

HPS&ST

NEWSLETTER



# HPS&ST NEWSLETTER

MAY 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

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## 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, ([nathanoseroff@gmail.com](mailto:nathanoseroff@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.

## Conceptual Change: Bridging the Gap Between History and Philosophy of Science (HPS) and Science Education, Interdisciplinary Workshop at Utrecht University

Date: 4 June 2021

Time: 9:30–17:15 (CET) Place: Online (Zoom)

Aims and scope:

Since the 1970s, conceptual change counts as a major topic in both the history and philosophy of science (HPS) and science education research.

Following the emerging consensus that HPS-informed science education is crucial for students' understanding of the methods, concepts and nature of science, this workshop brings together HPS scholars and science education researchers around the topic of conceptual change.

In particular, we aim to address the following main questions:

- How have HPS and science education research informed and/or influenced each other's views on conceptual change over the past decades until the present?
- What is the relation between recent debates in HPS and science education research on theories and models of conceptual change?
- What is required to make their respective insights into conceptual change of mutual benefits?

Program

9:45 Stella Vosniadou (Flinders University): 'Bridging the Gap Between Conceptual Change Research in the History and Philosophy of Science and Science Education: From the Science Education Point of View'

11:00 Magdalena Kersting (University of Oslo): 'Einstein's Impact on Changes in Our Habits of Thought'

11:30 Sam Rijken (Erasmus University Rotterdam): 'Teaching with Thought Experiments'

12:00 Floor Kamphorst (Utrecht University): 'Introduction to the Light Postulate' 14:00 Paul-Hoyningen-Huene (Leibniz Universität Han-

nover): ‘Conceptual Change: Kuhn’s Story’  
 15:15 Stefaan Blancke (Tilburg University):  
 ‘Bridging the History of Science and Science Edu-  
 cation: Conceptual Change and Cultural Attrac-  
 tion’

15:45 Robert Meunier (Universität Kassel): ‘Con-  
 ceptual Change and the Differential Production  
 of Research Narratives in Biology’

16:15 Stig Børsen Hansen (University of Southern  
 Denmark): ‘Metaphysics and Transfer of Learn-  
 ing’

Participation is free of charge. Please register for  
 the workshop by filling in our [online registration  
 form](#). Once registered as a participant, you will re-  
 ceive the abstracts of the talks and keynotes as well  
 as information and instructions for how to parti-  
 cipate.

In order to secure orderly plenary discussion, only  
 the first 35 participants will be able to switch on  
 their camera and microphone to engage in the dis-  
 cussion. Participants outside of this group will be  
 able to submit written questions before and dur-  
 ing the sessions, however their camera and micro-  
 phone will be disabled by default.

## Pittsburgh Centre for Philosophy of Science

Center for Philosophy of Science  
 University of Pittsburgh  
 Pittsburgh, PA USA Edouard Machery, Director  
 Inquiries: [pittcntr@pitt.edu](mailto:pittcntr@pitt.edu)  
 Website: <https://www.centerphilsci.pitt.edu>



### New Fellows...

2021-22 Senior Visiting Fellow: Heather Douglas

2021-22 Postdoctoral Fellows: Ravit Dotan and  
 Aydin Mohseni

Fall 2021 Visiting Fellows: Brian McLoone, Mat-  
 thew Parker, Hyundeuk Cheon, Anthony Beavers,  
 and Darrell Rowbottom

Spring 2022 Visiting Fellows: Leonardo Bich,  
 Laura Menatti, Eugen Fischer, Ruth Kastner, and  
 Serife Tekin

*Philosophy of Medicine* The mission of *Philosophy  
 of Medicine* is to serve as the flagship journal  
 for the field by advancing research in philosophy  
 of medicine, by engaging widely with medicine,  
 health sciences and the public, and by providing  
 open-access content for all.

Website: <https://philmed.pitt.edu/philmed> Spon-  
 sorship for the journal is provided by the Center  
 for Philosophy of Science.

**Center Talks on Youtube** If you want to watch one

of our talks from this past year, please visit our YouTube channel [here](#).

In addition, you can get to know our fellows in our 5-Minute Fellows videos, available [here](#).

## 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 con-

tent.

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>.

## Conference on the History of Science in Education, São Paulo – Campinas, October 26-29, 2021

The II International Conference on the History of Science in Education and the VIII Meeting of Working Days for History of Science and Teaching will be held jointly with the Earth Science History and Teaching High Level Course (Master and PhD) of the State University at Campinas, the University of Trás-os-Montes and Alto-Douro (UTAD), the University of Porto (UP) and the University of Coimbra (UC).

The participants of the virtual meeting will have online access to all parts of the scientific and educational program. The audience will have the opportunity to interact orally with the speakers.

Location: The Faculty of Exact and Technological Sciences (FCET) - PUC-SP and The Institute of Geosciences of The State University at Campinas – Unicamp

Information and Registration available [here](#).

E-mail: [hcensino.pucsp@gmail.com](mailto:hcensino.pucsp@gmail.com)

## 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](#).

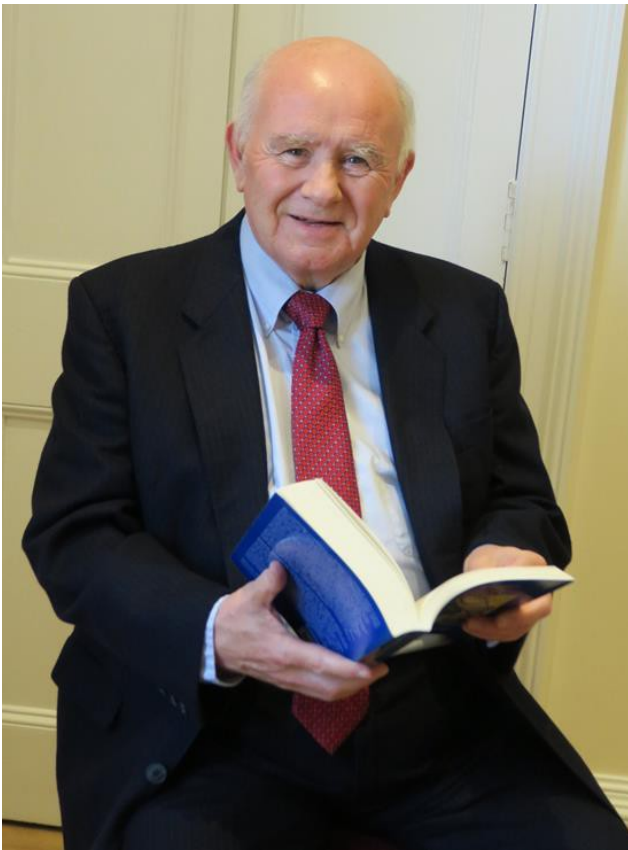
## Opinion Piece: *Abusing Popper*, Jeremy Shearmur, Emeritus Fellow, Australian National University

[Jeremy Shearmur](#) was formerly a reader in philosophy in the School of Philosophy at the Australian National University from where he retired at the end of 2013. He is currently an emeritus fellow, lives in Dumfries in Scotland, and is undertaking research and a limited amount of lecturing and Ph.D. supervision. He was educated at the London School of Economics.

He has taught at the University of Edinburgh, the University of Manchester, and at George Mason University. He was also director of studies at the [Centre for Policy Studies in London](#).

After briefly pursuing studies in librarianship, he worked for eight years as assistant to Karl Popper.

Among his books are: *Hayek and After* (1996); *The Political Thought of Karl Popper* (1996); *Karl Popper, After the Open Society* (2008) edited with Piers Norris Turner; *The Cambridge Companion to Popper* (2016) edited with Geoffrey Stokes. His edition of *Law, Legislation and Liberty* in Friedrich Hayek's *Collected Works* will be published in 2021.



- She comments: ‘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.’
- She makes various insinuations – emphasised by the listing of the original article ‘how-popperian-falsification-enabled-the-rise-of-neoliberalism’ (which was presumably the work of Aeon editors) – that Popper was encouraging ‘neoliberalism’.
- She concludes that what would seem to be poor understandings of Popper’s ideas have been made use of for poor purposes.

I will comment on all this under several different headings.

## Introduction

This essay is a critical comment on Charlotte Sleight’s ‘[The Abuses of Popper](#)’ which first appeared in February this year as an Aeon essay and then was reproduced in the HPSST Newsletter (April 2021).

Briefly my concerns are:

- Sleight presents a mistaken account of Popper’s philosophy and methodology of science.
- She claims that: ‘For all its appealing simplicity, falsification was quickly demolished by philosophers’ saying ‘Generally, we don’t conclude that we have disproved well- established laws of physics – rather, that our experiment was faulty’.
- She says that it was a group of biologists that gave Popper his first scientific hearing.

## Popper’s Philosophy of Science

Professor Sleight tells us:

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.

If she had looked more carefully at Popper’s *Logic of Scientific Discovery*, she would have noted that Popper tells us: ‘no conclusive disproof of a theory can ever be produced’ (§9). Indeed, an important theme in the book is his discussion of ‘conventionalism’. Popper, referring particularly to Dingle, but also to Duhem and Poincaré, notes that a particular theory can be saved in the face of a prima facie refutation, by way of modifying our other theories and assumptions, or by questioning



experimental results or arguing that discrepancies with a theory are only apparent.

Popper argues that this is possible, but that how we should react to this possibility depends on our view of what we should be aiming at. Popper favours what might be called an aspirational realism – as he would later say, that science should aim at trying to discover truth about the world. He distinguished between this and a ‘conventionalist’ approach which would save our pet ideas, by systematically making modifications elsewhere to a system of theories and initial conditions.

It was, for Popper, all a matter of a choice of methodology, to be made in the light of what we are aiming at – which is, itself, a matter of choice. One might see the heart of Popper’s *Logic of Scientific Discovery* as elaborating the kind of methodological approach which he suggests that we should take up. Popper went on to elaborate his favoured realist approach in many subsequent works. Two particular aspects of this are worth noting here.

In 1963, he emphasised that scientists typically face a problem-situation posed by their wish to explain experimental ‘facts which earlier theories successfully explained; others which they could not explain; and [others] by which they were actually falsified’ (*Conjectures and Refutations* ch. 10). Popper then argues for the importance of three additional ideas. The first was that we should proceed from ‘some powerful, unifying idea’. The second, that our new theory should be independently testable. While third, the new theory should pass ‘some new, and severe, tests’.

There are also his ideas about ‘metaphysical research programmes’. Popper had, from *The Logic of Scientific Discovery* onwards, stressed not only that metaphysics – e.g. untestable cosmological theories – are meaningful, but that they had played

an important role in the development of science. Since the late 1940s, he had, in lectures, discussed the role of ‘metaphysical research programmes’ in science. He had written about these in his *Postscript* (proofs of which were available to members of his department in the 1960s) and in his *Unended Quest*. In the ‘metaphysical epilogue’ to his *Postscript*, he set out his ideas about this at some length. He also offered his own suggestions about a research programme for science, based on ideas about probabilistic dispositions or ‘propensities’.

In *Conjectures and Refutations* chapter 8, Popper also discussed the way in which metaphysical ideas themselves could be critically appraised, while in another paper dating from the same period, he discussed Leibniz’s criticism of Cartesian physics, as, in effect, an illustration of this approach. His earlier ‘Back to the Presocratics’ (available in *Conjectures* chapter 5), offered a striking reconstruction of the history of presocratic philosophy as a critical dialogue about cosmology.

Thus, for Popper, scientific theories should be falsifiable: openness to empirical appraisal is really important. But there is much to appraise about a theory prior to its being tested. A refutation is, for Popper, a refutation of a system of theories (and initial conditions). As Popper noted:

...we falsify the whole system (the theory as well as the initial conditions) which was required for the deduction ... of the falsified statement. Thus it cannot be asserted of any one statement of the system that it is, or is not, specifically upset by the falsification. (*Logic of Scientific Discovery*, §18).

In the event of a refutation, it is up to us which element of this system we try to modify. But for Popper what is crucial is that we should not reduce the content of our theoretical system, and

that the resulting ideas should be independently testable. If an existing successful theory is refuted, we should seek to replace it by something that can explain our existing success and also the refutation. However, we may also appraise our programmatic ideas for the development of testable science, and expose them to inter-subjective criticism even if they are not themselves testable. Indeed, as his discussion of quantum mechanics in and subsequent to *The Logic of Scientific Discovery* exemplifies, the critical discussion of purely theoretical ideas plays an important role in his work.

## Popper and Science

Professor Sleight suggests:

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.

Adding:

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.

From Popper's perspective, science and philosophy are intimately inter-related. Popper had a strong interest in science and was involved in substantive issues about its interpretation and development. In *The Logic of Scientific Discovery* he discussed issues to do with quantum theory. The English translation includes – with permission – a letter that Einstein sent him written in 1935, expressing some agreement, but also criticism, of

his ideas. He met with Schrödinger and Bohr; and presented a paper at Karl Menger's *mathematisches Colloquium*. When Popper visited Otago, New Zealand, he discussed the substance of John Eccles' research work with him. Popper published a number of short pieces in *Nature* about 'The Arrow of Time' (from 1956 to 1967), and an article on 'Birkhoff and von Neumann's Interpretation of Quantum Mechanics' (1968).

He wrote quite extensively on quantum theory in his *Postscript*, and in subsequent papers, and he also undertook extensive work relating to other areas in physics (he had a part-written book in which he undertook extensive work, on special relativity, general relativity, quantum theory and statistical mechanics). Some of this is reported on in his *Unended Quest*. A wide-ranging paper on the search for invariants in physics, delivered in 1965, was eventually published in his *The World of Parmenides*.

The point that I wish to make here, is that Popper's interactions with scientists – for whom he frequently expressed great admiration – was not a matter of offering 'clarifying rigour', but of a passionate concern with the substance of science. In addition, his concern with what I have referred to as 'aspirational realism' led naturally to a wish to see if scientific ideas which were at odds with such an approach might be open to criticism and re-interpretation.

## Popper and Popular Views about Science

A key feature of Popper's approach was a respect for what had been achieved in science, but also a concern with its fallibility. He thought that a knowledge of science was important, and that a study of the history of science was essential for

anyone interested in the philosophy of science. He stressed the interplay between imagination and criticism (it is worth recalling his reference to Bergson's ideas about "an irrational element" or "a creative intuition" in discovery), and his repudiation of foundationalism. It is in this context not surprising that Medawar should have warmed to his approach. Medawar's 'Is the scientific paper a fraud?' represents a striking exploration of Popperian themes in an area of practical importance (*The Listener* 70, 1963, pp.377–8).

In addition, as Steve Fuller brought out in his *Kuhn vs. Popper*, Popper's approach opens up the social organization of science for critical scrutiny and improvement. Despite Popper's own personal aversion to work in the sociology of science as can be seen in his discussion of his experiences with an anthropologist, in 'The Logic of the Social Sciences', it is possible to take a sociological reading of Popper's epistemology. On this, see Ian Jarvie's Republic of Science, and also my article, '[Popper, Social Epistemology and Dialogue](#)'.

Popper, at the same time, thought that Kuhn had played an important role in throwing light on the way in which 'normal scientists' are currently trained. But Popper saw this as an intellectual betrayal, and faulted their education for not exposing them properly to the intellectual adventure involved in the pursuit of science (see, for some striking points about this, his 'The Moral Responsibility of the Scientist' in *The Myth of the Framework*, pp.123-4.).

## Neoliberalism

Professor Sleight's paper also contains a variety of comments about Popper and neoliberalism. An important issue in this general area, is that

one needs to distinguish between critical engagement with the ideas of a particular thinker who is deemed a 'neoliberal', and the policies of governments, one influence on which might have been some aspects of 'neoliberal' ideas. In the case of Popper, this problem does not arise as it is simply mistaken to view him as a neoliberal.

In his youth, Popper had been a socialist – and, indeed, a Marxist. Many aspects of his *Open Society* can be seen as critical reflections on the conduct of the Marxist-influenced Austrian Social Democrats in the inter-war years. His own preferred view became an undogmatic espousal of piecemeal humanitarian social improvement, controlled by critical feedback from all citizens. In response to a query from Rudolf Carnap – who had known Popper as a socialist, in Vienna – as to whether he was still a socialist, Popper offered an interesting and nuanced response (See 'Correspondence with Carnap on Social Philosophy', now in *After the Open Society*). In correspondence with his friend Bryan Magee – who had just become a Labour MP – Popper was, in 1974, willing to contemplate the government taking a 51% share in all public companies!

As to 'neoliberalism', one needs to distinguish between the work of theorists such as, say, Hayek, and the policies followed by governments. It is also worth noting that Hayek had very different views from Soros – who has been critical, at some length, of 'neoliberalism', and whose Foundation has tended to support causes that are 'liberal' in the U.S. sense. Hayek has expressed some agreement with Popper's epistemological ideas. But this played no role in Hayek's social and political writings. Popper's methodological ideas (which is all that has been discussed by them) have met with only limited support among economists.

There are some striking parallels between his *Open Society* and Hayek's *Road to Serfdom* though the first was completed prior to publication of the second. But the books were written from very different perspectives. (On this, see my *Hayek and After* and *The Political Thought of Karl Popper*, as well as the editorial introduction to my edition of Hayek's *Law, Legislation and Liberty*, forthcoming 2021.)

Popper was no 'neoliberal'. He was personally grateful to Hayek for his assistance in placing *The Open Society* with Routledge, and also for helping create the readership in scientific method at the LSE for which Popper was able to apply. He was happy to join the Mont Pelerin Society. But Popper saw it as an organisation of people opposed to tyranny. Prior to its first meeting, he wrote to Hayek urging on him the importance of including socialists among its members, so as not to split the camp of humanitarianism. And while he was – along with other members of the Mont Pelerin Society – a sponsor of a 'Principles of Freedom' series, he wrote to complain that all that they were publishing was books on economic liberty. (See, on this, my editorial introduction to Friedrich Hayek's *Law, Legislation and Liberty*.)

Popper was also critical of Hayek's views about 'social justice' (although he seems to have been reluctant to go into print because of his feeling of personal indebtedness to Hayek). In comments about the collapse of the Soviet Union, Popper stressed the importance of the introduction of a reformed system of law and an appropriate judicial system. He was also critical of approaches which advocated wholesale privatisation, arguing instead for a piecemeal approach. On this see 'A Letter to my Russian Readers' in *After the Open Society*, and George Urban's interview with Popper, 'The Best World We Have Yet Had', in Urban's *End*

*of Empire: The Demise of the Soviet Union*.

## Ethics

Professor Sleight makes a variety of points about ethical issues, suggesting that a Popperian approach offered a way of avoiding them. Popper had an aversion to pretentious ethical theorising, and his concerns were typically with practical measures. However, in his 'The Moral Responsibility of the Scientist' (Most easily accessible in his *The Myth of the Framework*) Popper starts by making a few of his general views very clear:

Formerly, the pure scientist or the pure scholar had only one responsibility beyond those which everyone else has – that is, to search for truth.... Today not only all pure science may become applied science, but even all pure scholarship. (p. 121)

Popper goes on to recommend that prospective students should have the opportunity to discuss ethical issues from the beginning of their studies, and, as a practical suggestion, moots that they and their teachers should have the opportunity to 'hammer out a modern form of an undertaking analogous to the Hippocratic Oath' (*The Myth of the Framework*, p. 122). See also Popper and McIntyre's piece 'The Critical Attitude in Medicine: the need for a new ethics', in *After the Open Society*. Popper's tentative suggestions for this include (p. 123):

The Overriding Loyalty. This [the student] owes neither to his teacher nor to his colleagues, but to mankind – just as the physician owes his overriding loyalty to his patients. The student must be constantly aware of the fact that every kind of study may produce results which may affect the lives of many people, and he must constantly try to foresee, and to

guard against, any possible danger or possible misuse of his results, even if he does not wish to have his results applied.... One of the few things we can do about our main issue is to try to keep alive, in all scientists, the consciousness of their responsibility.

## Concluding Comments

In her essay, Professor Sleigh refers to a large range of different issues. At the heart of what she has written, however, seems to me a bad misunderstanding of Popper's work. I have, in consequence, concentrated upon that, and on clarifying what Popper's views actually were on a number of the other issues upon which she touches.

**Editor's Note:** On Popper, see information on following book in the Book's section of this newsletter:

Parusniková, Zuzana, Merritt, David (Eds.) (2021). *Karl Popper's Science and Philosophy*. Dordrecht: Springer.

## 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.

## Recent HPS&ST Research Articles

*Journal of the History of Biology* (Volume 54, issue 1, April 2021)

Special issue: Connecting to the Living History of Radiation Exposure

Issue editors: Jacob Darwin Hamblin & Linda M. Richards

Aivelo, T. & Uitto, A. (2021). Factors explaining students' attitudes towards learning genetics and belief in genetic determinism. *International Journal of Science Education*, 1-

18. doi:[10.1080/09500693.2021.1917789](https://doi.org/10.1080/09500693.2021.1917789) online first
- Archila, P.A., Danies, G., Molina, J. et al. (2021). Towards COVID-19 Literacy. *Sci & Educ*, 1-24. doi:[10.1007/s11191-021-00222-1](https://doi.org/10.1007/s11191-021-00222-1) online first
- Bašnáková, J., Čavojová, V. & Šrol, J. (2021). Does Concrete Content Help People to Reason Scientifically?. *Sci & Educ*, 1-18. doi:[10.1007/s11191-021-00207-0](https://doi.org/10.1007/s11191-021-00207-0) online first
- Billingsley, B., Nassaji, M. (2021). Secondary School Students' Reasoning About Science and Personhood. *Sci & Educ*, 1-25. doi:[10.1007/s11191-021-00199-x](https://doi.org/10.1007/s11191-021-00199-x) online first
- Brecevic, C. (2021) The Role of Imagination in Ernst Mach's Philosophy of Science: A Biologico-economical View. *HOPOS: The Journal of the International Society for the History of Philosophy of Science*. Ahead of Print
- Cristalli, C., & Pietarinen, A.-V. (2021). Abstraction and Generalization in the Logic of Science: Cases from Nineteenth-Century Scientific Practice. *HOPOS: The Journal of the International Society for the History of Philosophy of Science*. doi:[10.1086/713087](https://doi.org/10.1086/713087) Ahead of Print
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## Recent HPS&ST Related Books

Dean-Jones, Lesley (Ed.). (2021). *Historia Animalium Book X: Aristotle's Endoxon, Topos and Dialectic on On Failure to Reproduce* (Cambridge Classical Texts and Commentaries). Cambridge: Cambridge University Press.

ISBN: 978-1-139-05772-1 [online]

“This is the first modern edition of Book X of the *Historia Animalium*. It argues that the first five chapters are a summary, from the hand of Aristotle, of a medical treatise by a physician practicing in the fourth-century BCE. This gives short shrift to Hippocratic staples such as trapped menses and the wandering womb, and describes a woman’s climax during sex in terms that can be easily mapped onto modern accounts. In summarising the treatise and examining its claims in the last two chapters, Aristotle follows the method described in the Topics for a philosopher embarking on a new field of study. Here we see Aristotle’s ruminations over the conundrum of a woman’s contribution to conception at an early stage in the development of his theory of reproduction. Far from being an insignificant pseud-epigraphon, this is a central text for understanding the development of ancient gynaecology and Aristotelian methodology.” (From the Publisher)

More information available [here](#).

Dimeo, Michelle (2021). *Lady Ranelagh: The Incomparable Life of Robert Boyle's Sister*. Chicago,

IL: The University of Chicago Press.

ISBN: 978-0-226-73160-5

“For centuries, historians have speculated about the life of Katherine Jones, Lady Ranelagh. Dominant depictions show her either as a maternal figure to her younger brother Robert Boyle, one of the most significant scientists of his day, or as a patroness of the European correspondence network now known as the Hartlib circle—but neither portrait captures the depth of her intellect or the range of her knowledge and influence.

“Philosophers, mathematicians, politicians, and religious authorities sought her opinion on everything from decimalizing the currency to producing Hebrew grammars. She practiced medicine alongside distinguished male physicians, treating some of the most elite patients in London. Her medical recipes, political commentaries, and testimony concerning the philosophers’ stone gained international circulation. She was an important influence on Boyle and a formidable thinker in her own right.

“Drawing from a wealth of new archival sources, Michelle DiMeo fills out Lady Ranelagh’s legacy in the context of a historically sensitive and nuanced interpretation of gender, science, and religion. The book re-creates the intellectual life of one of the most respected and influential women in seventeenth-century Europe, revealing how she managed to gain the admiration of diverse contemporaries, effect social change, and shape contemporary science.” (From the Publisher)

More information available [here](#).

Justus, James (2021). *The Philosophy of Ecology: An Introduction*. Cambridge, UK: Cambridge University Press. ISBN: 978-1-139-62694-1

“Ecology is indispensable to understanding the biological world and addressing the environmental



problems humanity faces. Its philosophy has never been more important. In this book, James Justus introduces readers to the philosophically rich issues ecology poses. Besides its crucial role in biological science generally, climate change, biodiversity loss, and other looming environmental challenges make ecology's role in understanding such threats and identifying solutions to them all the more critical. When ecology is applied and its insights marshalled to address these problems and guide policy formation, interesting philosophical issues emerge. Justus sets them out in detail, and explores the often ethically charged dimensions of applied ecological science, using accessible language and a wealth of scientifically-informed examples." (From the Publisher)

More information available [here](#).

Killin, Anton, Allen-Hermanson, Sean (Eds.) (2021). *Explorations in Archaeology and Philosophy*. Dordrecht: Springer.

ISBN: 978-3-030-61052-4

"This volume explores various themes at the intersection of archaeology and philosophy: inference and theory; interdisciplinary connections; cognition, language and normativity; and ethical issues. Showcasing this heterogeneity, its scope ranges from the method of analogical inference to the evolution of the human mind; from conceptual issues in assessing the health of past populations to the ethics of cultural heritage tourism. It probes the archaeological record for evidence of numeracy, curiosity and creativity, and social complexity. Its contributors comprise an interdisciplinary cluster of philosophers, archaeologists, anthropologists, and psychologists, from a variety of career stages, of whom many are leading experts in their fields.

"Chapter 3 is available open access under a Creative Commons Attribution 4.0 International License via [link.springer.com](http://link.springer.com)." (From the Publisher)

More information available [here](#).

Malabou, Catherine (2021). *Morphing Intelligence: From IQ Measurement to Artificial Brains*. (Carolyn Shread, Trans.). New York, NY: Columbia University Press.

ISBN: 978-0-231-18737-4 [Paperback]

"In this remarkable book Catherine Malabou focuses on the transformations of "intelligence" as it moves from genetics to epigenetics to automatism. Historically grounded, philosophically astute, and engagingly written, this book is highly recommended for anyone interested in intelligence—artificial and natural—and in contemporary configurations of what counts as human." – N. Katherine Hayles, author of *Unthought: The Power of the Cognitive Nonconscious*

"Catherine Malabou is one of the rare philosophers who seriously engages contemporary biological research in her explorations of human experience. In this book, she turns her attention to the core question of intelligence, and with spectacular results. At stake is the very future of human thought, and Malabou is led to reflect on machine intelligence for the first time, generating singular insights. As ever, Malabou's prose is precise and elegant, deftly expressed in Carolyn Shread's fluid translation" – David Bates, coeditor of *Plasticity and Pathology: On the Formation of the Neural Subject*

"*Morphing Intelligence* contains significant new developments in Malabou's ongoing work at the intersections of philosophy and the sciences. She moves from her groundbreaking theoretical reflections on neuroplasticity and epigenetics to a philosophical confrontation with the various challenges posed by today's emerging forms of artificial intelligence. Malabou, with her characteristic clarity and insight, radically redraws the lines between humans and machines, brains and computers. *Morphing Intelligence* is a major achievement and not to be

missed.” – Adrian Johnston, author of *A New German Idealism: Hegel, Žižek, and Dialectical Materialism*

More information available [here](#).

McGrath, Alister E. (2021). *The Territories of Human Reason: Science and Theology in an Age of Multiple Rationalities*. Oxford, UK: Oxford University Press. ISBN: 978-0-192-84568-9 [Paperback]

“Our understanding of human rationality has changed significantly since the beginning of the century, with growing emphasis being placed on multiple rationalities, each adapted to the specific tasks of communities of practice. We may think of the world as an ontological unity - but we use a plurality of methods to investigate and represent this world. This development has called into question both the appeal to a universal rationality, characteristic of the Enlightenment, and also the simple ‘modern-postmodern’ binary. The Territories of Human Reason is the first major study to explore the emergence of multiple situated rationalities. It focuses on the relation of the natural sciences and Christian theology, but its approach can easily be extended to other disciplines. It provides a robust intellectual framework for discussion of transdisciplinarity, which has become a major theme in many parts of the academic world.

“Alister E. McGrath offers a major reappraisal of what it means to be ‘rational’ which will have significant impact on older discussions of this theme. He sets out to explore the consequences of the seemingly inexorable move away from the notion of a single universal rationality towards a plurality of cultural and domain-specific methodologies and rationalities. What does this mean for the natural sciences? For the philosophy of science? For Christian theology? And for the interdisciplinary

field of science and religion? How can a single individual hold together scientific and religious ideas, when these arise from quite different rational approaches? This ground-breaking volume sets out to engage these questions and will provoke intense discussion and debate.” (From the Publisher)

More information available [here](#).

Nelson, William Max (2021). *The Time of Enlightenment: Constructing the Future in France, 1750 to Year One*. Toronto: University of Toronto Press. ISBN: 978-1-487-50770-1

“A new idea of the future emerged in eighteenth-century France. With the development of modern biological, economic, and social engineering, the future transformed from being predetermined and beyond significant human intervention into something that could be dramatically affected through actions in the present.

“The Time of Enlightenment argues that specific mechanisms for constructing the future first arose through the development of practices and instruments aimed at countering degeneration. In their attempts to regenerate a healthy natural state, Enlightenment philosophes created the means to exceed previously recognised limits and build a future that was not merely a recuperation of the past, but fundamentally different from it. A theoretically inflected work combining intellectual history and the history of science, this book will appeal to anyone interested in European history and the history of science, as well as the history of France, the Enlightenment, and the French Revolution.” (From the Publisher)

More information available [here](#).

North, Jill (2021). *Physics, Structure, and Reality*.

Oxford, UK: Oxford University Press.  
ISBN: 978-0-192-89410-6 [Hardback]

“In *Physics, Structure, and Reality*, Jill North addresses a set of questions that get to the heart of the project of interpreting physics—of figuring out what physics is telling us about the world. How do we figure out the nature of the world from a mathematically formulated physical theory? What do we infer about the world when a physical theory can be mathematically formulated in different ways? North argues that there is a certain notion of structure, implicit in physics and mathematics, to which we should pay careful attention in order to discern what physics is telling us about the nature of reality. North draws lessons for related topics, including the use of coordinate systems in physics, the differences among various formulations of classical mechanics, the nature of spacetime structure, the equivalence of physical theories, and the importance of scientific explanation. Although the book does not explicitly defend scientific realism, instead taking this to be a background assumption, the account provides an indirect case for realism toward our best theories of physics.” (From the Publisher).

More information available [here](#).

Parusniková, Zuzana, Merritt, David (Eds.) (2021). *Karl Popper's Science and Philosophy*. Dordrecht: Springer. ISBN: 978-3-030-67036-8

“Of all philosophers of the 20th century, few built more bridges between academic disciplines than Karl Popper. He contributed to a wide variety of fields in addition to the epistemology and the theory of scientific method for which he is best known. This book illustrates and evaluates the impact, both substantive and methodological, that Popper has had in the natural and mathematical sciences. The topics selected include quantum mechanics, evolutionary biology, cosmology, mathematical logic,

statistics, and cognitive science. The approach is multidisciplinary, opening a dialogue across scientific disciplines and between scientists and philosophers.” (From the Publisher)

More information available [here](#).

Ruse, Michael (2021). *A Philosopher Looks at Human Beings*. Cambridge, UK: Cambridge University Press. ISBN: 978-1-108-90705-7

“Why do we think ourselves superior to all other animals? Are we right to think so? In this book, Michael Ruse explores these questions in religion, science and philosophy. Some people think that the world is an organism - and that humans, as its highest part, have a natural value (this view appeals particularly to people of religion). Others think that the world is a machine - and that we therefore have responsibility for making our own value judgements (including judgements about ourselves). Ruse provides a compelling analysis of these two rival views and the age-old conflict between them.

In a wide-ranging and fascinating discussion, he draws on Darwinism and existentialism to argue that only the view that the world is a machine does justice to our humanity. This new series offers short and personal perspectives by expert thinkers on topics that we all encounter in our everyday lives.” (From the Publisher)

More information available [here](#).

Servos, John W. (2021). *Physical Chemistry from Ostwald to Pauling: The Making of a Science in America*. Princeton, NJ: Princeton University Press. ISBN: 978-1-400-84418-0 [ebook]

“John Servos explains the emergence of physical chemistry in America by presenting a series of lively

portraits of such pivotal figures as Wilhelm Ostwald, A. A. Noyes, G. N. Lewis, and Linus Pauling, and of key institutions, including MIT, the University of California at Berkeley, and Caltech. In the early twentieth century, physical chemistry was a new hybrid science, the molecular biology of its time. The names of its progenitors were familiar to everyone who was scientifically literate; studies of aqueous solutions and of chemical thermodynamics had transformed scientific knowledge of chemical affinity. By exploring the relationship of the discipline to industry and to other sciences, and by tracing the research of its leading American practitioners, Servos shows how physical chemistry was eclipsed by its own offspring — specialties like quantum chemistry.” (From the Publisher)

More information available [here](#).

Stearns, Justin K. (2021). *Revealed Sciences: The Natural Sciences in Islam in Seventeenth-Century Morocco*. Cambridge: Cambridge University Press. ISBN: 978-1-107-58852-3

“Demonstrating the vibrancy of an Early Modern Muslim society through a study of the natural sciences in seventeenth-century Morocco, *Revealed Sciences* examines how the natural sciences flourished during this period, without developing in a similar way to the natural sciences in Europe. Offering an innovative analysis of the relationship between religious thought and the natural sciences, Justin K. Stearns shows how nineteenth and twentieth-century European and Middle Eastern scholars jointly developed a narrative of the decline of post-formative Islamic thought, including the fate of the natural sciences in the Muslim world. Challenging these depictions of the natural sciences in the Muslim world, Stearns uses numerous close readings of works in the natural sciences to a detailed overview of the place of the natural sciences in scholarly and educational landscapes of the Early

Modern Magreb, and considers non-teleological possibilities for understanding a persistent engagement with the natural sciences in Early Modern Morocco.” (From the Publisher)

More information available [here](#).

Thomas, John Meurig (2021). *Albemarle Street: Portraits, Personalities and Presentations at The Royal Institution*. Oxford, UK: Oxford University Press. ISBN: 978-0-192-89800-5 [Hardback]

“The Royal Institution of Great Britain is renowned the world over, first, because it is a premier arena for the advancement of new scientific and technological knowledge; and second because it highlights the advance of knowledge of all kinds. It bridges the sciences and the humanities, and as much publicity is given to advances in the arts, archaeology, architecture, drama and literature as to the pure and applied sciences. More famous scientists have lived and worked in the Royal Institution than in any other laboratory in the world. A roll-call includes Rumford, Davy, Faraday, Tyndall, Dewar, Rayleigh, W. H. Bragg, W. L. Bragg and George Porter. Not is it only the home of continuous electricity, it is also the birthplace of many aspects of molecular biology and viruses and enzymology. Some fifteen scientists who have won the Nobel Prize have, at one time or another, worked or lectured at the RI. And eminent individuals, like Howard Carter and Coleridge, have lectured there.

“*Albemarle Street - Portraits, Personalities and Presentations at The Royal Institution* is a lively and compelling personal selection of the remarkable personalities and achievements of some of the extraordinary scientists and individuals who, during the nineteenth and twentieth centuries, worked or lectured at 21 Albemarle Street in Mayfair, central London. John Meurig Thomas offers a unique and valuable insight into the history of this prestigious address, having himself lived and worked at

the Royal Institution for some twenty years.” (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

June 4, 2021, Conceptual Change: Bridging the Gap Between History and Philosophy of Science (HPS) and Science Education, Utrecht University  
Information available [here](#).

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 8-10, 2021 Conference, *Société de philosophie des sciences* University of Mons, Belgium  
Inquiries: Antoine Brandelet ([antoine.brandelet@umons.ac.be](mailto:antoine.brandelet@umons.ac.be))

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

[IUHPSST](#) – 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))

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