HPS&ST Note
March 2016

# Introduction

This HPS&ST monthly note is sent direct to about 6,600 individuals who directly or indirectly have an interest in the connections of history and philosophy of science with 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 science teaching lists.

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 HPS&ST concerns.

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

# Gerald Holton Interview

Gerald Holton, born 1922 is in his 94th year and ‘going strong’. He is Mallinckrodt Professor of Physics and Professor of History of Science Emeritus at Harvard University.

He has published numerous important and well-known books in the history and philosophy of science, and (with Stephen G. Brush) the substantial textbook Physics, the Human Adventure: From Copernicus to Einstein and Beyond (2001).

He was also one of the guiding figures in the creation and on-going revision of the HPS-informed Harvard Project Physics Course for high schools. Among his honors are the Millikan Medal, the George Sarton Medal, election to Fellowships of the American Philosophical Society and the American Physical Society, and the presidency of the US History of Science Society.

More details of his life, achievements and research can be found at:

https://en.wikipedia.org/wiki/Gerald_Holton

Inter-Divisional Teaching Commission
International Union of the History and Philosophy of Science
www.idtc-iuhps.com
Holton is a giant of twentieth-century HPS&ST research. Among his many publications on the theory and pedagogy of physics teaching are two published in *Science & Education*:


Unfortunately he has not yet written an autobiography, but in 2015 he was interviewed by the Harvard University Gazette with a view to eliciting something of his most interesting life story. The interview can be read at:

[http://news.harvard.edu/gazette/story/2015/05/a-completely-new-life-was-beckoning/](http://news.harvard.edu/gazette/story/2015/05/a-completely-new-life-was-beckoning/)


Amir Aczel, a US statistician and most successful communicator and populariser of science and mathematics, passed away in November of last year. He was a gentle, inquisitive and thorough scholar, with an enviable gift for clear writing, story-telling, and for rending complex scientific and historical matters into engaging prose.

He published nearly twenty commercially successful books. Something of his life, interests and publications can be seen at: [https://en.wikipedia.org/wiki/Amir_Aczel](https://en.wikipedia.org/wiki/Amir_Aczel).


Aczel was a contributor to the International Pendulum Project and these contributions were published as:

# 1st European IHPST Regional Conference, August 22-25, 2016, Europa-Universität Flensburg, Germany

**Chairs:** Peter Heering & Claus Michelsen ([ihpst16@uni-flensburg.de](mailto:ihpst16@uni-flensburg.de))

**Plenary speakers:**
- Johannes Grebe-Ellis (Bergische Universität Wuppertal):
- Hanne Andersen (University of Copenhagen)
- Iwan Rhys Morus (Aberystwyth University)


# Asian HPS&ST Conference, December 15-18, 2016, Pusan National University, South Korea.

**Chairs:** Hae-Ae Seo (Biology Education, PNU) & Youngmin Kim (Physics Education, PNU)

**Conference Theme:** *Inquiry in Science and in Science Education: Historical, Philosophical and Pedagogical Dimensions*

Pusan National University is in Busan, South Korea’s second largest city, located on the southern coast of the country with easy high-speed train and air connection to Seoul. The Conference will open on Thursday evening with a plenary lecture and welcoming reception in the evening and on Friday and Saturday for full day presentations. The Conference will close on Sunday at lunch time and a half-day excursion will be offered in the afternoon. A
pre-conference research workshop on HPS and Education themes and methodologies will be organized for graduate students and junior scholars.

*Plenary Speakers include:*

**Darrell P. Rowbottom** is Professor and Head of Philosophy at Lingnan University, Hong Kong. He studied physics as an undergraduate (at Bristol), and history and philosophy of science (at the LSE) and philosophy (at Durham) thereafter. He subsequently held posts at several universities in the UK, including Bristol, Edinburgh, and Oxford. His current research focuses on general issues in the philosophy of science (e.g. scientific method, scientific realism, and scientific progress) and the philosophy of probability (e.g. intersubjective probability and measurement paradoxes). He also has interests in epistemology, metaphysics, and the philosophy of education.


*Proposals* for individual papers (1,000 words) and symposia are due by: **June 10, 2016.**

*Inquiries* to: Hae-Ae Seo ([haseo@pusan.ac.kr](mailto:haseo@pusan.ac.kr))


# The 7th International Conference of the European Society for the History of Science (ESHS), Prague, 22 - 24 September, 2016.

The Conference website is available at: [http://www.7eshs2016.cz](http://www.7eshs2016.cz)

There you will find the presentation of the Conference as well as the various deadlines for registration and submission of abstracts ([http://www.7eshs2016.cz/callforpapers/](http://www.7eshs2016.cz/callforpapers/)).

The submission of stand-alone papers and symposia is now possible at the following [http://7eshs2016.guarant.eu/abstracts/](http://7eshs2016.guarant.eu/abstracts/)

# Graduate HPS&ST Course, University of Copenhagen, September 19-23, 2016.

A graduate course on *Educational Implications of the History and Philosophy of Science and Mathematics* will be held at University of Copenhagen, September 19-23, 2016.

This international doctoral course will focus on the utilisation of historical and philosophical scholarship to inform science and mathematics education. The course will present an overview of this research tradition and discuss educational implications of HPS&M based on the analysis of case studies from different disciplines. The course is open to both Danish and
international students; it is free of charge for the participants (including lunch); and can have a maximum of 25 participants. Participants can receive 5 ECTS (European Credit Transfer and Accumulation System) points.

Among the course lecturers are Michael Matthews (founding editor of Science & Education), Peter Heering (Past President IHPST), Helge Kragh (History of Physics) and Jesper Lützen (History of Mathematics).

More information about the course and a registration link can be found at www.ind.ku.dk/hpscourse; and from the course coordinator Ricardo Karam (ricardo.karam@ind.ku.dk).

# Division of the History of Science & Technology (DHST) 25th International Congress, Rio de Janeiro, Brazil, 23 to 29 July 2017.

The 25th ICHST will be held in the Praia Vermelha campus of the Federal University of Rio de Janeiro (UFRJ), located in one of the most beautiful and touristic regions in the city, served by various forms of public transport and close to important clusters of hotels, beaches, and numerous artistic and cultural attractions.

More information is available at: http://www.ichst2017.sbhc.org.br/

The theme of the 25th Congress is “Science, Technology and Medicine between the Global and the Local”. This theme is construed broadly, and studies of the History of Science, Technology and Medicine at the global, national and local levels, across all periods, and from a variety of methodological and historiographical approaches are encouraged.

Deadline for submission of symposia proposals is 30 April 2016.
Deadline for submission of stand-alone papers 30 November 2016

The minutes of the last meeting of the DHST Council, which took place in Beijing on 12 December 2015, have been posted on the DHST Website:

https://docs.google.com/viewer?a=v&pid=sites&srcid=ZGhzdHdlYi5vcmd8d3d3fGd4OjZjODI1ZmJmYWExMzRmNWY

The Inter-Divisional Teaching Commission (IDTC) of the DHST/DLMPS will stage a education-related symposium during the congress. This might consist of 3, 5, 7 or more
papers depending on number and quality of submissions received by 15 April 2016, thus allowing time for selection by IDTC and final submission to Congress Organising Committee by due date of 30 April.

Proposals of 1,000 words, including title, author’s name, institution and email should be sent as a Word document to the local IDTC contact person:

Andréia Guerra  
Centro Federal de Educação Tecnológica do Rio de Janeiro - CEFET-RJ  
Teknê Group  
Departamento de Pesquisa  
BRAZIL  
aguerra@tekne.pro.br

Education symposium papers ideally should connect to the Congress theme (broadly construed) and can deal with the history of science education, the utilisation of history of science in education, curriculum debates about appropriate school and university science programmes, the impact of textbooks on teaching, the role of HPS in teacher education, and other topics. All symposium presenters need to be registered for the congress.

In addition to the symposium, the IDTC will arrange a congress session on ‘Engaging and Innovative Teaching in the History of Science’. More details on this will follow.

# IsisCB Explore History of Science Index

Consider using the IsisCB Explore History of Science Index (isiscb.org/explore) for your research, and encourage your library or department to add it to their list of resources. Accessible to anyone on the web, IsisCB Explore is a completely open access service made possible by the History of Science Society with support from the University of Oklahoma.

IsisCB Explore opens up bibliographical research in the history of science, technology, and medicine. It is designed for students, scholars, librarians, and the general public. Users will find the data architecture intuitive and powerful, and librarians can trust that it will guide researchers to the best literature in the discipline.

There are some instructional videos on the IsisCB Explore YouTube Channel. The introductory video gives you a quick overview. You can find more information about the history of the Isis Bibliography on the main site: isiscb.org. Information from: Stephen Weldon, Department of History of Science, University of Oklahoma (spweldon@ou.edu).

# Recent HPS&ST Research Articles


# Recent HPS&ST Books


“Ignorance, or the study of ignorance, is having a moment. Ignorance plays a powerful role in shaping public opinion, channelling our politics, and even directing scholarly research. The first collection of essays to grapple with the historical interplay between education and ignorance, Miseducation finds ignorance—and its social production through naïveté, passivity, and active agency—at the center of many pivotal historical developments. Ignorance allowed Americans to maintain the institution of slavery, Nazis to promote ideas of race that fomented genocide in the 1930s, and tobacco companies to downplay the dangers of cigarettes. Today, ignorance enables some to deny the fossil record and others to ignore climate science.
A. J. Angulo brings together seventeen experts from across the scholarly spectrum to explore how intentional ignorance seeps into formal education. Each chapter identifies education as a critical site for advancing our still-limited understanding of what exactly ignorance is, where it comes from, and how it is diffused, maintained, and regulated in society. Miseducation also challenges the notion that schools are, ideally, unimpeachable sites of knowledge production, access, and equity. By investigating how laws, myths, national aspirations, and global relations have recast and, at times, distorted the key purposes of education, this pathbreaking book sheds light on the role of ignorance in shaping ideas, public opinion, and policy.” (From the Publisher)

More information at: https://jhupbooks.press.jhu.edu/content/miseducation


“In the sixteenth century medicinal plants, which until then had been the monopoly of apothecaries, became a major topic of investigation in the medical faculties of Italian universities, where they were observed, transplanted, and grown by learned physicians both in the wild and in the newly founded botanical gardens. Tuscany was one of the main European centres in this new field of inquiry, thanks largely to the Medici Grand Dukes, who patronised and sustained research and teaching, whilst also taking a significant personal interest in plants and medicine. This is the first major reconstruction of this new world of plants in sixteenth-century Tuscany. Focusing primarily on the medical use of plants, this book also shows how plants, while maintaining their importance in therapy, began to be considered and studied for themselves, and how this new understanding prepared the groundwork for the science of botany. More broadly this study explores how the New World's flora impacted on existing botanical knowledge and how this led to the first attempts at taxonomy.” (from the Publisher)

More information at: https://www.routledge.com/products/9781472466228


“The goal of meteorology is to portray everything atmospheric, everywhere, always,” declared John Bellamy and Harry Wexler in 1960, soon after the successful launch of TIROS 1, the first weather satellite. Throughout the twentieth century, meteorological researchers have had global ambitions, incorporating technological advances into their scientific study as they worked to link theory with practice. Wireless telegraphy, radio, aviation, nuclear tracers, rockets, digital computers, and Earth-orbiting satellites opened up entirely new research horizons for meteorologists. In this book, James Fleming charts the emergence of the interdisciplinary field of atmospheric science through the lives and careers of three key figures: Vilhelm Bjerknes (1862–1951), Carl-Gustaf Rossby (1898–1957), and Harry Wexler (1911–1962).

In the early twentieth century, Bjerknes worked to put meteorology on solid observational and theoretical foundations. His younger colleague, the innovative and influential Rossby, built the first graduate program in meteorology (at MIT), trained aviation cadets during World War II, and was a pioneer in numerical weather prediction and atmospheric chemistry. Wexler, one of Rossby’s best students, became head of research at the U.S. Weather Bureau, where he developed new technologies from radar and rockets to computers and satellites, conducted research on the Antarctic ice sheet, and established carbon dioxide measurements at the Mauna Loa Observatory in Hawaii. He was also the first meteorologist to fly into a hurricane—an experience he chose never to repeat.
Fleming maps both the ambitions of an evolving field and the constraints that checked them—war, bureaucracy, economic downturns, and, most important, the ultimate realization (prompted by the formulation of chaos theory in the 1960s by Edward Lorenz) that perfectly accurate measurements and forecasts would never be possible.” (From the Publisher)

More information at: https://mitpress.mit.edu/atmospheric-science


“Thinking Things Through offers a broad, historical, and rigorous introduction to the logical tradition in philosophy and its contemporary significance. It is unique among introductory philosophy texts in that it considers both the historical development and modern fruition of a few central questions. It traces the influence of philosophical ideas and arguments on modern logic, statistics, decision theory, computer science, cognitive science, and public policy. The text offers an account of the history of speculation and argument, and the development of theories of deductive and probabilistic reasoning. It considers whether and how new knowledge of the world is possible at all, investigates rational decision making and causality, explores the nature of mind, and considers ethical theories. Suggestions for reading, both historical and contemporary, accompany most chapters.

This second edition includes four new chapters, on decision theory and causal relations, moral and political theories, “moral tools” such as game theory and voting theory, and ethical theories and their relation to real-world issues. Examples have been updated throughout, and some new material has been added. It is suitable for use in advanced undergraduate and beginning graduate classes in philosophy, and as an ancillary text for students in computer science and the natural sciences.”

More information at: https://mitpress.mit.edu/books/thinking-things-through-0


“The Soviet agronomist Trofim Lysenko became one of the most notorious figures in twentieth-century science after his genetic theories were discredited decades ago. Yet some scientists, even in the West, now claim that discoveries in the field of epigenetics prove that he was right after all. Seeking to get to the bottom of Lysenko’s rehabilitation in certain Russian scientific circles, Loren Graham reopens the case, granting his theories an impartial hearing to determine whether new developments in molecular biology validate his claims.

In the 1930s Lysenko advanced a “theory of nutrients” to explain plant development, basing his insights on experiments which, he claimed, showed one could manipulate environmental conditions such as temperature to convert a winter wheat variety into a spring variety. He considered the inheritance of acquired characteristics—which he called the “internalization of environmental conditions”—the primary mechanism of heredity. Although his methods were slipshod and his results were never duplicated, his ideas fell on fertile ground during a time of widespread famine in the Soviet Union.

Recently, a hypothesis called epigenetic transgenerational inheritance has suggested that acquired characteristics may indeed occasionally be passed on to offspring. Some biologists dispute the evidence for this hypothesis. Loren Graham examines these arguments, both in Russia and the West, and shows how, in Russia, political currents are particularly significant in affecting the debates.” (From the Publisher)


“This is a new account, of how, in the early 1900s, the French-born surgeon Alexis Carrel (1873–1944) set the groundwork for the later success in human organ transplantation, and gained America's first Nobel Prize in 1912. His other contributions were the first operations on the heart, and the first cell culture methods. He was prominent in military surgery in WW1, and in the 1930s, gained further fame when collaborating with the aviator Charles Lindbergh on an organ perfusion pump.

But controversy followed his every move, including concerns over scientific misconduct, notably his claim to have obtained "immortal" heart cells, now shown to be fraudulent. In 1934, he authored a best-selling book Man, the Unknown based on his strongly-held conservative, spiritual, political and eugenic views, adding a belief in faith healing and parapsychology. He settled in Paris in WW2 under the German occupation, believing that the conditions would allow him to refashion the degenerate Western civilization. His extremist views re-emerged in the 1990s when they proved interesting to right-wing politicians, and in a bizarre twist, jihadist Islamists now laud his criticisms of the West.” (From the Publisher)


“Does the future exist already? What is space? Are time machines physically possible? What is quantum mechanical reality like? Are there many universes? Is there a ‘true’ geometry of the universe? Why does there appear to be an arrow of time? Do humans play a special role in the world?

In this unique introductory book, Dean Rickles guides the reader through these and other core questions that keep philosophers of physics up at night. He discusses the three pillars of modern physics (quantum mechanics, statistical mechanics, and the theories of relativity), in addition to more cutting-edge themes such as econophysics, quantum gravity, quantum computers, and gauge theories. The book’s approach is based on the idea that philosophy of physics is a kind of ‘interpretation game’ in which we try to map physical theories onto our world. But the rules of this game often lead to a multiplicity of possible victors: rarely do we encounter a simple answer. The Philosophy of Physics offers a highly accessible introduction to the latest developments in this exciting field. Written in a lively style, with many visual examples, it will appeal to beginner-level students in both physics and philosophy.” (From the Publisher)


Biological races do not exist—and never have. This view is shared by all scientists who study variation in human populations. Yet racial prejudice and intolerance based on the myth of race remain deeply ingrained in Western society. In his powerful examination of a persistent, false, and poisonous idea, Robert Sussman explores how race emerged as a social construct from early biblical justifications to the pseudoscientific studies of today.

The Myth of Race traces the origins of modern racist ideology to the Spanish Inquisition, revealing how sixteenth-century theories of racial degeneration became a crucial justification for Western imperialism and slavery. In the nineteenth century, these theories fused with
Darwinism to produce the highly influential and pernicious eugenics movement. Believing that traits from cranial shape to raw intelligence were immutable, eugenicists developed hierarchies that classified certain races, especially fair-skinned “Aryans,” as superior to others. These ideologues proposed programs of intelligence testing, selective breeding, and human sterilization—policies that fed straight into Nazi genocide. Sussman examines how opponents of eugenics, guided by the German-American anthropologist Franz Boas’s new, scientifically supported concept of culture, exposed fallacies in racist thinking.

Although eugenics is now widely discredited, some groups and individuals today claim a new scientific basis for old racist assumptions. Pondering the continuing influence of racist research and thought, despite all evidence to the contrary, Sussman explains why—when it comes to race—too many people still mistake bigotry for science. (From the Publisher)

Details at: http://www.yorku.ca/cshps1/meeting.html
May 2-31, 2016, Annual Meeting of the Canadian Society for History and Philosophy of Mathematics (CSHPM), Calgary, Canada
Details at: http://www.cshpm.org/meeting/
June 16-18, 2016, Ernst Mach Centenary Conference, University of Vienna, Austria.
Details at: http://sshap.org/2015/08/13/cfp-ernst-mach-centenary-conference-2016/
June 17-19, 2016, 6th Conference of the Society for the Philosophy of Science in Practice (SPSP), Glassboro, NJ, USA.
June 20-24, 2016, 12th International Conference of the Learning Sciences, Nanyang Technological University, Singapore
Details at: https://www.isls.org/icsl2016/theme.html
June 22-25, 2016, Eighth Joint Meeting of the BSHS, CSHP, and HSS, Edmonton, Alberta, Canada.
Details at: www.uab.ca/3societies
June 22-15, 2016, History of Philosophy of Science (HOPOS) annual conference, University of Minneapolis, USA.
Details at: http://hopos2016.umn.edu/
June 22-26, 2016, Annual Meeting of the Society for the History of Technology (SHOT), Singapore
Details at: http://www.historyoftechnology.org/call_for_papers/index.html
July 3-5, 2016, Sixth Integrated History and Philosophy of Science conference (&HPS6)
Details at: https://philosophyofscienencenetwork.wordpress.com/hps6/
July 8-9, 2016, ‘Representations of Nature(s), Humans and God(s) in Literature’, International Commission on Science and Literature DHST/IUHPST Hermoupolis, Syros Island, Greece.
Details from: George Vlahakis gvlahakis@yahoo.com
July 13-15, 2016, Science in Public 2016, University of Kent, Canterbury, UK
July 16-18, 2016, 18th UK-European Foundations of Physics Conference
Details at: http://www.lse.ac.uk/philosophy/blog/2015/10/01/foundations-2016/
July 18-22, 2016, History and Pedagogy of Mathematics, Montpellier, France
Details at: http://hpm2016.sciencesconf.org/resource/page/id/2
Details at: http://www.icohtec.org/annual-meeting-2016-cfp.html
August 10-13, 2016, Annual Meeting of the Cognitive Science Society, Philadelphia, MA, USA
Details at: http://cognitivesciencesociety.org/conferece2016/index.html
August 22-25, 2016, 1st European IHPST Regional Conference, Flensburg, Germany
Details at: http://ihpst.net/content.aspx?page_id=22&club_id=360747&module_id=189361
Details at: http://ease2016tokyo.jp/
September 5-7, 2016, European Physical Society, 2nd International Conference on the History of Physics, Pöllau Castle, Pöllau, Austria.
Abstract submission deadline: 28 April 2016
Details at: www.historyofphysics.org
September 16-17, 2016, Mathematical Biography: A MacTutor Celebration, St Andrews University, Scotland
Details at: http://www.mcs.st-and.ac.uk/mathbiog/

September 22-24, 2016, The 7th International Conference of the European Society for the History of Science (ESHS), Prague
Details at: http://www.7eshs2016.cz

October 26-28, 2016, Conference on science and democracy, Pisa, Italy
Details at: http://iasc.me/2016-conference/

November 5, 2016, Leibniz: Legacy and Impact, Manchester Metropolitan University, UK
Abstract deadline: February 28.

November 14-15: Symposium: The Dilemmas of Upright Scientists, Israel, Tel-Aviv University
Inquiries to: Yuliana Litov, ylitov@tauex.tau.ac.il

December, 15-18, 2016, 3rd Asian IHPST Regional Conference, Pusan National University, South Korea.
Inquiries to: Hwe-Ae Seo, haseo@pusan.ac.kr

January 5-8, 2017, 131th Annual Meeting of the American Historical Association, Denver, Colorado, USA.
Details at: http://historians.org/annual-meeting/future-meetings

February 16-20, 2017, AAAS Annual Meeting, Boston, USA
Details at: https://aaas.confex.com/aaas/2017/cfp.cgi

July 4-7, 2017, 14th IHPST International Biennial Conference, Ankara, Turkey.
Conference Chairs Mehmet Fatih Taşar [mftasar@gazi.edu.tr] & Gultekin Cakmakci [cakmakci@hacettepe.edu.tr]
Details at: http://ihpst.net/

Details at: http://www.ishpssb.org/announcements/148-ishpssb-2017-meeting

Details at: http://www.ichst2017.sbhc.org.br/site/capa

# Assistance Required

In one form or another, this monthly HPS&ST newsletter/note has been produced and distributed for the past 25+ years. Since its original printed, folded and posted beginnings, it has served as a vehicle for keeping the wide and ever-growing international community of HPS scholars who have education interests and the equally wide community of science educators who have HPS interests in contact with each other and with research and activities in the HPS&ST field.

Since 1987 its editor has been Michael Matthews, School of Education, UNSW (m.matthews@unsw.edu.au). Over the years there have been sterling assistant editors. For the past year Paulo Mauricio from Lisbon, Portugal (https://sites.google.com/site/pauloeigenvalue/home) has been giving invaluable assistance in gathering material for the newsletter. Another assistant would be most useful in enhancing the content and reach of the newsletter/note. Having net access to journal holdings is important, as is some ability to make contact with the multitude of international and national
HPS associations and Science Education associations with interests in the field. Anyone interested in giving such assistance can make direct contact with the editor.