

# HPS&ST Note

May 2018

## Introduction

This HPS&ST monthly note is sent direct to about 7,450 individuals who directly or indirectly have expressed 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 and more engaging and effective teaching of the history and philosophy of science. The note 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 20+ years.

The note 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 note (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 Note, along with RESOURCES, OBITUARIES, OPINION PIECES and more, are lodged at the website:

<http://www.hpsst.com/>

## **European Society for the History of Science Biennial Conference and British Society for the History of Science Annual Meeting, University College, London, 14-17 September 2018**

The organising committee of ESHS 2018 invite proposals for individual papers to be presented at the conference. The organisers will aim to arrange submissions into coherent strands. In selecting papers for the conference, the organisers will give preference to those that address, in some way, the conference theme of 'Unity and Disunity'. This can be interpreted very broadly, to address, amongst other topics, unity and disunity within and across diverse sciences, nations, periods, and historiographies; unity and disunity as ideals and realities; and unity and disunity as characterizing relations between the sciences and politics, technology, economics, and the arts. Submissions, including an abstract no longer than 300 words in either English or French, should be made, via the conference website <http://eshs2018.uk>, by 23.59 GMT on 28 February 2018.

## **4th Latin American Conference of the International History, Philosophy and Science Teaching Group (IHPST-LA), September 3 to 5, 2018, Federal University of ABC, UFABC, Santo André, Brazil**

After 8 years from the 1st Latin American Conference, in Maresias (SP), and 3 years from the 13th Biennial Conference of the IHPST, in Rio de Janeiro (RJ), Brazil will host again a group meeting. In three days of intense discussion, we seek to promote a wide debate among historians, educators, teachers and others on the relation between history, philosophy, sociology and science teaching.

There will be three kinds of submission of proposal: oral communication, poster and thematic symposia. Proposals may be submitted in Portuguese, Spanish or English.

Submission of proposals (all categories): from February 19 to March 30

Early registration deadline: June 3

If you have any doubts and suggestions, send an e-mail to [ihpstla2018@gmail.com](mailto:ihpstla2018@gmail.com)

Complete version of CFP: <http://www.brenoam.com/ihpstla-2018-en>.

**4th Latin American Conference of the International History, Philosophy and Science Teaching Group (IHPST-LA), September 3 to 5, 2018, Federal University of ABC, UFABC, Santo André, Brazil**

After eight years from the First Latin American Conference, in Maresias (SP), and three years from the Thirteenth Biennial Conference of the IHPST, in Rio de Janeiro (RJ), Brazil will host again a group meeting. In three days of intense discussion, we seek to promote a wide debate among historians, educators, teachers and others on the relation between history, philosophy, sociology and science teaching.

There will be three kinds of submission of proposal: oral communication, poster and thematic symposia. Proposals may be submitted in Portuguese, Spanish or English.

Submission of proposals (all categories): from February 19 to March 30 Early registration deadline: June 3

If you have any doubts and suggestions, send an e-mail to [ihpstla2018@gmail.com](mailto:ihpstla2018@gmail.com).

Complete version of CFP available [here](#).

## **International Conference on History of Science and Science Education (ICH SSE), 2018 August, 29-31, 2018, State University of Paraiba, Brazil**

This is the XI biennial conference gathering together researchers in history and philosophy of science and science education. The conference will be hosted by the Research Group on History of Science and Science Teaching (GHCEN) of State University of Paraiba.

In its 10 years of existence, GHCEN has contributed to Brazilian research on the historical and philosophical approach to science teaching. Composed by undergraduate and graduate students and high school teachers, the Group has researched and implemented teaching strategies to spread history and philosophy of science in science education. Its focus has been in the inquiry-based learning supported by didactical materials with the historical and philosophical approach. This includes historical research based on the modern historiography of science, lesson plans with a historical and inquiry-based approach, replication of historical experiments and instruments, multimedia materials (videos and cartoons) and theatre plays.

According to the connection with GHCEN research, the theme of this XI Conference will be the similarities between the humanistic goals and the science teaching.

In this Conference, we expect the presentations will indicate how different humanistic didactical approaches can contribute:

- To build a new perspective on science and its meaning to society;
- To improve science teaching from teacher's perspective;
- To motivate students to learn science and about science.

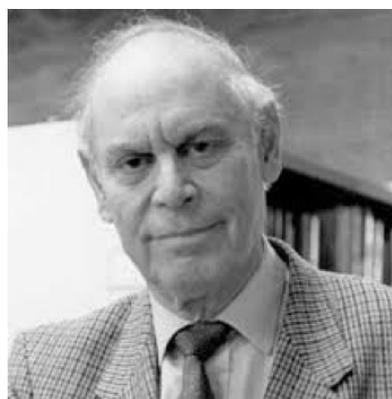
Details available [here](#).

## Opinion Page

### Tracing Tom Kuhn's Evolution: A Personal Perspective

Gerald Holton, Mallinckrodt Professor of Physics and professor of the history of science, emeritus, Harvard University

When the invitation to provide an opinion piece to the *HPS&ST Note* reached me, I thought I might offer some thoughts about Tom's creative work in a personal way, being now perhaps one of the few who knew and interacted with Tom in those early days, for over a dozen years.



We had some overlapping lives, intellectually, institutionally, culturally, and socially. Born in the same year, we received our doctorate degrees in physics at about the same time, under brilliant and demanding scientists, in the same building (while Harvard University was only just abandoning its quota system with respect to admitting Jewish students). President James B. Conant and his hugely ambitious General Education program excited in both of us intense interest in the history of science.

We also publicly acknowledged our intellectual debts in our early days to many of the same powerful scholars (among the contemporaries, Koyre, Sartre, Helene Metzger, R.K. Merton, Marjorie Nicolson, Ernest Nagel, etc., and among those from whom we both had taken courses or consulted, Quine, Philipp Frank, P.W. Bridgman, Van Vleck, Richard von Mises, Raphael Demos, etc.). We took part in the same informal workshops, and Tom and I saw each other and our families also at social gatherings. Later we corresponded, with Tom generously providing his opinions on some of my work. Moreover, while we had grown up in a philosophical climate much indebted to logical empiricism, each of us adopted positions different from that, in both our cases centered on the role of scientists' predisposi-

tions, although in quite opposite ways.

So despite the complexities that may hide behind friendships, for long enough segments of our lives moved along strangely parallel paths, during the period of our personal and professional maturing. That fact may give me some standing here, specifically in trying to help answer a persistent question about the evolutionary history of Tom's work.

That question was raised early and indirectly by Tom's friend and mentor, Harvard's President Conant, in Conant's famous letter, in which he begged off writing a preface to Tom's *Structure*. In uncharacteristic sharpness, Conant dismissed the conception of paradigm as "a magical verbal word to explain everything", and perceptively using the words "you have fallen in love" with it, he suggested what may have prompted Tom's choice of his main concepts.

The reaction became quite explicit in Steven Weinberg's essay of 1998, "The Revolution That Didn't Happen". While lauding many aspects of Tom's writings, Steve called the description of scientific revolutions "seriously misleading", insisting that changes in understanding nature "have been evolutionary, not revolutionary" He then asked: "What in Kuhn's life led him to his radical skepticism, to his strange view of the progress of science?"

In trying to provide an answer to this question, Steve shared a portion of a letter Tom had sent to him, in which Tom had written of having experienced a crucial "epiphany" around 1947, when he suddenly thought he could understand Aristotle's own mindset about the physics of that period, and so to speak slip into Aristotle's own paradigmatic preference. (Tom referred to the same incident also at other times.)

Tom's response to Steve is surely fascinating. But there may be other contributions to be made on this point. The time and place for one such additional insight came when Tom returned in November 1991 to Harvard to give his last lecture there, at his old home, launching the new annual Robert and Maurine Rothschild Lecture series, with his talk entitled "The Trouble with the Historical Philosophy of Science".

Some analysis of that event may suggest how to reconsider Steve's question.

In this quest, one has to start with a fact, based on observation and readings, that Tom was internally deeply anguished. (This mixture in some scholars is of course not unknown to us historians of science.) Part of his anguish was the result of his shifting disciplinary identity over time. He started to see himself as a physicist, at a time when his Harvard Physics department was astonishingly flowering. The work of professors there, such as Ed Purcell, Norman Ramsey, Julian Schwinger, Bob Pound, Van Vleck, and E.C. Kemble, set the bar for good work to be done there in any field very high indeed. For every graduate student who was inspired by this constellation there was likely to be another to feel discouraged.

At any rate, right after having gotten his Ph.D. degree in 1949, Tom said later tersely, "I got out of physics". His thesis adviser, Van Vleck, let it be known that this move annoyed him greatly, because Van Vleck thought he had wasted his time on his student. But Tom now began to train himself to become a historian of science under the auspices of Jim Conant, co-teaching in an undergraduate course in General Education, centered on case studies of the 17th century Scientific Revolution and its consequences. The profession was still quite young in the USA—few universities had history of science programs, Harvard having no such department for years to come.

Tom took his place as a historian of science with his book, meant for undergraduate-level courses, titled significantly *The Copernican Revolution*, though it was not published (in part because of Tom's meticulousness) until 1957. But meanwhile, in 1955, the possibility of a tenure appointment at Harvard was denied him by its Committee on General Education, reportedly because of Tom's then still thin publication record.

Philosophy of science had been a side interest for Tom since his school days, but had begun to move to the center by 1952-53, when Tom looked for funds to have time for writing a monograph that eventually became the *Structure of Scientific Revolutions* book of 1962. Happily, the University of California in Berkeley offered Tom an Assistant Professorship in History of Science, located in both the Depart-

ment of History and the Department of Philosophy. This arrangement illustrated his straddling of his professional identities at the time. Yet, this arrangement soon caused a deeply upsetting event. As late as 1995, Tom reported in an interview, “a quite destructive thing happened” and “I was extraordinarily angry, as you can guess, and very deeply hurt. I mean that’s a hurt that has never altogether gone away”<sup>1</sup>. What happened was that when Tom’s appointment to a full professorship came up, the Philosophy Department at Berkeley specifically opposed Tom’s membership in that department.

From his perspective, he had left physics early, had become a historian of science, but his final, public turn into a professional philosopher of science had been denied in a manner that was hurtful for the rest of his life. However, there was left a way for him clearly to establish his credentials in the field, although there too the bar was very high (one thinks of Quine and Putnam back “home”, and others elsewhere). This possibility, on which he had been working on and off for years, came into full view at Tom’s last lecture at Harvard, at the Rothschild Lecture<sup>2</sup>.

Tom begun his talk by confessing that the “transformation” of the “image of science”, which he thought he had helped to bring about, troubled him because some of his concepts had been used and developed by people who called themselves “Kuhnians”, although he regarded their viewpoints as “damagingly mistaken”. He was pained to be associated with their misunderstandings. In this feeling he was not alone. There were others who had reached astonishing popular success but suffered the same sort of pain. For example, Bridgman, in a publication in which he reassessed his own writings in the philosophy of science, confessed that regarding “this thing called ‘operationalism’...I feel that I have created a Frankenstein, which certainly got away from me”.

Next, in his lecture, Tom announced that he was currently at work on a new book, “a far larger project”, devoted to “a theory which I once called incommensurability”, although he regretted that in this talk he could not give details. But, importantly,

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1. Originally *Neusis* No.6, 1997, 145-200; then *The Road Since Structure*, J. Conant & J. Haugeland (eds.), 2000, University of Chicago Press, pp. 253-323.

2. *The Road Since Structure*, pp. 105-120.

here he would speak “as a philosopher”. A key point was that “for a philosopher who adopts the historical perspective, the problem is...understanding small incremental changes of belief” (rather than preoccupation with evaluation of belief itself). The use of the word “small” in that sentence prepared one to expect next a revisit to his conception of large changes, such as Revolutions. Instead, to my surprise, Tom went into the opposite direction, saying that “scientific development is like Darwinian evolution”.

He elaborated this viewpoint with his use of related conceptions such as “evolutionary tree” and “speciation”. Of course, Tom had briefly touched on evolutionary models toward the end of his *Structure* book of decades earlier, but in the context of chapters there only with headings such as “Progress through Revolutions” and “Revolution and Relativism”. No longer. Now his evolving view—he called it “reconceptualization”—had brought him, as he declared at the end of his talk, to the need to reinterpret the main parts of his previous thoughts. That, he announced, would be found in his new, to-be-expected work, where, as he put it, “the answer is incommensurability”.

Much of Tom’s promise of a reconceptualized, reinterpreted version of his previous conceptions—as well as his analogy of scientific development with Darwinian evolution—would have appealed to previous critics like Steven Weinberg (and there had been many others). But the proof of the promise had to wait for the book. One could feel that once more the stakes were high for Tom. Speaking explicitly as a philosopher, his standing in that profession would now hinge on the new work, of which he could give us in his lecture only hints. But although Tom talked about this important project later (for example in a long interview, published in 1991), he was ultimately not able to publish it, although needed to prove at last his asserted rupture between his successive paradigms.

And that, in my view, was a chief source of Tom’s internal state of dismay, especially in his last decade, as he was trying to reach the new, high professional identity level he had set for himself, but had been denied him. He had always been hard on himself; and had been through the harsh school of making himself anew as he was evolving—from physics to history to philosophy. As he told his interviewers in

October 1995, less than a year before his death: “I am an anxious, neurotic”.

Sadly, it was worse. There are good reasons to think that near the end of his career Tom considered himself to have been a failure. Yet, he would have been the only one to make such a severe judgment about himself. As illustrated by the persistent, widespread attention being paid to his work, his place in scholarship is of course secure.

Above is adapted and excerpted from Gerald Holton, “Steve’s Question and Tom’s Last Lecture”, in Alexander Blum *et al.*, *Shifting Paradigms*, Edition Open Access, 2016.

Further information: See [Prof. Gerald Holton’s faculty page at Harvard University](#) for the following: a selection of his books and a few of his published essays (downloadable free), for his Curriculum Vitae, for his DASH (Digital Access to Scholarship at Harvard), and for his Department of Physics Faculty Webpage.

## Invitation to Submit Opinion Piece

In order to make better educational use of the wide geographical and disciplinary reach of this HPS&ST Note, 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 editor. 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 Note.

They will be archived in the OPINION folder at the HPS&ST web site:

<http://www.hpsst.com/>.

Previous HPS&ST Note Opinion Pieces at <http://www.hpsst.com/>

Monica H. Green, History Department, Arizona State University, [On Learning How to Teach the Black Death](#) (March 2018).

Stephen Pinker, Psychology Department, Harvard University, [The Intellectual War on Science](#) (February 2018).

Michael Ruse, Philosophy Department, Florida State University, [Does Life Have Meaning? Or is it Self-Deception at Best and Terrifyingly Absurd at Worst?](#) (January 2018).

Mario Bunge, Philosophy Department, McGill University, [In Defence of Scientism](#) (December 2017).

Susan Haack, Philosophy and Law Departments, University of Miami, [The Future of Philosophy, the Seduction of Scientism](#) (November 2017).

Nicholas Maxwell, University College London, [What's Wrong with HPS and What Needs be Done to Put it Right?](#) (June 2017).

Heinz W. Drodste, [An Interview with Mario Bunge](#) (May 2017).

Nicholas Maxwell, University College London, [The Crisis of Our Times and What to do About It](#) (April 2017).

Eric Scerri, UCLA, [Bringing Science Down to Earth](#) (March 2017).

Robert Nola, University of Auckland, [Fake News in the Post-Truth World](#), (February 2017).

Michael D. Higgins, President of Ireland, [The Need to Teach Philosophy in Schools](#) (December 2016).

Philip A. Sullivan, University of Toronto, [What is wrong with Mathematics Teaching in Ontario?](#) (July 2016).

Gregory Radick, Leeds University, [How Mendel's legacy holds back the teaching of science](#) (June 2016).

Matthew Stanley, New York University, [Why Should Physicists Study History?](#)

## Thomas Kuhn and Science Education

Following Gerald Holton's Opinion Piece, the following published material on Thomas Kuhn and Science Education could be of interest to readers:

Matthews, M.R. (ed.): 2000, '[Thomas Kuhn and Science Education: A Special Double Issue](#)', *Science & Education* 9(1-2).

Michael R. Matthews / Editorial

Thomas S. Kuhn / On Learning Physics

Alexander T. Levine / Which Way is Up? Thomas Kuhn's Analogy to Conceptual Development in Childhood

Steve Fuller / From Conant's Education Strategy to Kuhn's Research Strategy

Van Berkel & Wobbe De Vos / Normal Science Education and Its Dangers: The Case of School Chemistry

Stephen G. Brush / Thomas Kuhn as an Historian of Science

Howard Sankey / Kuhn's Ontological Relativism

Robert Nola / Saving Kuhn from the Sociologists of Science

Harry L. Shipman / Thomas Kuhn's Influence on Astronomers

Hanne Andersen / Learning by Ostension: Thomas Kuhn on Science Education

Stellan Ohlsson / Falsification, Anomalies and the Naturalistic Approach to Cognitive Change

Cathleen C. Loving & William W. Cobern / Invoking Thomas Kuhn: What Citation Analysis Reveals for Science Education

Matthews, M.R.: 2004, 'Thomas Kuhn and Science Education: What Lessons can be Learnt?' *Science Education* 88 (1), 90-118.

## PhD Theses in HPS&ST Domain

This will be a new section of the monthly HPS&ST Note. The Note is the ideal medium for publicizing 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.

Candidate's Name and email: Andreas Henke, [ahenke@uni-bremen.de](mailto:ahenke@uni-bremen.de)

Institution: University of Bremen, Institute of Didactics of Natural Sciences

Supervisors: Prof. Dr. Dietmar Höttecke and Prof. Dr. Horst Schecker

Thesis title: *Lehren und Lernen über die Natur der Naturwissenschaften – Potentiale historisch orientierten Physikunterrichts*

(EN: *Teaching and learning about the nature of science – exploring the potentials of HPS in teaching physics*)

Abstract of 100-300 words

“This thesis highlights the chances, but also the difficulties of stimulating explicit and reflexive learning about the nature of science (NOS) within the framework of an historical-investigative approach to physics teaching. Within the EU project HIPST teaching units according to this framework were developed in teacher-researcher-teams and were tested multicyclically at secondary schools in Lower Saxony. In the course of several empirical investigations, first 8th grade student's conceptions of the historical development of science were investigated. Subsequently, the teachers involved in HIPST were asked about their perceived difficulties in implementing the historical-investigative teaching units. Finally, the effects of this type of teaching were explored in detail by comparing changes in pupils' conceptions about

the NOS within two lesson series (also 8th grade): One following a historical-investigative approach, the other following an inquiry-learning approach. Both featured explicit and reflective learning opportunities on the same NOS ideas. Additionally, trait-treatment-interactions were explored, i.e. for both teaching approaches the effects of several motivational measures of students on their learning about the NOS were compared. Quantitatively, both treatments result in similar NOS learning outcomes. Motivational measures only influence NOS learning in the context of the inquiry based unit. Qualitatively, three conclusions can be drawn from the results:

1. Some educational properties of historical-investigative teaching of physics need to be consistent with its NOS learning goals and content: the degree of open-endedness and pre-structuredness of classroom experiments and their conceptual and methodological learning goals; the ways and aims of promoting empathy with historical scientists and of dramatizing historical information.
2. Science teachers only feel competent about teaching the NOS within historical-investigative lessons, if they have knowledge about pupils' ideas about history and about the NOS, if they know the advantages and disadvantages of different pedagogical models for coordinating historical and current science concepts, and if they are able to give meaning to historical classroom investigations by mediating between the pupil's autonomy and the open-endedness of authentic investigations on the one hand and the closed-endedness of history and of the curriculums' conceptual learning demands on the other hand.
3. Student's perspectives - their preexisting ideas about the NOS, their abilities concerning historical thinking, their affinity for physics teaching, as well as their learned expectations towards physics teaching - determine whether and how they make sense of historical-investigative physics teaching, of the NOS learning

opportunities, and of the historical information contextualizing them.”

## Recent HPS&ST Research Articles

*Studies in History and Philosophy of Science Part A* (Vol. 68, April 2018) Topic: Multiple Realizability and Levels of Reality. Editor: Alex Manafu

Bagnoli, F., & Livi, R. (2018) Michael Faraday: a virtuous life dedicated to science. *Substantia*, 2(1), 121-134. doi:[10.13128/Substantia-45](https://doi.org/10.13128/Substantia-45)

Boi, L. (2018) Some Mathematical, Epistemological, and Historical Reflections on the Relationship Between Geometry and Reality, Space-Time Theory and the Geometrization of Theoretical Physics, from Riemann to Weyl and Beyond. *Foundations of Science*, 1-38. doi:[10.1007/s10699-018-9550-6](https://doi.org/10.1007/s10699-018-9550-6) online first

Chalmers, A. (2018) How Pressure Became a Scalar, Not a Vector. *Physics in Perspective*, 1-15. doi:[10.1007/s00016-018-0221-3](https://doi.org/10.1007/s00016-018-0221-3) online first

Davis, J. P., & Bellocchi, A. (2018) Objectivity, subjectivity, and emotion in school science inquiry. *Journal of Research in Science Teaching*, 1-29. doi:[10.1002/tea.21461](https://doi.org/10.1002/tea.21461) online first

Li, X. *et al.* (2018) Analysis of Five Junior High School Physics Textbooks Used in China for Representations of Nature of Science. *Research in Science Education*, 1-12. doi:[10.1007/s11165-018-9713-z](https://doi.org/10.1007/s11165-018-9713-z)

Osborne, J., Rafanelli, S., & Kind, P. (2018) Toward a more coherent model for science education than the crosscutting concepts of the next generation science standards: The affordances of styles of reasoning. *Journal of Research in Science Teaching*. doi:[10.1002/tea.21460](https://doi.org/10.1002/tea.21460) online first

Park, W., Song, J. (2018) Goethe's Conception of "Experiment as Mediator" and Implications for Practical Work in School Science. *Science & Education*, 27(1,2),

39-61. doi:[10.1007/s11191-018-9965-z](https://doi.org/10.1007/s11191-018-9965-z)

Mayor, M., & Cenadelli, D. (2018) Exoplanets – the beginning of a new era in astrophysics: A protagonist’s perspective. *The European Physical Journal H*, 1-41. doi:[10.1140/epjh/e2018-80063-1](https://doi.org/10.1140/epjh/e2018-80063-1) Online first [Oral history interview]

Neuss, M. J. (2018) Blood money: Harvey’s *De motu cordis* (1628) as an exercise in accounting. *The British Journal for the History of Science*, 1-23. doi:[10.1017/S0007087418000250](https://doi.org/10.1017/S0007087418000250) online first

Stewart, P. J. (2018) Mendeleev’s predictions: success and failure. *Foundations of Chemistry*, 1-7. doi:[10.1007/s10698-018-9312-0](https://doi.org/10.1007/s10698-018-9312-0) online first

Wan, D., Zhang, H., Wei, B. (2018) Impact of Chinese Culture on Pre-service Science Teachers’ Views of the Nature of Science. *Science & Education*, 1-35. doi:[10.1007/s11191-018-9968-9](https://doi.org/10.1007/s11191-018-9968-9) online first

Wray, K. B. (2018) What to make of Mendeleev’s predictions? *Foundations of Chemistry*, 1-5. doi:[10.1007/s10698-018-9313-z](https://doi.org/10.1007/s10698-018-9313-z) online first

## Recent HPS&ST Related Books

Burwell, Jennifer (2018) *Quantum Language and the Migration of Scientific Concepts*. Cambridge, MA: The MIT Press. ISBN: 9780262037556

“The principles of quantum physics—and the strange phenomena they describe—are represented most precisely in highly abstract algebraic equations. Why, then, did these mathematically driven concepts compel founders of the field, particularly Erwin Schrödinger, Niels Bohr, and Werner Heisenberg, to spend so much time reflecting on ontological, epistemological, and linguistic concerns? What is it about quantum concepts that appeals to latter-day Eastern mystics, post-structuralist critics, and get-rich-quick schemers? How did their interpretations and misinterpretations of quantum phenomena reveal

their own priorities? In this book, Jennifer Burwell examines these questions and considers what quantum phenomena—in the context of the founders’ debates over how to describe them—reveal about the relationship between everyday experience, perception, and language.

“Drawing on linguistic, literary, and philosophical traditions, Burwell illuminates representational and linguistic problems posed by quantum concepts—the fact, for example, that quantum phenomena exist only as probabilities or tendencies toward being and cannot be said to exist in a particular time and place. She traces the emergence of quantum theory as an analytic tool in literary criticism, in particular the use of wave/particle duality in interpretations of gender differences in the novels of Virginia Woolf and critics’ connection of Bohr’s Principle of Complementarity to poetic form; she examines the “quantum mysticism” of Fritjof Capra and Gary Zukav; and she concludes by analyzing “nuclear discourse” in the context of quantum concepts, arguing that it, too, adopts a language of the unthinkable and the indescribable.”  
(From the Publisher)

More information available [here](#).

Cuffaro, Michael E., & Fletcher, Samuel C. (Eds.) (2018) *Physical Perspectives on Computation, Computational Perspectives on Physics*. Cambridge, UK: CUP ISBN: 9781107171190

“Although computation and the science of physical systems would appear to be unrelated, there are a number of ways in which computational and physical concepts can be brought together in ways that illuminate both. This volume examines fundamental questions which connect scholars from both disciplines: is the universe a computer? Can a universal computing machine simulate every physical process? What is the source of the computational power of quantum computers?

Are computational approaches to solving physical problems and paradoxes always fruitful? Contributors from multiple perspectives reflecting the diversity of thought regarding these interconnections address many of the most important developments and debates within this exciting area of research. Both a reference to the state of the art and a valuable and accessible entry to interdisciplinary work, the volume will interest researchers and students working in physics, computer science, and philosophy of science and mathematics.” (From the Publisher)

More information available [here](#).

Currie, Adrian (2018) *Rock, Bone, and Ruin: An Optimist's Guide to the Historical Sciences*. Cambridge, MA: The MIT Press.

“The ‘historical’ sciences have been neglected by philosophers. Adrian Currie analyzes both the problems and the opportunities involved in reconstructing and understanding the unobservable deep past. His engaging discussion—ranging from the character of global ice ages through the habits of giant dinosaurs to the meaning of Mayan monuments—explores the surprising commonalities that underlie these superficially diverse sciences.” – Martin Rudwick, University of Cambridge; author of *Earth's Deep History and Bursting the Limits of Time*

“*Rock, Bone, and Ruin* is an extraordinarily ambitious, provocative, and generative treatment of the epistemic predicament of the historical sciences. Adrian Currie trains his philosophical eye on the research strategies of ‘unlucky’ historical scientists—those who contend with messy, incomplete, and opaque traces of the past—and explains how, against the epistemic odds, they establish a robust understanding of seemingly inaccessible geological events, evolutionary processes, and cultural dynamics. This is a nuanced and richly illustrated account

of scientists operating under non-ideal circumstances that demonstrates what can be accomplished by taking seriously the turn to practice. It has implications that will be of interest to practitioners and it is an incisive argument for doing philosophy differently: attentive to the epistemic challenges scientists actually face, resolutely local and contextual, and unabashedly normative.” – Alison Wylie, Professor, Department of Philosophy, University of British Columbia

More information available [here](#).

Mößner, Nicola (2018) *Visual Representations in Science: Concept and Epistemology*. Dordrecht: Routledge. ISBN: 9781138089938

“Visual representations (photographs, diagrams, etc.) play crucial roles in scientific processes. They help, for example, to communicate research results and hypotheses to scientific peers as well as to the lay audience. In genuine research activities they are used as evidence or as surrogates for research objects which are otherwise cognitively inaccessible. Despite their important functional roles in scientific practices, philosophers of science have more or less neglected visual representations in their analyses of epistemic methods and tools of reasoning in science. This book is meant to fill this gap. It presents a detailed investigation into central conceptual issues and into the epistemology of visual representations in science.” (From the Publisher)

More information available [here](#).

Mößner, Nicola, & Nordmann, Alfred (2018) *Reasoning in Measurement*. Dordrecht: Routledge. ISBN: 9781138331945

“This collection offers a new understanding of the epistemology of

measurement. The interdisciplinary volume explores how measurements are produced, for example, in astronomy and seismology, in studies of human sexuality and ecology, in brain imaging and intelligence testing. It considers photography as a measurement technology and Henry David Thoreau's poetic measures as closing the gap between mind and world.

“By focusing on measurements as the hard-won results of conceptual as well as technical operations, the authors of the book no longer presuppose that measurement is always and exclusively a means of representing some feature of a target object or entity. Measurement also provides knowledge about the degree to which things have been standardized or harmonized – it is an indicator of how closely human practices are attuned to each other and the world.” (From the Publisher)

More information available [here](#).

Staiti, Andrea, & Clarke, Evan (Eds.) (2018) *The Sources of Husserl's 'Ideas I'*. Berlin: De Gruyter. ISBN: 978-3-11-055159-4

“Despite an ever-growing scholarly interest in the work of Edmund Husserl and in the history of the phenomenological movement, much of the contemporaneous scholarly context surrounding Husserl's work remains shrouded in darkness. While much has been written about the critiques of Husserl's work associated with Heidegger, Levinas, and Sartre, comparatively little is known of the debates that Husserl was directly involved in. The present volume addresses this gap in scholarship by presenting a comprehensive selection of contemporaneous responses to Husserl's work. Ranging in date from 1906 to 1917, these texts bookend Husserl's landmark *Ideas for a Pure Phenomenology and Phenomenological Philosophy* (1913). The selection encompasses essays that Husserl responded to directly in the *Ideas I*, as well as a number of the critical and sympathetic essays that appeared in the

wake of its publication. Significantly, the present volume also includes Husserl's subsequent responses to his critics. All of the texts included have been translated into English for the first time, introducing the reader to a wide range of long-neglected material that is highly relevant to contemporary debates regarding the meaning and possibility of phenomenology." (From the publisher)

More information available [here](#).

Schindler, Samuel (2018) *Theoretical Virtues in Science: Uncovering Reality through Theory*. Cambridge, UK: CUP. ISBN: 9781108422260

"In this ambitious book Samuel Schindler mounts a sustained defence of scientific realism, challenging the most important antirealist arguments with a comprehensive and multi-layered appeal to theoretical virtues. His advocacy for the general truth-conduciveness of these virtues, rejecting the lure of predictivism, is both balanced and persuasive." – Hasok Chang, University of Cambridge

"Steeped in the history of science and bursting with examples, this book turns a spotlight on the 'theoretical virtues' and their role in determining what the natural sciences reveal about our world. Fearlessly contesting received views of the import of novel predictions and the nature of ad hoc hypotheses, Schindler shows by example how general philosophy of science, and the history and philosophy of science, are indispensable to an understanding of scientific knowledge." – Anjan Chakravartty, University of Notre Dame, Indiana

More information available [here](#).

Turner, David P. (2018) *The Green Marble: Earth System Science and Global Sustainability*. New York, NY: Columbia University Press. ISBN: 9780231180610

“*The Green Marble* introduces earth systems as spheres: the noösphere formed when human actions attained a sufficient magnitude to alter the planet, the biosphere or the total life on Earth, the hydrosphere, the technosphere. David P. Turner interweaves planetary systems, large-scale human actions, and the risk of global system failures in this rich text to provide a readable, systems-oriented, intellectually rich narrative on understanding the deep global issues that we face today.”  
– Herman H. Shugart, W.W. Corcoran Professor of Natural History, University of Virginia

“This book takes us on a journey around the biosphere at all scales, from cellular details of photosynthesis to global biome distributions, and in time, from four billion years ago as life began to thousands of years into the future with a changing climate. It is exceedingly rare for a single text to cover the natural and social sciences on global environmental change and to take the intellectual risk of offering big solutions. The end result is a very readable book that should catalyze the type of thought-provoking class discussions all good teachers desire.”  
– Steven Running, Emeritus Regents Professor of Ecology, University of Montana

More information available [here](#).

Weaver, Christopher Gregory (2018) *Fundamental Causation: Physics, Metaphysics, and the Deep Structure of the World*. Dordrecht: Routledge. ISBN: 9781138213135

“Fundamental Causation addresses issues in the metaphysics of deterministic singular causation, the metaphysics of events, property instances, facts, preventions, and omissions, as well as the debate between causal reductionists and causal anti-reductionists. The book also pays special attention to causation and causal structure in physics. Weaver argues that causation is a multigrade obtaining relation that is transitive, irreflexive, and asymmetric. When causation is singular, determ-

inistic and such that it relates purely contingent events, the relation is also universal, intrinsic, and well-founded. He shows that proper causal relata are events understood as states of substances at ontological indices. He then proves that causation cannot be reduced to some non-causal base, and that the best account of that relation should be unashamedly primitivist about the dependence relation that underwrites its very nature. The book demonstrates a distinctive realist and anti-reductionist account of causation by detailing precisely how the account outperforms reductionist and competing anti-reductionist accounts in that it handles all of the difficult cases while overcoming all of the general objections to anti-reductionism upon which other anti-reductionist accounts falter. This book offers an original and interesting view of causation and will appeal to scholars and advanced students in the areas of metaphysics, philosophy of science, and philosophy of physics.” (From the publisher)

More information available [here](#).

Authors of HPS&ST-related papers and books are invited to bring them to attention of the Note’s assistant editors, Paulo Maurício at [paulo.asterix@gmail.com](mailto:paulo.asterix@gmail.com) or Nathan Oseroff at [nathanoseroff@gmail.com](mailto:nathanoseroff@gmail.com) for inclusion in these sections.

## Coming HPS&ST Related Conferences

May 14-17, 2018, Fifth International Conference on the Nature and Ontology of Spacetime, Albena, Bulgaria

More information at: <http://www.minkowskiinstitute.org/conferences/2018/>

May 17-18, 2018, Philosophy of Biology at the Mountains (POBAM), University of Utah, Salt Lake City, US.

Details at: <https://sites.google.com/view/pobam/home>

- May 17-20, 2018, The 8th Annual Values in Medicine, Science, and Technology Conference. The University of Texas at Dallas, Richardson, Texas, USA  
Details at: <http://www.utdallas.edu/c4v/2018-conference/>
- May 18-20, 2018, 46th annual meeting of the Society for Exact Philosophy. University of Connecticut, USA  
More information at: <http://www.phil.ufl.edu/SEP/meeting/2018/index.html>
- May 23-25, 2018, Workshop on Explanation and Understanding. Ghent University  
More information at: <http://www.lrr.ugent.be/explanationunderstanding/>
- May 24-26, 2018, 4th International Workshop on Historical Epistemology: Historical epistemology and the disunities of the sciences. Université Paris 1 Panthéon-Sorbonne  
More information at: <https://episthist.hypotheses.org/1016>
- May 24-26, 2018, Science Teaching in Pre-Modern Societies, McGill University, Montreal.  
Information: Katrin Dinkel [katrin.dinkel@mcgill.ca](mailto:katrin.dinkel@mcgill.ca)  
Sally Ragep, [sally.ragep@mcgill.ca](mailto:sally.ragep@mcgill.ca)  
Details available [here](#)
- May 26-28, 2018, CSHPS Annual Meeting, Regina, Canada  
Details at: <http://www.yorku.ca/cshps1/meeting.html>
- May 28-30, 2018, Closing International Workshop: Democratisation of science – epistemological issues and new perspectives. Université de Lyon, France  
More information at: <https://tinyurl.com/y7vbrewt>
- May 31, June 1, 2018, Is Religion Natural?, Centre for Ethics and the Centre Pieter Gillis, University of Antwerp (Belgium)  
Inquiries with Esther Kroeker: [esther.kroeker@uantwerpen.be](mailto:esther.kroeker@uantwerpen.be).
- June 1-2, 2018, Fake Knowledge, Department of Philosophy, University of Cologne, Germany.

More information: Dr. Amy Flowerree ([aflowerr@uni-koeln.de](mailto:aflowerr@uni-koeln.de)) Abstract submission: March 15, 2018.

June 4-6, 2018, Consortium for Socially Relevant Philosophy of/in Science and Engineering (SRPOISE) 4th Conference, Academy of Medicine at Georgia Tech, Atlanta, USA

Details at: <http://srpoise2018.weebly.com>

June 4-7, 2018, Canadian Philosophical Association: 2018 Annual Congress. Montreal, Quebec, Canada

More information at: <https://www.acpcpa.ca/cpages/home-page>

June 7-8, 2018, The Spirit of Inquiry in the Age of Jefferson. American Philosophical Society, Philadelphia.

Details at: <https://www.amphilsoc.org/spirit-inquiry-age-jefferson>

June 11-13, 2018, Models of Explanation. 11th Munich-Sydney-Tilburg/Turin (MuST) Conference in Philosophy of Science. University of Turin.

Details at: <https://modelsofexplanation.wordpress.com/>

June 14-15, 2018, Explanatory Power. A workshop in the DACH project: Inferentialism, Bayesianism, and Scientific Explanation. University of Geneva.

More information at: [http://www.unige.ch/lettres/philo/files/1114/9917/0204/Explanatory\\_Power.pdf](http://www.unige.ch/lettres/philo/files/1114/9917/0204/Explanatory_Power.pdf)

Inquiries to: [lorenzo.casini@unige.ch](mailto:lorenzo.casini@unige.ch)

June 14-16, 2018, Phenomenological Approaches to Physics Historical and Philosophical Perspectives, University of Graz, Austria

Details at: <http://phenphysics.weebly.com/>

June 18-20, 2018, Society of European Philosophy and Forum for European Philosophy Annual Conference, University of Essex, UK.

More information available [here](#).

June 18-20, 2018, 5th Annual Conference of the International Association for the

- Philosophy of Time (IAPT), Seoul, South Korea.  
More information at: <https://iapt5seoul.weebly.com/>
- June 19-21, 2018, 7th annual conference of the Society for the Study of the History of Analytical Philosophy (SSHAP 2018), Hamilton, Ontario  
More information at: <http://sshap.org/category/meetings/annual-meetings/>
- June 22-24, 2018, Bertrand Russell Society Annual Meeting 2018, McMaster University in Hamilton, Ontario  
More information at: <http://bertrandrussell.org/annual-meeting-2018/>
- June 22-23, 2018, Computational Modelling in Philosophy (CMP). Munich Center for Mathematical Philosophy (MCMP) – LMU Munich.  
Details at: <https://tinyurl.com/y9tpvq9m>
- June 27-29, 2018, Reconceiving Cognition, Antwerp, Belgium  
More information at: <https://www.uantwerpen.be/en/rg/filop/reconceiving/>
- June 27-29, 2018, Measurement at the Crossroads. University Paris Diderot, France.  
Details at: <https://measurement2018.sciencesconf.org/>
- June 29-July 1, 2018, Annual Conference of the Society for Applied Philosophy. Utrecht, The Netherlands.  
More information available [here](#).
- June 30-July 2, 2018, 7th SPSP Congress, Ghent University, Belgium  
Details, Erik Weber, [Erik.Weber@UGent.be](mailto:Erik.Weber@UGent.be).
- July 2-4, 2018, 3rd International Conference on Science and Literature, Paris.  
Details, George N. Vlahakis, [gvlahakis@yahoo.com](mailto:gvlahakis@yahoo.com).
- July 3-6, 2018, 9th Conference of the International Society for the Study of Argumentation (ISSA), University of Amsterdam, The Netherlands  
Details at: <https://www.conftool.net/issa2018/>
- July 4-6, 2018, VIIème Congrès de la Société de Philosophie des Sciences, Nantes,

France.

Details at: <https://congressps.sciencesconf.org/resource/page/id/1>

July 4-6, 2018, BSPS 2018 Annual Conference, University of Oxford, UK

More information available [here](#).

July 4-6, 2018, VIIème Congrès de la Société de Philosophie des Sciences, Nantes, France.

Details available [here](#).

July 5-7, 2018, The Evolution of Knowledge. &HPS7: Integrated History and Philosophy of Science, 7th conference. Leibniz Universität Hannover, Hannover, Germany

Inquiries to: Uljana Feest [feest@philos.uni-hannover.de](mailto:feest@philos.uni-hannover.de)

Or, Ohad Parnes [oparnes@mpiwg-berlin.mpg.de](mailto:oparnes@mpiwg-berlin.mpg.de)

July 9-11, 2018, FAPSA 2018 Conference: The Future of Philosophy in Schools. The University of Notre Dame, Fremantle, Australia.

Details available [here](#).

July 9-12, 2018, HOPOS 2018 International Conference, Groningen, the Netherlands

Details at: <http://www.hopos2018.nl/>

July 16-18, 2018, Annual Conference of the International Society for the Philosophy of Chemistry (ISPC). Department of Philosophy, University of Bristol, UK

Inquiries to [gb0859@bristol.ac.uk](mailto:gb0859@bristol.ac.uk)

More information at: <https://sites.google.com/site/socphilchem/>

July 17-19, 2018, Eight International Conference on Language, Culture and Mind.

Venue: Denison University in Granville, Ohio, USA

Details at: <https://conferences.denison.edu/lcm8/>

July 17-21, 2018, International Committee for the History of Technology, 45th

- symposium, Jean Monnet University, Saint-étienne, France.  
Further information at: <http://www.icohtec.org/annual-meeting-2018.html>
- July 19-27, 2018, 2018 Summer Institute; From Biological Practice to Scientific Metaphysics. Taipei, Taiwan  
Details available [here](#)
- July 23-27, 2018, The 2018 Conference on Artificial Life (ALIFE 2018), Tokyo, Japan.  
Details at: <http://2018.alife.org/>
- July 28-August 1, 2018, American Association of Physics Teachers (AAPT), Annual Conference, Washington DC, USA.  
Details at: [programs@aapt.org](mailto:programs@aapt.org)
- July 29 – August 2, 2018, 25th Biennial Conference in Chemical Education, University of Notre Dame, Notre Dame, IN, USA  
Details at: <http://bcce2018.org/Default.html>
- August 5-11, 2018, 41st International Wittgenstein Symposium. Kirchberg am Wechsel, Austria.  
Details at: [http://www.alws.at/index.php/symposium/view/call\\_for\\_papers/](http://www.alws.at/index.php/symposium/view/call_for_papers/)
- August 8-10, 2018, A Materialist Theory of the Mind: 50 Years On. University of Sydney, Australia.  
More information available [here](#).
- August 20-21, 2018, First International Conference on Philosophy and Meaning in Life, Sapporo, Japan  
More information at: <http://caep-hu.sakura.ne.jp/en/event/>
- August 22-24, 2018, Society for the Metaphysics of Science (4th Annual Conference), Milan, Italy.  
Further information: Christina Conroy at [c.conroy@moreheadstate.edu](mailto:c.conroy@moreheadstate.edu)
- August 29 – 31, 2018, XI International Conference on History of Science and Science Education (ICHSSE), State University of Paraiba, Campina Grande, Brazil.

Information available [here](#).

August 29 – September 1, 2018, Society for Social Studies of Science – Transnational STS, Sydney, Australia

Details at: [http://www.4sonline.org/item/4s\\_sydney\\_18\\_announced](http://www.4sonline.org/item/4s_sydney_18_announced)

September 3-4, 2018, First Irvine-Munich-PoliMi-Salzburg Conference in Philosophy and Foundations of Physics (IMPS 2018). Salzburg, Austria.

More information available [here](#).

September 3-4, 2018, “Kinds of Reasoning”: IV FINO Graduate Conference in Mind, Language and Science, Vercelli and Novara, Italy.

More information available [here](#).

September 3-5, 2018, 4th Latin American Conference of the International History, Philosophy and Science Teaching Group (IHPST-LA), Federal University of ABC, UFABC, Santo André, Brazil

Information at: <http://www.brenoam.com/ihpstla-2018-en>.

September 10-12, 2018, The Insides of Nature: Causalities, Causal Processes and Conceptions of Nature. Faculdade de Filosofia e Ciências Sociais Universidade Católica Portuguesa, Braga, Portugal

More information at: <http://braga.ucp.pt/filosofiadanatureza/eng.html#>

September 13-14, 2018, Uniting Two Perspectives on Mental Illness: Philosophy and Linguistics. University of Essex, UK.

More information available [here](#).

September 14-16, 2018, Colloquium Logicum 2018, University of Bayreuth, Germany.

More information available [here](#).

September 14-17, 2018, European Society for the History of Science Biennial Conference and British Society for History of Science annual conference, ‘Unity and Disunity’, University College London’s Institute of Education, London, UK

More information at: <http://eshs2018.uk/index.php/call-for-papers/>

For further details please contact the Programme Co-ordinator, Frank James:  
[fjames@ri.ac.uk](mailto:fjames@ri.ac.uk).

September 17-20, 2018, Tenth international conference (GAP.10) of the German Society for Analytic Philosophy (GAP), Cologne, Germany

More information at: <https://gap10.de/en/>

September 19-21, 2018, CiNaPS 2018: Causality in the Neuro- and Psychological Sciences. University of Antwerp, Belgium.

More information available [here](#).

September 19-22, 2018, 19th European Association of Museums of the History of Medical Sciences biennial Congress, Barcelona, Spain.

More information available [here](#).

September 26-28, 2018, Deuxième colloque de la SFHSH – Histoire des sciences humaines et sociales. Paris, France.

Details at: <https://sfhsh.hypotheses.org/1018>

October 2-6, 2018, XIII International Ontology Congress: Physics and Ontology. San Sebastian (University of the Basque Country) and Barcelona Autonomous University of Barcelona, Spain.

Details at: <http://www.ontologia.info/>

October 15-17, 2018, Philosophy of Cancer Biology. Bordeaux, France.

More information available [here](#).

October 17-21, 2018, 3rd International Conference on the History of Physics under the auspices of the European Physical Society, Donostia-San Sebastian (Spain)

Details at: <http://www.ehu.eus/ehusfera/hopdss2018/>

October 19-20, 2018, “The Ethics of Conduct in Debate” University of Tartu Graduate Conference 2018, Tartu, Estonia.

More information available [here](#).

October 26-27, 2018, Central States Philosophical Association 2018 Meeting, University at Buffalo, Buffalo, NY.

More information available [here](#).

October 28, November 1st, 2018, 18th International Conference on Systems Biology Humanities and Social Sciences, Lyon, France.

More information available [here](#).

November 1-4, 2018, 26th Biannual Meeting of Philosophy of Science Association, Seattle, Washington.

More information available [here](#).

November 8-10, 2018, Investigating the Mind: Pain, Emotion & Affective Disorders, Ruhr-University Bochum, Germany.

More information available [here](#).

November 13-16, 2018, IX conference of the Spanish Society of Logic, Methodology and Philosophy of Science (SLMFCE), Madrid, Spain.

More information at: <http://www.solofici.org/congreso2018/>

November 15-17, 2018, 7th Making of the Humanities conference, University of Amsterdam, The Netherlands.

More information available [here](#).

November 23-28, 2018, East Asian Science Education Association (EASE) annual conference, National Dong Hwa University, Hualien Taiwan.

Details at: <http://new.theease.org/conference2018.php>

November 28-30, 2018, 29th Novembertagung on the History of Mathematics: “History of Mathematical Concepts and Conceptual History of Mathematics”, University of Seville, Spain.

Details available [here](#).

December 5-7, 2018, First Annual Meeting of The Australasian Society for Philosophy and Psychology, Macquarie University, Sydney, Australia.

Details available [here](#).

February 25-27, 2019, Third International Conference of the German Society for  
Philosophy of Science (GWP.2019), Cologne, Germany.

More information available [here](#).

March 31-April 3, 2019, NARST Annual Conference, Baltimore, USA

Details at: <https://www.narst.org/>