

HPS&ST

NEWSLETTER



# HPS&ST NEWSLETTER

APRIL 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 25+ 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](mailto:m.matthews@unsw.edu.au)).

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

## HPS&ST NEWSLETTER STAFF

Editor Michael Matthews

Assistant Editor  
(Opinion Page  
& Formatting) Nathan Oseroff-Spicer

Assistant Editor  
(Publications  
& Website) Paulo Maurício

ISSN: 2652-2837

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## Third IUHPST Essay Prize in History and Philosophy of Science

The International Union of History and Philosophy of Science and Technology (IUHPST) is pleased to announce the outcome of the competition for the third IUHPST Essay Prize in History and Philosophy of Science. This prize competition seeks to encourage fresh methodological thinking on the history and philosophy of science as an integrated discipline. For this round of the competition the prize question was: “What can history and philosophy of science, technology and medicine contribute to our current global challenges?” The full text of the call for entries can be found [here](#).

The winner of the 2021 prize is the essay entitled “Misinformation age: What early modern scientific fakes can tell us about today’s online fabrications” by Ms. Marlis Hinckley of Johns Hopkins University. This thoughtful, provocative, and well-argued essay gives an illuminating analysis of how misinformation can spread, looking at the 16th century as a source of insight. Hinckley draws an imaginative and instructive parallel between 16th-century animal fakes (in particular, Aldrovandi’s “dragon”) and some salient current cases such as the impact of the Wakefield study on autism and vaccination, and the circulation of misinformation about COVID-19. The linkages she draws are keen, sensitive, plausible, and relevant. The historical work Hinckley presents is a deft and productive synthesis, succinct and filled with content.

It genuinely integrates a philosophical perspective in order to understand the nature of information and to advance an ethical argument about responsible information-sharing. Hinckley opens up important practical questions and suggests that

we need to craft a nuanced notion of “common sense” in order to guide people in sharing information with each other. We commend Marlis Hinckley for this bold and original essay, which takes a reflective look at history to challenge our present ways of life.

Ms. Hinckley will receive her prize and present the content of their essay in a special session at the 26th International Congress of History of Science and Technology (ICHST) in Prague (online), 25–31 July 2021.

This prize is administered by the Joint Commission, whose remit is to make links between the work of the two Divisions of the IUHPST, namely the DHST (Division of History of Science and Technology) and the DLMPST (Division of Logic, Methodology and Philosophy of Science and Technology).

The panel of judges for the 2021 competition consisted of: Rachel Ankeny, University of Adelaide, Australia; Agnes Bolinska, University of South Carolina, USA; Hasok Chang (chair), University of Cambridge, UK; Benedikt Löwe, Universities of Amsterdam/Hamburg/Cambridge, the Netherlands/Germany/UK; Helen Longino, Stanford University, USA; Joseph Martin, Durham University, UK; Michael Osborne, Oregon State University, USA, and Dirk Schlimm, McGill University, Canada. For further information about the IUHPST, see <http://iuhpst.org>.

## Science History Institute Receives <https://www.sciencehistory.org/news/bredig-clir-grant> CLIR Grant to Digitise Papers of Georg and Max Bredig

*Collection Smuggled Out of Nazi Germany Tells Story of Noted German Jewish Scientist's Rise to Prominence and His Family's Struggle to Survive the Holocaust*

The Science History Institute has been awarded a \$198,454 grant from the Council on Library and Information Resources (CLIR) for the project *Science and Survival: Digitising the Papers of Georg and Max Bredig*.

Unlike many other archival collections of German Jewish scientists that were seized and destroyed by the Nazis, Georg Bredig's papers miraculously survived. This award will be used to catalogue, translate, digitise, and make publicly accessible nearly 3,000 letters, photographs, and other documents from this newly rediscovered trove of rare historic material as well as the related war-time papers of Max Bredig, Georg's son.

Georg Bredig (1868–1944) was a pioneering scientist in the field of physical chemistry who held important academic positions until his career was ended by the Nazis in 1933. The pre-1933 materials detail Bredig's early scientific training and his rise to international prominence during the golden age of German science. The collection contains extensive correspondence with many Nobel laureates in chemistry and physics, including Svante Arrhenius, Wilhelm Ostwald, Niels Bohr, Ernst Rutherford, Fritz Haber, Max Planck, Walther Nernst, and Harold Urey.

For more information about the Science History Institute and this award, please visit:

## Conference, Société de philosophie des sciences, September 8-10, 2021, University of Mons

The next meeting of the Société de philosophie des sciences (SPS : <https://www.sps-philoscience.org/>) will take place on September 8 – 10 2021 at the University of Mons (Belgium).

Organising committee: Antoine Brandelet (University of Mons), Anne Staquet (University of Mons), Jérémy Attard (University of Mons), Alice Van Helden (University of Namur), Bertrand Hespel (University of Namur), Dominique Lambert (University of Namur). The main theme of the 2021 congress will be: "Sciences and scientificity"

The meeting is composed of:

(1) Invited speakers: Marion Vorms (Université Paris 1 Panthéon-Sorbonne), Jean-Pierre Cléro (Centre Bentham Paris & Université de Rouen), Stephan Lewandowsky (University of Bristol), Guillaume Lecointre (Muséum national d'histoire naturelle), Alan Sokal (New York University & University College London), Brigitte Axelrad (Université de Grenoble, vice-présidente de l'AFIS).

(2) Symposia (In English or French) of 3-4 interventions on one specific theme; the total length of a symposium is 1:30-2:00 depending on the number of included interventions. *Symposia are highly recommended, notably if they include both scientific and philosophical interventions.*

(3) Individual papers (In English or French), suitable for a 30-minute presentation (discussion

included). Deadline for submission : **April 30th 2021**

Submission via the website <https://sps2021.sciencesconf.org/>

For any inquiries, please contact Antoine Brandelet ([antoine.brandelet@umons.ac.be](mailto:antoine.brandelet@umons.ac.be))

## Executive Director, History of Science Society (USA)

The History of Science Society seeks a visionary Executive Director. Founded in 1924, the Society is dedicated to understanding science, technology, and medicine in historical context. More than 1700 individual members, one-third of whom reside outside the United States, support the Society's mission to foster interest in the history of science, promote discussion of science's social and cultural relations, and bring this understanding to others worldwide.

The Society's 2014 Strategic Plan may be found [here](#).

As the History of Science Society looks towards its second century, the next Executive Director (ED) will be charged with advancing the Society's mission in a global context. The successful candidate will ensure that the Society sustains a vibrant scholarly community and acts as an effective advocate for the history of science. The ideal candidate will bring experience in academic administration or nonprofit management, as well as enthusiasm for working with elected leadership to create new avenues for advancing the history of science.

This is a full-time position based in the United States with a renewable 3-year contract, subject to annual performance review. Compensation will

be commensurate with experience. The position will begin on July 1, 2021.

The ideal candidate will bring a strong commitment to HSS's mission, and to increase diversity, inclusivity, and transparency in the organisational culture of the society. The following professional qualifications, skills, and experience will be important for success in the role of Executive Director:

- Experience with budgeting, financial statements and fundraising
- Excellent interpersonal communication skills, and a commitment to teamwork
- Excellent computer skills and an understanding of the value of technology
- Experience with conference planning
- An advanced degree in the history of science or another relevant academic field
- Senior-level managerial experience in foundations, research, higher education or the non-profit sector, including strategic planning, budgeting, and staff management

Candidates should submit a cover letter addressing the position description, a curriculum vitae, and a list of three references to [directorsearch@hssonline.org](mailto:directorsearch@hssonline.org). For questions and nominations, please contact Professor Florence Hsia, Search Committee Chair ([florence.hsia@wisc.edu](mailto:florence.hsia@wisc.edu)). Review of applications will begin on May 2, 2021 and continue until the position is filled.



## Assistant Editor Required, HPS&ST Newsletter

The History, Philosophy and Science Teaching Newsletter has been produced, in one form or another, for 40+ years. It is now published on the web. The Contents announcement goes directly to about 9,500 emails and to different HPS lists and science education lists.

The newsletter has been edited by Michael Matthews at the University of New South Wales ([m.matthews@unsw.edu.au](mailto:m.matthews@unsw.edu.au)). There are two Assistant Editors, Paulo Maurício, Lisbon ([paulo.asterix@gmail.com](mailto:paulo.asterix@gmail.com)) and Nathan Oseroff-Spicer, London, ([nathanoserooff@gmail.com](mailto:nathanoserooff@gmail.com)).

A third assistant editor is now being sought in order to contribute to the Contents and Promotion of the newsletter, and particularly with seeking out and inviting Opinion Page essays from science educators and historians and philosophers of science. This is an opportunity to join an established team and contribute to the growth of the international HPS&ST community.

All enquiries to the editor or assistant editors.

## IHPST 2021 Webinars

The planned IHPST July International Conference in Calgary has been postponed till 3-7 July 2022. In lieu of the conference there will be a series of webinars available to IHPST members.

Importance of Research on History, Philosophy and Sociology of Science in Science Education: Reflections from the Editor-in-Chief of *Science & Education* May 7th 2 p.m. – 3:30 p.m GMT

Sibel Erduran, the Editor-in-Chief of *Science & Education* about the research on History, Philosophy, and Sociology of Science in Science Education. After the talk, the webinar will be opened to the audience to leave comments and pose questions.

Teaching Aspects of the Nature of Science  
Date and time to be announced.

William McComas will introduce and discuss contributions to the anthology *Nature of Science in Science Instruction Rationales and Strategies* (McComas 2020)

The webinars are open only to members of the IHPST Group. Further details, including Abstracts of the webinars and IHPST membership details are available [here](#).

## Philosophy of Science Association (PSA) Covid Teaching Resources

*Teaching Philosophy in the Time of COVID* is a new resource page on the PSA website. It features syllabi, articles, videos, podcasts, and other resources related to philosophy and the coronavirus. If you've found an interesting source on philosophy and the coronavirus, we invite you to submit it. The page will be updated weekly with new materials that are useful for professors teaching philosophy and COVID-19 in the classroom or for whomever is trying to think philosophically about the pandemic.

Details available [here](#).

## Dibner Award, Society for the History of Technology

Nominations are open for the Society for the History of Technology's Dibner Award. In general, online, screen-based and physical exhibits are eligible. However, in 2021 because of the restrictions on refereeing imposed by the pandemic, only online exhibits will be considered eligible. So, if you have a suitable online exhibit please do apply! The closing date for applications is 30 April 2021.

The Dibner Award for Excellence in Museum Exhibits was established in 1985, through the generosity of Bern Dibner, to recognise excellence in museums and museum exhibits that interpret the history of technology, industry, and engineering to the general public. Winning exhibits, in addition to being well designed and produced, should raise pertinent historical issues. Artefacts and images should be used in a manner that interests, teaches, and stimulates both the general public and historians. The award consists of a plaque and up to \$1,000 to cover expenses for a member of the design team to accept the award at the SHOT awards banquet.

Exhibits are eligible for this award if they have been open to the public for no more than 24 months before the deadline for nominations. The Society especially encourages nominations from local and regional museums and historical societies.

Further information about the prize, including the nomination form, a list of past recipients, and the members of the Dibner Award Committee can be found on the SHOT website [here](#).

## Opinion Piece: *The Abuses of Popper*, Charlotte Sleigh

Charlotte Sleigh is a researcher, writer and practitioner across the fields of science and humanities. Her research interests began in the history of biology and have continued as such with six books on different animals. Besides this, she has written widely on the historical and textual relationships between science and writing (*Literature and Science*, Palgrave 2010), and twentieth-century history of science (*Scientific Governance in Britain, 1914-79*, MUP 2016, co-edited with Don Leggett). In more recent years Charlotte has been involved with Art and Science projects and climate science communication. She is a former editor of the *British Journal for the History of Science* and current president of the British Society for the History of Science.



If you ask philosophically minded researchers – in the Anglophone world at least – why it is that science works, they will almost always point to the philosopher Karl Popper (1902-94) for vindication. Science, they explain, doesn't presume to provide the final answer to any question, but contents itself with trying to disprove things. Science, so the Popperians claim, is an implacable machine

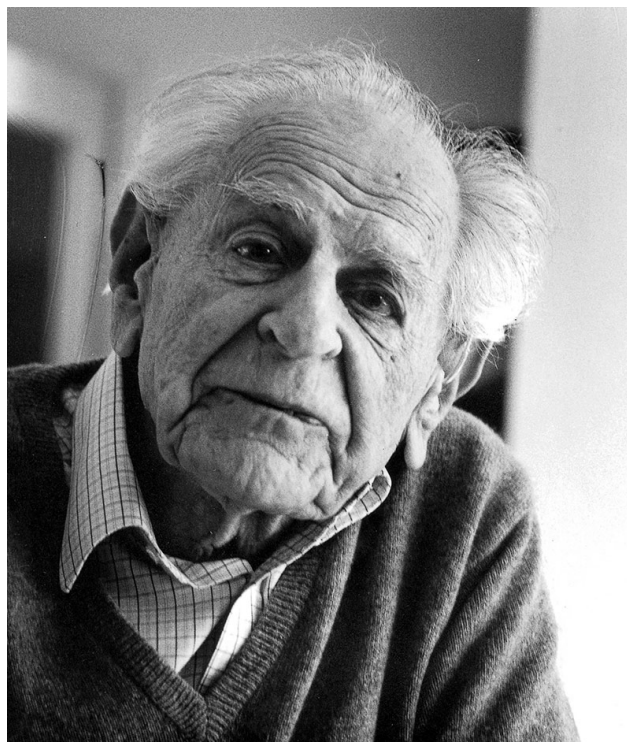


for destroying falsehoods.

Popper spent his youth in Vienna, among the liberal intelligentsia. His father was a lawyer and bibliophile, and an intimate of Sigmund Freud's sister Rosa Graf. Popper's early vocations draw him to music, cabinet making and educational philosophy, but he earned his doctorate in psychology from the University of Vienna in 1928. Realising that an academic post abroad offered escape from an increasingly antisemitic Austria (Popper's grandparents were all Jewish, though he himself had been baptised into Lutheranism), he scrambled to write his first book. This was published as *Logik der Forschung* (1935), or *The Logic of Scientific Discovery*, and in it he put forward his method of falsification. The process of science, wrote Popper, was to conjecture a hypothesis and then attempt to falsify it. You must set up an experiment to try to prove your hypothesis *wrong*. If it is disproved, you must renounce it. Herein, said Popper, lies the great distinction between science and pseudoscience: the latter will try to protect itself from disproof by massaging its theory. But in science it is all or nothing, do or die.

Popper warned scientists that, while experimental testing might get you nearer and nearer to the truth of your hypothesis via corroboration, you cannot and must not ever proclaim yourself correct. The logic of induction means that you'll never collect the infinite mass of evidence necessary to be certain in all possible cases, so it's better to consider the body of scientific knowledge not so much true as not-yet-disproved, or provisionally true. With his book in hand, Popper obtained a university position in New Zealand. From afar, he watched the fall of Austria to Nazism, and commenced work on a more political book, *The Open Society and its Enemies* (1945). Shortly after the war, he moved to the UK, where he remained for

the rest of his life.

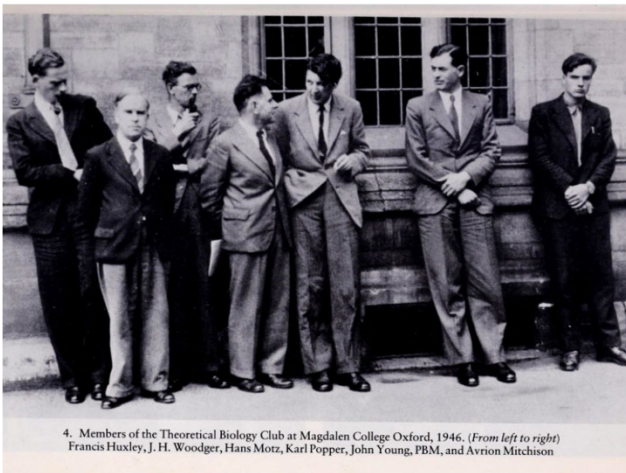


Karl Popper, 1987. Photo by Süddeutsche Zeitung/Alamy

For all its appealing simplicity, falsification was quickly demolished by philosophers, who showed that it was an untenable way of looking at science. In any real experimental set-up, they pointed out, it's impossible to isolate a single hypothetical element for disproof. Yet for decades, Popperianism has nonetheless remained popular among scientists themselves, in spite of its potentially harmful side-effects. Why should this be?

It was a group of biologists that gave Popper his first scientific hearing. They met as the Theoretical Biology Club in the 1930s and '40s, at the University of Oxford, at house parties in Surrey, and latterly in London too. Popper visited them both before and after the war, as they wrestled with evolutionary theory and with establishing connections between their different biological specialisms. During the prewar period in particular, evolutionary biology was – depending on one's outlook – either excitingly complex or confusingly

jumbled. Neat theories of Mendelian evolution, where discrete characteristics were inherited on the toss of a chromosomal coin, competed to explain evolution with arcane statistical descriptions of genetic qualities, continuously graded across populations. Meanwhile the club's leading light, Joseph Henry Woodger, hoped for a philosophically tight way of clarifying the notoriously flaky biological concept of 'organicism'. Perhaps Popper's clarifying rigour could help to sort it all out.



4. Members of the Theoretical Biology Club at Magdalen College Oxford, 1946. (From left to right) Francis Huxley, J. H. Woodger, Hans Motz, Karl Popper, John Young, PBM, and Avrion Mitchison

*Photo supplied by the author*

It is a striking fact that Popper's most vocal fans came from the biological and field sciences: John Eccles, the Australian neurophysiologist; Clarence Palmer, the New Zealand meteorologist; Geoffrey Leeper, an Australian soil scientist. Even Hermann Bondi, an Austrian-British physical scientist, who operated at the speculative end of cosmology. In other words, it was the scientists whose work could least easily be potted in an attempted laboratory disproof – Popper's method – who turned to Popper for vindication. This is odd. Presumably, they hoped for some epistemological heft for their work. To take a wider angle on the mystery, we might note the 'physics envy' sometimes attributed to 20th-century field scientists: the comparative lack of respect they experienced in both scientific and public circles. Popper seemed to offer salvation to this particular ill.

Among the eager philosophical scientists of the Theoretical Biology Club was a young man named Peter Medawar. Shortly after the Second World War, Medawar was drafted into a lab researching tissue transplantation, where he began a Nobel-winning career in the biological sciences. In his several books for popular audiences, and in his BBC Reith lectures of 1959, he consistently credited Popper for the success of science, becoming the most prominent Popperian of all. (In turn, Richard Dawkins credited Medawar as 'chief spokesman for "The Scientist" in the modern world', and has spoken positively of falsifiability.) In Medawar's radio lectures, Popper's trademark 'commonsense' philosophy was very much on display, and he explained with great clarity how even hypotheses about the genetic future of mankind could be tested experimentally along Popperian lines. In 1976, Medawar secured Popper his most prestigious recognition yet: a fellowship, rare among non-scientists, at the scientific Royal Society of London.

While all this was going on, three philosophers were pulling the rug away beneath the Popperians' feet. They argued that, when an experiment fails to prove a hypothesis, any element of the physical or theoretical set-up could be to blame. Nor can any single disproof ever count against a theory, since we can always put in a good-faith auxiliary hypothesis to protect it: perhaps the lab mice weren't sufficiently inbred to produce genetic consistency; perhaps the chemical reaction occurs only in the presence of a particular catalyst. Moreover, we have to protect some theories for the sake of getting on at all. Generally, we don't conclude that we have disproved well-established laws of physics – rather, that our experiment was faulty. And yet the Popperians were undaunted. What did they see in him?

The historian Neil Calver [argued](#) in 2013 that members of the Royal Society were swayed less by Popper's epistemological rules for research than by his philosophical chic. During the 1960s, they had been pummelled by the 'two cultures' debate that cast them as jumped-up technicians in comparison with the esteemed makers of high culture. Philosophy was a good cultural weapon with which to respond, since it demonstrated affinity with the arts. In particular, Popper's account of what came before falsification in research was a good defence of the 'cultural' qualities of science. He described this stage as 'conjecture', an act of imagination. Medawar and others made great play of this scientific creativity in order to sustain cultural kudos for their field. Their Popper was not the Popper of falsification at all, but another Popper of wishful interpretation.

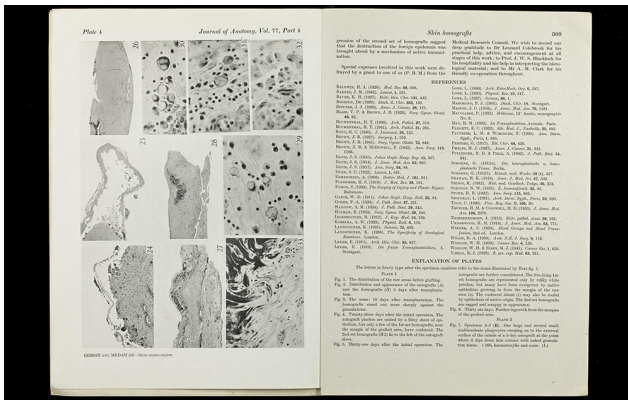
Although important to its participants, the two cultures [debate](#) was a storm in an institutional teacup. During the 1950s and '60s, when Popper's *Logik der Forschung* was available in English (*The Logic of Scientific Discovery*, 1959), clouds were gathering that threatened to flood out more than the chinaware of the Royal Society. In the public mind, the scientist was becoming a dangerous figure, the bogeyman responsible for the atomic bomb. Stanley Kubrick's *Dr Strangelove* (1964), played in so memorably deranged a fashion by Peter Sellers, was the embodiment of the type. Strangelove struck at the heart of Popperian ideals, an unreconstructed Nazi operating at the military-industrial nerve-centre of the 'free world'. As such, he reflected the real-life stories of Nazi war criminals imported by Operation Paperclip to the US to assist in the Cold War effort – a whitewashing project uncovered as early as 1951 by *The Boston Globe*. Against such a backdrop, the epistemic modesty of Popperian science was appealing indeed. Real scientists, in the Popperian mode, ab-

jured all politics, all truths. They didn't attempt to know the atom, still less to win wars. They merely attempted to disprove things. As Medawar put it in *The Hope of Progress* (1972):

The Wicked Scientist is not to be taken seriously ... There are, however, plenty of wicked philosophers, wicked priests and wicked politicians.

Falsification was a recipe to proclaim personal modesty as well. In an [interview](#) in 2017 for the Oral History of British Science project, the crystallographer John Helliwell rejected, with some embarrassment, the notion that he might have been responsible for any revolutionary 'paradigm shift' in science (the coinage of Popper's contemporary, Thomas Kuhn), when he pioneered a new method for visualising proteins and viruses, reaching instead for the humble method of falsification to describe his work.

One person's modesty, however, can be another person's denial of responsibility. A darker way of rendering the Popper vs Strangelove story is to say that falsification offers moral non-accountability to its adherents. A scientist can never be accused of supporting the wrong cause if their work is not about confirmation. Popper himself [declared](#) that science is an essentially theoretical business. Yet it was a naïve scientist working during the Cold War who didn't realise the significance of their funding source and the implications of their research. Medawar, for example, knew full well that his own field of immunology sprang directly from attempts at skin grafting and transplantation on wounded victims of the Second World War. Moreover, he was perfectly aware of the high body-count involved in its experiments (including the use of guillotined criminals in France) – by no means unethical in all cases, but [certainly](#) far from theoretical.



Microscopic slides showing the development of grafted tissue, from an early paper by Peter Medawar. *Courtesy the Wellcome Library*

The Popperian get-out clause was deployed in that most controversial of 20th-century sciences, eugenics. Medawar didn't hesitate to deploy the supposed moral non-accountability of science in defending eugenics, the topic that furnished the basis of his BBC lectures and much that followed. His argument was a subtle one, separating the science of eugenics into two types. 'Positive' eugenics – the creation of a perfect race – he characterised as bad because it was (a) Nazi, and (b) an unfalsifiable scientific goal – un-Popperian on two counts. This left the field clear for Medawar to lend his support to 'negative' eugenics, the deliberate prevention of conception by carriers of certain genetic conditions. This, claimed Medawar, was a strictly scientific (that is, Popperian) question, and didn't touch upon matters of ethics. It was something of an invidious argument.

With Popperian impatience over so-called mere semantics, Medawar brushed away worries that the eugenic word 'fitness' implied a judgment about who was 'fit' or not to be a part of society. Rather, Medawar claimed, it was a mere tag of convenience for an idea that had perfect clarity among evolutionary biologists. Ordinary people shouldn't worry themselves about its implications; the important thing was that scient-

ists had it straight in their minds. Science merely provided the facts; it was for the potential parent to decide. On one level, this sounds innocuous – and Medawar was by no means a bad person. But it was, and remains, intellectually shortsighted to disconnect science and ethics in this way. To suppose a situation in which a potential parent will exercise a perfect and unencumbered liberal choice lends unwarranted impartiality to the scientific facts. In reality, economics or politics might force that parent's hand. A more extreme example makes the case clear: if a scientist explains nuclear technology to a bellicose despot, but leaves the ethical choice of deployment to the despot, we wouldn't say that the scientist had acted responsibly.

As he prepared his [lectures](#) on the 'future of man', Medawar speculated that biological 'fitness' was in fact best understood as an economic phenomenon:

[I]t is, in effect, a system of pricing the endowment of organisms in the currency of offspring: ie, in terms of net reproductive performance.

Making such a connection – between the hidden hand of nature and the apparently impartial decisions of the market – was a hot way to read Popper. His greatest fans outside the scientific community were, in fact, economists. At the London School of Economics, Popper was close to the neoliberal theorist Friedrich Hayek. He also taught the soon-to-be billionaire George Soros, who named his Open Society Foundations (formerly, the Open Society Institute) after Popper's most famous book. Along with Hayek and several others, Popper founded the Mont Pelerin Society, promoting marketisation and privatisation around the world.

Popper's appointment to a fellowship at the Royal Society marked the demise of a powerful strand of socialist leadership in British science that had begun in the 1930s with the cadre of talented and public-facing researchers (J D Bernal, J B S Haldane and others) whom the historian Gary Werskey in 1978 dubbed 'the visible college'. Indeed, Popper had encountered many of them during his prewar visits to the Theoretical Biology Club. While they were sharpening their complex science against the edge of Popper's philosophy, he might well have been whetting his anti-Marxist inclinations against their socialised vision of science – even, perhaps, their personalities. What Popper did in *The Open Society* was take the biologists' politicising of science and attach it to anti-fascism. Science and politics were connected, but not in the way that the socialists claimed. Rather, science was a special example of the general liberal virtues that can be cultivated only in the absence of tyranny.

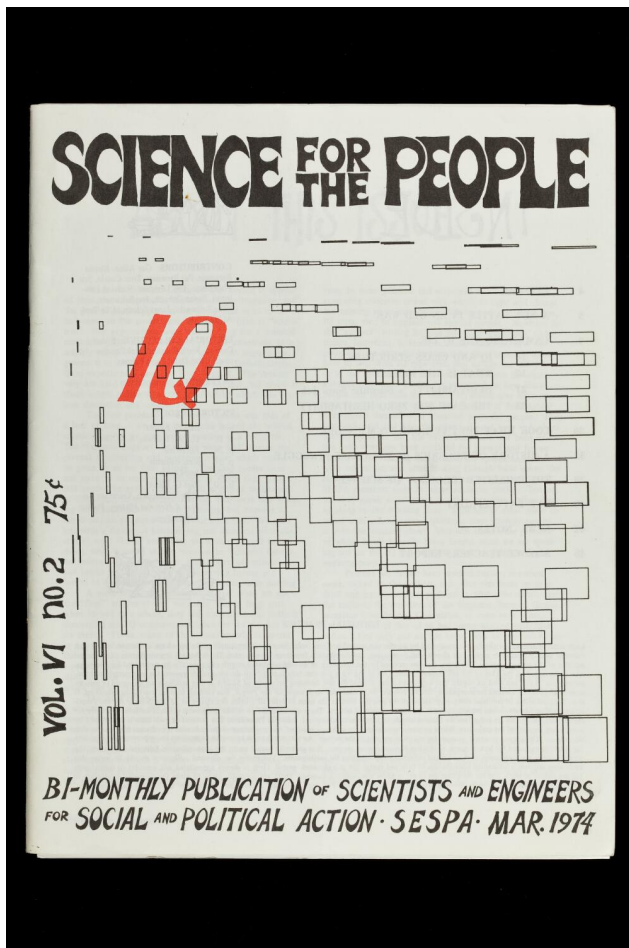
After the war, the commitment of visible-college scientists to nation-building saw them involved in many areas of governmental, educational and public life. The Popperians hated them. In *The Road to Serfdom* (1944), Hayek warned that they were 'totalitarians in our midst', plotting to create a Marxist regime. They should leave well alone, he argued, and accept that their lab work bore no connection to social questions. Hayek's bracketing off of governance was no more plausible in science than it was in economics. The greatest myth of neoliberalism is that it represents a neutral political perspective – a commitment to non-meddling – when in fact it must be sustained through aggressive pro-business propaganda and the suppression of organised labour. So, while Soros's social activism has done much good in the world, it has been funded through economic activity that depends upon a systematic repres-

sion of debate and of human beings for its success. Having a philosophical cover-story for this kind of neoliberalism, that likens it to (Popperian) science, does it no harm at all.

In thinking and writing about Popper, one becomes very conscious of antisemitism. Popper fled Nazi hatred in 1930s Austria; today, Soros is the victim of antisemitic slurs that would be ridiculous were it not for the history and the real threat of continued violence in which they are rooted. We do well to remember the biographical reasons that Popper had for advancing an open society, and for trying to redeem science from the sins committed by Nazi researchers. The sly elision of fascist and socialist science as the opponent to Popperianism – sometimes deliberate, sometimes unconscious – is a move for which it's more difficult to find sympathy.

Science is profoundly altered when considered analogous to the open market. The notion that scientific theories vie with one another in open competition overlooks the fact that research ambitions and funding choices are shaped by both big-p and small-p politics. There is a reason why more scientific progress has been made in drugs for the treatment of diseases of wealth than of poverty. Moreover, career success in science – which shapes future research agendas when a person becomes a leader in their field – is a matter profoundly inflected by gender, race, class and dis/ability.





Scientists refused Popper's distinction between science and ethics in *Science for the People*

Some unscrupulous researchers even used a Popperian frame to become, precisely, the 'wicked scientists' whose existence Medawar denied. As the historians Naomi Oreskes and Erik Conway describe in *Merchants of Doubt* (2010), scientists in the US and the UK were co-opted as lobbyists for tobacco companies during the late-20th century to cast doubt upon research that revealed a link between smoking and cancer. No such link could be proved, in Popperian terms; and that room for doubt was ruthlessly exploited by the scientists' paymasters. Many of the same scientists went on to work for fossil fuel lobbyists, casting doubt on the science of anthropogenic climate change.

It doesn't take much time on a search engine to find examples of Popperianism wielded by den-

iers. In a YouTube video from 2019, the Clear Energy Alliance (which DeSmog Blog lists as funded by oil interests) called upon the 'legendary scientific philosopher Karl Popper'. The group's central claim is that: 'In order to know if a theory could be true, there must be a way to prove it to be false. Unfortunately, many climate change scientists, the media and activists are ignoring this cornerstone of science.'

At the same time, academics at recognised universities write scholarly sounding papers for the libertarian, neoliberal and sceptic Cato Institute arguing that 'Popper's evolutionary epistemology captures ... the essence of science, but the conduct of climate science today is a far cry from [it]'. Such writers typically hail from the fields of economics and policy rather than science; untroubled by the critique of scientists, Popper's contested and outdated account of science suits them perfectly.

While Hayek et al held the smoking gun of Popperian mischief, there were well-intentioned reasons for sticking with a simple model of sceptical science. Not least that it dovetailed with the meritocratic narrative of post-war science: the notion that science, more than any other discipline, suited the upwardly mobile working and middle classes. It takes a particular kind of education and upbringing to see the aesthetics of completion, or grasp the mathematics of proof, but any smart kid can poke holes in something. If that's what science is, then it's open to anyone, no matter their social class. This was the meritocratic dream of educationalists in the 1950s: Britain would, in mutually supportive vein, be culturally modern and intellectually scientific.

That dream backfired. The notion that science is all about falsification has done incalculable damage not just to science but to human wellbeing.

It has normalised distrust as the default condition for knowledge-making, while setting an unreachable and unrealistic standard for the scientific enterprise. Climate sceptics demand precise predictions of an impossible kind, yet seize upon a single anomalous piece of data to claim to have disproved the entire edifice of combined research; anti-vaxxers exploit the impossibility of any ultimate proof of safety to fuel their destructive activism. In this sense, Popperianism has a great deal to answer for.

Originally published in [Aeon Magazine](#), 16 February 2021

## 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](mailto: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.

## History of Science YouTube Channel

The [HISTORY OF SCIENCE](#) channel on YouTube is an initiative of Brazilian and Portuguese scholars. It disseminates various areas of knowledge related to the history of science, technology, and scientific education through brief conversations with specialists, professors, and researchers from all over the world. There are currently about 100 presentations available on the channel. The bulk in Portuguese, but some in English.

The channel was created by two Ph.D. students of the Doctoral Program in the History of Sciences and Scientific Education promoted jointly by the University of Coimbra and the University of Aveiro. The videos, typically 10-15 minutes, are

reviewed and approved by the interviewees themselves and by an editorial board of professors from the Doctoral Program.

The most recent addition to the channel is a brief presentation on ‘[HPS-informed Teaching of Pendulum Motion](#)’ by Michael Matthews, UNSW.

The presentation draws on his contribution to the recent Springer anthology *Nature of Science in Science Instruction Rationales and Strategies*.

The History Channel administrators can be contacted direct at:

[historyofscienceuc@gmail.com](mailto:historyofscienceuc@gmail.com)

Proposals for presentations would be warmly received.

## Recent HPS&ST Research Articles

*HYLE: International Journal for Philosophy of Chemistry* (V. 27, N. 1, March 2021)

Special Issue on “Bridging the Philosophies of Biology and Chemistry”

Editor: Joachim Schummer <http://www.hyle.org/journal/issues/27-1/index.html>

Bernarduzzi, L.F., Bernardi, E.M., Ferrari, A. et al. (2021). Augmented Reality Application for Handheld Devices. *Science & Education*, 1-19. doi:[10.1007/s11191-021-00197-z](https://doi.org/10.1007/s11191-021-00197-z) online first

Charalampous, C. (2021). The Confined Atom: James Clerk Maxwell on the Fundamental Particles and the Limits of Scientific Knowledge. *Perspectives on Science*, 29(2), 189–214. doi:[10.1162/posc\\_a\\_00365](https://doi.org/10.1162/posc_a_00365)

Fackler, A. (2021). When Science Denial Meets Epistemic Understanding. *Science & Educa-*

*tion*, 1-17. doi:[10.1007/s11191-021-00198-y](https://doi.org/10.1007/s11191-021-00198-y) online first

Folkers, C. (2021). Disproportionate Impacts of Radiation Exposure on Women, Children, and Pregnancy: Taking Back our Narrative. *J Hist Biol*, 1-36. doi:[10.1007/s10739-021-09630-z](https://doi.org/10.1007/s10739-021-09630-z) online first

Ihde, D. (2021). From Heideggerian Industrial Gigantism to Nanoscale Technologies. *Found Sci*, 1-13. doi:[10.1007/s10699-020-09731-8](https://doi.org/10.1007/s10699-020-09731-8) online first

Jacoby, F. (2021). Acids and Rust: A New Perspective on the Chemical Revolution. *Perspectives on Science*, 29(2), 215–236. doi:[10.1162/posc\\_a\\_00366](https://doi.org/10.1162/posc_a_00366)

Machery, E. (2021). A mistaken confidence in data. *Euro Jnl Phil Sci* 11(34), 1-17. doi:[10.1007/s13194-021-00354-9](https://doi.org/10.1007/s13194-021-00354-9)

Mejias, S, Thompson, N, Sedas, RM, et al. (2021). The trouble with STEAM and why we use it anyway. *Science Education*, 105, 209– 231. doi:[10.1002/sce.21605](https://doi.org/10.1002/sce.21605)

O’Raifeartaigh, C., O’Keeffe, M. & Mitton, S. (2021). Historical and philosophical reflections on the Einstein-de Sitter model. *EPJ H* 46, 4. doi:[10.1140/epjh/s13129-021-00007-8](https://doi.org/10.1140/epjh/s13129-021-00007-8)

Pfeffer, M. (2021). The Society of Astrologers (c.1647–1684): Sermons, feasts and the resuscitation of astrology in seventeenth-century London. *The British Journal for the History of Science*, 1-21. doi:[10.1017/S0007087421000029](https://doi.org/10.1017/S0007087421000029) online first

Philip, R.(2021). India’s National Science Talent Search Examination (1963–1976). *Science & Education*, 1-23. doi:[10.1007/s11191-021-](https://doi.org/10.1007/s11191-021-)

[00210-5](#) online first

Prkachin, Y. (2019). “The Sleeping Beauty of the Brain”: Memory, MIT, Montreal, and the Origins of Neuroscience. *Isis*, 112(1), 22-44. doi:[10.1086/713795](#)

van Strien, M. (2021). Was physics ever deterministic? The historical basis of determinism and the image of classical physics. *EPJ H*, 46, 8. doi:[10.1140/epjh/s13129-021-00012-x](#)

Wei, B., Chen, X. (2021). Examining Teaching Emphases of History of Science in Award-Winning Science Lesson Plans in Macao. *Science & Education*, 1-19. doi:[10.1007/s11191-021-00208-z](#) online first

Rheinberger, H. J. (2021). Commentary to “Practicing Dialectics of Technoscience During the Anthropocene” by Hub Zwart. *Found Sci*, 1-5.. doi:[10.1007/s10699-020-09773-y](#) online first

Secord, J. (2021). Revolutions in the head: Darwin, Malthus and Robert M. Young. *The British Journal for the History of Science*, 1-19. doi:[10.1017/S0007087420000631](#) online first

Zwart, H. (2021). Practicing Dialectics of Technoscience during the Anthropocene. *Found Sci*, 1-20. doi:[10.1007/s10699-020-09738-1](#) online first

## Recent HPS&ST Related Books

Aronova, Elena (2021). *Scientific History: Experiments in History and Politics From the Bolshevik Revolution to the End of the Cold War*. Chicago, IL: The University of Chicago Press. ISBN: 978-0-226-76138-1

“Increasingly, scholars in the humanities are calling

for a reengagement with the natural sciences. Taking their cues from recent breakthroughs in genetics and the neurosciences, advocates of “big history” are reassessing long-held assumptions about the very definition of history, its methods, and its evidentiary base. In *Scientific History*, Elena Aronova maps out historians’ continuous engagement with the methods, tools, values, and scale of the natural sciences by examining several waves of their experimentation that surged highest at perceived times of trouble, from the crisis-ridden decades of the early twentieth century to the ruptures of the Cold War.

“The book explores the intertwined trajectories of six intellectuals and the larger programs they set in motion: Henri Berr (1863–1954), Nikolai Bukharin (1888–1938), Lucien Febvre (1878–1956), Nikolai Vavilov (1887–1943), Julian Huxley (1887–1975), and John Desmond Bernal (1901–1971). Though they held different political views, spoke different languages, and pursued different goals, these thinkers are representative of a larger motley crew who joined the techniques, approaches, and values of science with the writing of history, and who created powerful institutions and networks to support their projects.

“In tracing these submerged stories, Aronova reveals encounters that profoundly shaped our knowledge of the past, reminding us that it is often the forgotten parts of history that are the most revealing.” (From the Publisher)

More information available [here](#).

Cappelen, Herman & Dever, Josh (2021). *Making AI Intelligible: Philosophical Foundations*. Oxford, UK: Oxford University Press. ISBN: 978-0-192-89472-4

“Can humans and artificial intelligences share concepts and communicate? *Making AI Intelligible* shows that philosophical work on the metaphysics

of meaning can help answer these questions. Herman Cappelen and Josh Dever use the externalist tradition in philosophy to create models of how AIs and humans can understand each other. In doing so, they illustrate ways in which that philosophical tradition can be improved.

“The questions addressed in the book are not only theoretically interesting, but the answers have pressing practical implications. Many important decisions about human life are now influenced by AI. In giving that power to AI, we presuppose that AIs can track features of the world that we care about (for example, creditworthiness, recidivism, cancer, and combatants). If AIs can share our concepts, that will go some way towards justifying this reliance on AI. This ground-breaking study offers insight into how to take some first steps towards achieving Interpretable AI.” (From the Publishers)

More information available [here](#).

Even-Ezra, Ayelet (2021). *Lines of Thought: Branching Diagrams and The Medieval Mind*. Chicago, IL: The University of Chicago Press. ISBN: 978-0-226-74308-0

“We think with objects—we conduct our lives surrounded by external devices that help us recall information, calculate, plan, design, make decisions, articulate ideas, and organise the chaos that fills our heads. Medieval scholars learned to think with their pages in a peculiar way: drawing hundreds of tree diagrams. *Lines of Thought* is the first book to investigate this prevalent but poorly studied notational habit, analysing the practice from linguistic and cognitive perspectives and studying its application across theology, philosophy, law, and medicine.

“These diagrams not only allow a glimpse into the thinking practices of the past but also constitute a chapter in the history of how people learned to rely

on external devices—from stone to parchment to slide rules to smartphones—for recording, storing, and processing information. Beautifully illustrated throughout with previously unstudied and unedited diagrams, *Lines of Thought* is a historical overview of an important cognitive habit, providing a new window into the world of medieval scholars and their patterns of thinking.” (From the Publisher)

More information available [here](#).

Kelp, Christoph (2021). *Inquiry, Knowledge, and Understanding*. Oxford, UK: Oxford University Press.

ISBN: 978-0-192-89609-4

“*Inquiry, Knowledge, and Understanding* takes inquiry as the starting point for epistemological theorising. It uses this idea to develop new and systematic answers to some of the most fundamental questions in epistemology, including about the nature of core epistemic phenomena (most importantly: knowledge and understanding) as well as their value and the extent to which we possess them. Christoph Kelp argues that knowledge is the constitutive aim of inquiry into specific questions and that understanding is the constitutive aim of inquiry into general phenomena. He shows that these claims shed light on the nature of knowledge and understanding. He develops non-reductive ‘network’ analyses for both knowledge and understanding which elucidate the nature of knowledge and understanding in terms of their place in inquiry.

“Activities with constitutive aims, including inquiry, constitute critical domains of value in which the constitutive aim corresponds to a for-its-own-sake value relative to this domain. This study uses this idea to explain which epistemic phenomena are epistemically valuable for their own sake and to develop new solutions to a range of important value problems in epistemology, including the



time-honoured Meno problem: knowledge is more valuable than mere true belief because it is the constitutive aim of inquiry, and thus epistemically valuable for its own sake.” (From the Publishers)

More information available [here](#).

Lutz, Sebastian & Tuboly, Adam Tamas (2021). *Logical Empiricism and the Physical Sciences: From Philosophy of Nature to Philosophy of Physics*. Abingdon: Routledge. ISBN: 978-1-138-36735-7

“This volume has two primary aims: to trace the traditions and changes in methods, concepts, and ideas that brought forth the logical empiricists’ philosophy of physics and to present and analyze the logical empiricists’ various and occasionally contrary ideas about the physical sciences and their philosophical relevance. These original chapters discuss these developments in their original contexts and social and institutional environments, thus showing the various fruitful conceptions and philosophies behind the history of 20th-century philosophy of science.

“*Logical Empiricism and the Natural Sciences* is divided into three thematic sections. Part I surveys the influences on logical empiricism’s philosophy of science and physics. It features chapters on Maxwell’s role in the worldview of logical empiricism, on Reichenbach’s account of objectivity, on the impact of Poincaré on Neurath’s early views on scientific method, Frank’s exchanges with Einstein about philosophy of physics, and on the forgotten role of Kurt Grelling. Part II focuses on specific physical theories, including Carnap’s and Reichenbach’s positions on Einstein’s theory of general relativity, Reichenbach’s critique of unified field theory, and the logical empiricists’ reactions to quantum mechanics. The third and final group of chapters widens the scope to philosophy of science and physics in general. It includes contributions on

von Mises’ frequentism; Frank’s account of concept formation and confirmation; and the interrelations between Nagel’s, Feigl’s, and Hempel’s versions of logical empiricism.

“This book offers a comprehensive account of the logical empiricists’ philosophy of physics. It is a valuable resource for researchers interested in the history and philosophy of science, philosophy of physics, and the history of analytic philosophy.” (From the Publisher)

More information available [here](#).

Maxwell, Nicholas (2021). *The World Crisis — And What to Do About It: A Revolution for Thought and Action*. London, UK: World Scientific

“Science and technology have made the modern world possible, but also created all the global problems that threaten our future: the climate crisis, the COVID-19 pandemic, mass extinction of species, environmental degradation, overpopulation, lethal modern war, and the menace of nuclear weapons. Nicholas Maxwell, world-renowned philosopher of science and author of 14 books, argues that all these problems have come about because humans have solved only the first of two great problems of learning — how to acquire scientific knowledge and technological know-how — but not the second — how to create a civilised, wise world.

“The key disaster of our times is that we have science without wisdom. At present, universities all over the world are devoted to the pursuit of specialised knowledge and technology, or “knowledge-inquiry”. Maxwell contends that they need to be radically transformed so that their basic function becomes to help humanity tackle global problems, with a more rigorous and socially beneficial perspective he calls “wisdom-inquiry”. *The World Crisis — And What to Do About It* spells out in detail the changes that need to be made to academic

inquiry, why they need to be made, and how they would enable universities to help humanity actively and effectively tackle and solve current global problems.” (From the Publisher)

More information available [here](#).

Nail, Thomas (2021). *Theory of the Earth*. Redwood City, CA: Stanford University Press. ISBN: 978-1-503-62755-0

“We need a new philosophy of the earth. Geological time used to refer to slow and gradual processes, but today we are watching land sink into the sea and forests transform into deserts. We can even see the creation of new geological strata made of plastic, chicken bones, and other waste that could remain in the fossil record for millennia or longer. Crafting a philosophy of geology that rewrites natural and human history from the broader perspective of movement, Thomas Nail provides a new materialist, kinetic ethics of the earth that speaks to this moment.

“Climate change and other ecological disruptions challenge us to reconsider the deep history of minerals, atmosphere, plants, and animals and to take a more process-oriented perspective that sees humanity as part of the larger cosmic and terrestrial drama of mobility and flow. Building on his earlier work on the philosophy of movement, Nail argues that we should shift our biocentric emphasis from conservation to expenditure, flux, and planetary diversity. *Theory of the Earth* urges us to rethink our ethical relationship to one another, the planet, and the cosmos at large.” (From the Publisher)

More information available [here](#).

Oreskes, Naomi (2021). *Why Trust Science?* Princeton, NJ: Princeton University Press. ISBN: 978-0-691-21226-5

“Are doctors right when they tell us vaccines are safe? Should we take climate experts at their word when they warn us about the perils of global warming? Why should we trust science when so many of our political leaders don’t? Naomi Oreskes offers a bold and compelling defence of science, revealing why the social character of scientific knowledge is its greatest strength—and the greatest reason we can trust it. Tracing the history and philosophy of science from the late nineteenth century to today, this timely and provocative book features a new preface by Oreskes and critical responses by climate experts Ottmar Edenhofer and Martin Kowarsch, political scientist Jon Krosnick, philosopher of science Marc Lange, and science historian Susan Lindee, as well as a foreword by political theorist Stephen Macedo.” (From the Publisher)

More information available [here](#).

Oreskes, Naomi (2021). *Science on a Mission: How Military Funding Shaped What We Do and Don’t Know About the Ocean*. Chicago, IL: The University of Chicago Press. ISBN: 978-0-226-73238-1

“What difference does it make who pays for science? “Some might say none. If scientists seek to discover fundamental truths about the world, and they do so in an objective manner using well-established methods, then how could it matter who’s footing the bill? History, however, suggests otherwise. In science, as elsewhere, money is power. Tracing the recent history of oceanography, Naomi Oreskes discloses dramatic changes in American ocean science since the Cold War, uncovering how and why it changed. Much of it has to do with who pays.

“After World War II, the US military turned to a new, uncharted theatre of warfare: the deep sea. The earth sciences—particularly physical oceanography and marine geophysics—became essential to the US Navy, who poured unprecedented money and logistical support into their study. Science on

a Mission brings to light how this influx of military funding was both enabling and constricting: it resulted in the creation of important domains of knowledge but also significant, lasting, and consequential domains of ignorance.

“As Oreskes delves into the role of patronage in the history of science, what emerges is a vivid portrait of how naval oversight transformed what we know about the sea. It is a detailed, sweeping history that illuminates the ways funding shapes the subject, scope, and tenor of scientific work, and it raises profound questions about the purpose and character of American science. What difference does it make who pays? The short answer is: a lot.” (From the Publisher)

More information available [here](#).

Polloni, Nicola & Kedar, Yael (2021). *The Philosophy and Science of Roger Bacon*. Studies in Honour of Jeremiah Hackett. Abingdon, UK: Routledge. ISBN: 978-0-367-47174-3

“*The Philosophy and Science of Roger Bacon* offers new insights and research perspectives on one of the most intriguing characters of the Middle Ages, Roger Bacon. At the intersections between science and philosophy, the volume analyses central aspects of Bacon’s reflections on how nature and society can be perfected. The volume dives into the intertwining of Bacon’s philosophical stances on nature, substantial change, and hylomorphism with his scientific discussion of music, alchemy, and medicine. *The Philosophy and Science of Roger Bacon* also investigates Bacon’s projects of education reform and his epistemological and theological ground maintaining that humans and God are bound by wisdom, and therefore science. Finally, the volume examines how Bacon’s doctrines are related to a wider historical context, particularly in consideration of Peter John Olivi, John Pecham, Peter of Ireland, and

Robert Grosseteste. *The Philosophy and Science of Roger Bacon* is a crucial tool for scholars and students working in the history of philosophy and science and also for a broader audience interested in Roger Bacon and his long-lasting contribution to the history of ideas.” (From the Publisher)

More information available [here](#).

Schummer, Joachim & Børsen, Tom (eds.) (2021). *Ethics of Chemistry: From Poison Gas to Climate Engineering*. Singapore: World Scientific.

“Although chemistry has been the target of numerous public moral debates for over a century, there is still no academic field of ethics of chemistry to develop an ethically balanced view of the discipline. And while ethics courses are increasingly demanded for science and engineering students in many countries, chemistry is still lagging behind because of a lack of appropriate teaching material. This volume fills both gaps by establishing the scope of ethics of chemistry and providing a case-based approach to teaching, thereby also narrating a cultural history of chemistry.

“From poison gas in WWI to climate engineering of the future, this volume covers the most important historical cases of chemistry. It draws lessons from major disasters of the past, such as in Bhopal and Love Canal, or from thalidomide, Agent Orange, and DDT. It further introduces to ethical arguments pro and con by discussing issues about bisphenol-A, polyvinyl chloride, and rare earth elements; as well as of contested chemical projects such as human enhancement, the creation of artificial life, and patents on human DNA. Moreover, it illustrates chemical engagements in preventing hazards, from the prediction of ozone depletion, to Green Chemistry, and research in recycling, industrial substance substitution, and clean-up. Students also learn about codes of conduct and chemical regulations.

“An international team of experts narrate the historical cases and analyse their ethical dimensions. All cases are suitable for undergraduate teaching, either in classes of ethics, history of chemistry, or in chemistry classes proper.” (From the Publisher)

More information available [here](#).

Sterelny, Kim (2021). *The Pleistocene Social Contract: Culture and Cooperation in Human Evolution*. Oxford, UK: Oxford University Press.

ISBN: 978-0-197-53138-9

“Kim Sterelny here builds on his original account of the evolutionary development and interaction of human culture and cooperation, which he first presented in *The Evolved Apprentice* (2012). Sterelny sees human evolution not as hinging on a single key innovation, but as emerging from a positive feedback loop caused by smaller divergences from other great apes, including bipedal locomotion, better causal and social reasoning, reproductive cooperation, and changes in diet and foraging style. He advances this argument in *The Pleistocene Social Contract* with four key claims about cooperation, culture, and their interaction in human evolution.

“First, he proposes a new model of the evolution of human cooperation. He suggests human cooperation began from a baseline that was probably similar to that of great apes, advancing about 1.8 million years ago to an initial phase of cooperative forging, in small mobile bands. Second, he then presents a novel account of the change in evolutionary dynamics of cooperation: from cooperation profits based on collective action and mutualism, to profits based on direct and indirect reciprocation over the course of the Pleistocene. Third, he addresses the question of normative regulation, or moral norms, for band-scale cooperation, and connects it to the stabilisation of indirect reciprocation as a central aspect of forager cooperation. Fourth, he develops

an account of the emergence of inequality that links inequality to intermediate levels of conflict and cooperation: a final phase of cooperation in large-scale, hierarchical societies in the Holocene, beginning about 12,000 years ago.

“*The Pleistocene Social Contract* combines philosophy of biology with a reading of the archaeological and ethnographic record to present a new model of the evolution of human cooperation, cultural learning, and inequality.” (From the Publisher)

More information available [here](#).

Yates, JoAnne & Murphy, Craig N. (2021). *Engineering Rules: Global Standard Setting since 1880*. Baltimore, MD: Johns Hopkins University Press. ISBN: 978-1-421-44003-3

“Private, voluntary standards shape almost everything we use, from screw threads to shipping containers to e-readers. They have been critical to every major change in the world economy for more than a century, including the rise of global manufacturing and the ubiquity of the internet. In *Engineering Rules*, JoAnne Yates and Craig N. Murphy trace the standard-setting system’s evolution through time, revealing a process with an astonishingly pervasive, if rarely noticed, impact on all of our lives.

“This type of standard setting was established in the 1880s, when engineers aimed to prove their status as professionals by creating useful standards that would be widely adopted by manufacturers while satisfying corporate customers. Yates and Murphy explain how these engineers’ processes provided a timely way to set desirable standards that would have taken much longer to emerge from the market and that governments were rarely willing to set. By the 1920s, the standardisers began to think of themselves as critical to global prosperity and world

peace. After World War II, standardisers transcended Cold War divisions to create standards that made the global economy possible. Finally, Yates and Murphy reveal how, since 1990, a new generation of standardisers has focused on supporting the internet and web while applying the same standard-setting process to regulate the potential social and environmental harms of the increasingly global economy.

“Drawing on archival materials from three continents, Yates and Murphy describe the positive ideals that sparked the standardisation movement, the ways its leaders tried to realise those ideals, and the challenges the movement faces today. *Engineering Rules* is a riveting global history of the people, processes, and organisations that created and maintain this nearly invisible infrastructure of today’s economy, which is just as important as the state or the global market.” (From the Publisher)

More information available [here](#).

Yi-Jui Wu, Harry (2021). *Mad by the Millions: Mental Disorders and the Early Years of the World Health Organization*. Cambridge, MA: The MIT Press. ISBN: 978-0-262-04538-4

“In 1948, the World Health Organization began to prepare its social psychiatry project, which aimed to discover the epidemiology and arrive at a classification of mental disorders. In *Mad by the Millions*, Harry Y-Jui Wu examines the WHO’s ambitious project, arguing that it was shaped by the postwar faith in technology and expertise and the universalising vision of a “world psyche.” Wu shows that the WHO’s idealised scientific internationalism laid the foundations for today’s highly metricalised global mental health system.

“Examining the interactions between the WHO and developing countries, Wu offers an analysis of the “transnationality” of mental health. He examines knowledge-sharing between the organisation

and African and Latin American collaborators, and looks in detail at the WHO’s selection of a Taiwanese scientist, Tsung-yi Lin, to be its medical officer and head of the social psychiatry project. He discusses scientists’ pursuit of standardisation—not only to synchronise sectors in the organisation but also to produce a common language of psychiatry—and how technological advances supported this. Wu considers why the optimism and idealism of the social psychiatry project turned to dissatisfaction, reappraising the WHO’s early knowledge production modality through the concept of an “export processing zone.” Finally, he looks at the WHO’s project in light of current debates over psychiatry and global mental health, as scientists shift their concerns from the creation of universal metrics to the importance of local matrixes.” (From the Publisher)

More information available [here](#).

Yu, Han (2021). *Mind Thief: The Story of Alzheimer’s*. New York, NY: Columbia University Press. ISBN: 978-0-231-19870-7

“Alzheimer’s disease, a haunting and harrowing ailment, is one of the world’s most common causes of death. Alzheimer’s lingers for years, with patients’ outward appearance unaffected while their cognitive functions fade away. Patients lose the ability to work and live independently, to remember and recognise. There is still no proven way to treat Alzheimer’s because its causes remain unknown.

“*Mind Thief* is a comprehensive and engaging history of Alzheimer’s that demystifies efforts to understand the disease. Beginning with the discovery of “presenile dementia” in the early twentieth century, Han Yu examines over a century of research and controversy. She presents the leading hypotheses for what causes Alzheimer’s; discusses each hypothesis’s tangled origins, merits, and gaps; and details their successes and failures. Yu synthesises



a vast amount of medical literature, historical studies, and media interviews, telling the gripping stories of researchers' struggles while situating science in its historical, social, and cultural contexts. Her chronicling of the trajectory of Alzheimer's research deftly balances rich scientific detail with attention to the wider implications. In narrating the attempts to find a treatment, Yu also offers a critical account of research and drug development and a consideration of the philosophy of aging. Wide-ranging and accessible, *Mind Thief* is an important book for all readers interested in the challenge of Alzheimer's." (From the Publisher)

More information available [here](#).

Authors of HPS&ST-related papers and books are invited to bring them to attention of [Paulo Maurício](#) or [Nathan Oseroff-Spicer](#) for inclusion in these sections.

## Coming HPS&ST Related Conferences

July 11-16, 2021, Biennial meeting of the International Society for the History, Philosophy, and Social Studies of Biology, Milwaukee, WI  
Details available [here](#).

July 19-23, 2021 'Objects of Understanding: Historical Perspectives on Material Artefacts in Science Education' will take place at the Europa-Universität Flensburg (Germany)  
Details: Roland Wittje, [roland.wittje@gmail.com](mailto:roland.wittje@gmail.com) and [here](#).

July 25-31, 2021, 26th International Congress of History of Science and Technology (DHST), Prague. (WEB CONFERENCE)  
Information: <https://www.ichst2021.org/>

September 20-22, 2021, 'Developing Mario Bunge's Scientific-Philosophical Programme', Huaguang Academy of Information Science, Wuhan, China

Details from Zongrong LI [2320129239@qq.com](mailto:2320129239@qq.com).

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

Details from Glenn Dolphin: [glenn.dolphin@ucalgary.ca](mailto:glenn.dolphin@ucalgary.ca).

July 24-29, 2023, 17th DLMPST Congress, University of Buenos Aires Information: Pablo Lorenzani, [pablo@unq.edu.ar](mailto: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](mailto:paulo.asterix@gmail.com))

The NEWSLETTER is typeset in XeLaTeX.

The font is Minion Pro.

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