them. Using biology to complement history, they showcase these small creatures in a whole new light.

“On every page, the authors thoughtfully analyse the links between history and entomology. The book begins with silkworms, which have been farmed for centuries. It then moves to fleas and their involvement in the spread of the plague before introducing the role lice played in the Black Death, wars, and immigration. The following section concerns yellow fever mosquitoes, emphasising the effects of yellow fever in the Americas and the connection to sugar and slavery. After discussing the importance of western honey bees, the authors tie these five insects together in an exciting closing chapter.” (From the Publisher)

More information is available [here](#).

Coming HPS&ST Related Conferences

March 27-30, 2022, NARST Annual Conference, Vancouver, BC

Details: [here](#).

July 3rd-7th, 2022, IHPST 16th International Conference, University of Calgary, Canada

Details from Glenn Dolphin:

glenn.dolphin@ucalgary.ca.

July 18-22, 2022, 'Objects of Understanding: Historical Perspectives on Material Artefacts in Science Education', Europa-Universität Flensburg, Germany

Details: Roland Wittje, roland.wittje@gmail.com and [here](#).

July 24-29, 2023, 17th DLMPST Congress, University of Buenos Aires

Information: Pablo Lorenzano, pablo@unq.edu.ar.

HPS&ST Related Organisations and Websites

[IUHPST](#) – International Union of History, Philosophy, Science, and Technology

[DLMPST](#) – Division of Logic, Mathematics, Philosophy, Science, and Technology

[DHST](#) – Division of History, Science, and Technology

[IHPST](#) – International History, Philosophy, and Science Teaching Group

[NARST](#) – National Association for Research in Science Teaching

[ESERA](#) – European Science Education Research Association

[ASERA](#) – Australasian Science Education Research Association

[ICASE](#) – International Council of Associations for Science Education

[UNESCO](#) – Education

[HSS](#) – History of Science Society

[ESHS](#) – European Society for the History of Science

[AHA](#) – American History Association

[ISHEASTME](#) – International Society for the History of East Asian History of Science Technology and Medicine

[BSHS](#) – British Society for History of Science

[EPSA](#) – European Philosophy of Science Association

[AAHPSSS](#) - The Australasian Association for the History, Philosophy, and Social Studies of Science

[HOPOS](#) – International Society for the History of Philosophy of Science

[PSA](#) – Philosophy of Science Association

[BSPS](#) – The British Society for the Philosophy of Science

[SPSP](#) – The Society for Philosophy of Science in Practice

[ISHPSB](#) – The International Society for the History, Philosophy, and Social Studies of Biology

[PES](#) – The Philosophy of Education Society (USA)

The above list is updated and kept on the HPS&ST

website [HERE](#).

HPS&ST-related organisations wishing their web page to be added to the list should contact assistant editor Paulo Maurício (paulo.asterix@gmail.com)

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