
HPS&ST
NEWSLETTER

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SEPTEMBER 2022

The HPS&ST NEWSLETTER is emailed monthly to about 10,000 individuals who directly or indirectly have an interest in the contribution of history and philosophy of science to theoretical, curricular and pedagogical issues in science teaching, and/or interests in the promotion of innovative, engaging and effective teaching of the history and philosophy of science. The NEWSLETTER is sent on to different international and national HPS lists and international and national science teaching lists. In print or electronic form, it has been published for 40+ years.

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

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

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

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Newton's World: An Interactive Map

James Poskett, University of Warwick, has created and made freely available:

Newton's World: An Interactive Map

This is very much a teaching resource, not a scholarly edition.
Each location / person appears only once, even though Newton often refers to them in multiple places in the *Principia*.
Additional interpretation has not been included—the idea is students reflect on the meaning and significance of the connections, and do their own research.

All the data can be downloaded freely and reused here.

More the motivation for, and teaching context of the map, can be read here. Additions corrections, or suggestions, are appreciated.

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Bulletin for the History of Chemistry, Open Access Centenary Issue

The Division of the History of Chemistry of the American Chemical Society (HIST) is 100 years old in 2022. HIST is the home within ACS for chemists interested in the history of their discipline. Among its activities is publication of a peer-reviewed journal in history of chemistry, the *Bulletin for the History of Chemistry*.

In this anniversary year, we have prepared an extra issue of the *Bulletin* (2022, vol.47, no.1), available electronically to anyone (open access).

Prominent chemists and historians of chemistry were invited to contribute essays on the theme "Novel Insights in the History of Chemistry: Looking Back Yet Mostly Looking Forward." We invite readers to peruse this commemorative issue online at http://acshist.scs.illinois.edu/bulletin_open_access/bull22-vol47-1.php

In addition, 30 years of open-access issues of the Bulletin, which are free to all after a three-year window of access exclusively by HIST members and subscribers, can be found at http://acshist.scs.illinois.edu/bulletin_open_access/bull-index.php

More information about HIST is available at http://acshist.scs.illinois.edu/index.php

Royal Society Early Career Research Award

The award consists of a cash prize of £500 and publication in the journal, a runner-up prize of £250 and three honourable mentions will each receive £100. The previously unpublished essay of up to 12,000 words should be based on original research and it may relate to any aspect of the history of science, technology and medicine in any period.

Deadline for submission of an essay is 28th February 2023

Details are here: https://royalsocietypublishing.org/rsnr/essay-award

There is also a video about the prize here: https://www.youtube.com/watch?v=iCwSu9DzCXk

Professor Anna Marie Roos FLS FSA
Professor of the History of Science and Medicine University of Lincoln notes@royalsociety.org

History, Philosophy and Biology

Teaching Laboratory, University of Bahia

The History, Philosophy and Biology Teaching Lab (LEFHBio), associated with the Institute of Biology/ Federal University of Bahia and the National Institute of Science and Technology in Interdisciplinary and Transdisciplinary Studies in Ecology and Evolution (INCT IN-TREE), Brazil, will continue its seminar cycle on September 13th 2022 with the talk by Dr. Antoine Dussault (Collège Lionel-Groulx, Centre Interuniversitaire de recherche sur la science et la technology/CIRST and Centre de recherche en éthique/CRÉ, Canadá) addressing the following topic: "On the possibility of generalized selected effects ecological functions".
Remote event, Zoom **HERE**

Previous events of the Seminar Cycle of the Teaching, Philosophy and History of Biology Laboratory (LEFHBio) are available in the LEFHBio channel on You Tube:

Kostas Kampourakis, Students' "teleological misconceptions" in evolution education: why the underlying design stance, not teleology per se, is the problem: **HERE**

Adela Molina, Matriz compreensiva da educação científica com uma abordagem intercultural: **HERE** and **HERE**

Maël Montévil, How should we think scientifically about biological objects? **HERE**

Celso Sánchez, A pesquisa em educação ambiental e a perspectiva comunitarista na pesquisa em educação: **HERE**

Luiza Machado e Ahypunã Gwa Tawato, Povo Maraguá: Vida e Luta **HERE**

China, Science Curriculum Standards for Compulsory Education (2022)

In April 2022, the Ministry of Education of the People's Republic of China issued *Compulsory Education Curriculum Plan (2022 Edition)* and 16 curriculum standards for compulsory education in various learning areas, which will be implemented nationwide starting from the fall semester of 2022.

In order that, there is vertical connection between science curriculum in primary school and science curriculum in physics, chemistry, biology and other field in junior high school. The new standards provide a vertical connection and horizontal coordination between the elementary science curriculum and the junior high school curriculum in the areas of physics, chemistry, and biology.

The new curriculum proposes four discipline core competencies of science: 'scientific concepts inquiry and practice' 'attitude and responsibility' and 'scientific thinking'. The content of the curriculum set 13 discipline core ideas, through learning these core concepts, students will understand the cross-disciplinary concepts of substance and energy, structure and function, systems and models, and stability and change.

History and Philosophy of Science (HPS) is built into the new curriculum standard. It emphasizes the understanding of the nature of science and '*the relationship between science, technology, society, and the environment*' in the 'curriculum objectives'. The 'curriculum content' involves a large number of history of science and technology topics, human environmental responsibility, and other subjects.

History of science, Philosophy of science and Sociology of science integrated into the science curriculum will enable students to better understand the nature of science and to implement the development of core competencies.

Click here for curriculum document (choose English).

Science & Education Journal, New Metrics

Clarivate published journal citation reports for 2021 on June 28th, 2022. According to the reports, the impact factor of *Science & Education* journal has increased to **2.921** (2021) up from 2.114 (2020) and 1.262 (2019). The 5 Year impact factor has also increased from **2.786** (2021) up from 2.232 (2020) and 1.426 (2019). A key change for the journal is that it has jumped a quartile to (Q2) in Social Sciences Citation Index for the first time in its history in the Education & Educational Research category. The journal is now ranks 92/267 in Q2 and 65.73 JIF Percentile (2021) up from 152/265 Q3 and 42.83 JIF Percentile (2020).

The journal has maintained its top quartile (Q1) presence and moved up the list in History and Philosophy of Science category, ranking 4/62 Q1 and 94.35 JIF Percentile (2021) up from 7/63 Q1 and 89.68 JIF Percentile (2020). The metrics indicate an upward trajectory for the impact of the journal.

HPS&ST in Latin America

• IHPST-LA 2023

The 2023 IHPST meeting for Latin America will be held in Porto Alegre – Brazil. The candidature was approved by the IHPST council, and the meeting was announced in the last IHPST Conference in Calgary.

The IHPST-LA will gather researchers from all Latin America to discuss HPS&ST and its contemporary challenges. Following the recent discussions in the field, the conference theme will be "HPS&ST in times of science denial". The meeting is being planned by researchers from different countries in Latin America, aiming to provide a plural and collective event. Soon, we will share information about dates, proposal submissions, and deadlines.

Organizing Committee

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- *Echoes of Scientific Thought in Society - The late 19th century - early 20th century "race science" in Argentina and Brazil "*. This online meeting will bring together several scholars to discuss how the racial thought leads to impact in social constructs as diverse as education, literature and others, in Brazil and Argentina. It will also host paper presentation sessions (graduate students are especially encouraged to engage). Sept. 19-23, 2022. Information may be accessed here.

Do you have any contributions about HPS&ST in Latin America? If you have any information about events, publications, research groups, books about HPS&ST in Latin American and want to submit a brief note to be published in the HPS&ST NEWSLETTER, please contact

first Nathan Lima here or secondly Michael Matthews here.

Opinion Page: Systemic Cognition and Education

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Ibrahim A. Halloun is Professor of Physics and Education at Lebanese University. In addition to physics and education, his research interests include history and philosophy of science, and cognitive sciences and neuroscience. Throughout his career, he has contributed to curriculum reform in many countries. Through classroom-based research, he has developed, among others, Modeling Theory in science education that evolved into Systemic Cognition and Education (SCE), a generic pedagogical framework for student and teacher education.

Since the beginning of civilizations there has been a concern to systematize our quest for meaningful knowledge. And to provide for its sustainability in memory, as well as its documentation and exchange with others in readily accessible forms and its deployment in efficient and creative ways. Thus the invention of image drawing and carving on stone, hieroglyphs, and then alphabets,

This systematization became crucial with the emergence of formal education, at first for ancient philosophers and astronomers to form disciples who could sustain and carry forward their vision of the world, and for craftsmen and other professionals to form apprentices who could make their crafts, trades, and services thrive in society. It became most crucial when enlightened rulers and decision makers wanted formal education to become an institutionalized, widespread endeavour to transfer knowledge accrued throughout generations to youngsters at large so that they may take advantage of it for their own welfare and the welfare of their communities and humankind.

Human knowledge about the physical world, including humankind and all organisms we are part of, and products, processes, and services we have invented, and about the abstract realm of our own imagination, like in the case of music and mathematics, have so much proliferated and diversified in constituents, structural modes, and procedural modalities, and continue to do so at a fast and unprecedented pace that no individual or community can keep up with. Systematization of learning how to learn in general, and of learning about professional knowledge in any community of practice, academia included, becomes then far more crucial than ever before in formal and informal education. Systemism is a worldview and a mindset that can serve us best in this respect in cognition and various aspects of formal education.

Systemism

With a systemic worldview, we conceive everything within us and around us as consisting of interacting physical or conceptual systems or parts of systems (or of subsystems). Simply put, a system is an ordered unit or totality consisting of interconnected and interdependent physical or conceptual entities that come together or that are brought together in order to serve specific purposes under specific conditions. With a systemic mindset, we learn about, interact with, and modify both the physical world and the abstract realm through appropriate conceptual systems that we construct to represent and investigate patterns of interest

in either world or realm, and/or to make changes in these patterns or bring about new patterns altogether.

Systemism is of great value to both experts working in a given discipline and students learning about that discipline. Looking at any discipline in any field with systemic conceptual lenses (e.g., the disciplines of physics and biology in the field of natural sciences, algebra and geometry in mathematics, music and painting in arts, philosophy and literature in humanities) brings for experts and students alike coherence and consistency to content and procedural knowledge in that discipline, and efficiently systematizes knowledge construction and deployment. More importantly, systemism efficiently systematizes disciplinary convergence, i.e., bringing and connecting together different disciplines in the same and different fields in order to tackle issues that neither discipline helps tackling well enough independently of other disciplines.

Such convergence is behind major inventions and disciplinary advances we have witnessed in the last few decades, and it is, and will continue to be, at the very foundations of most new careers and all other developments affecting our lives that have emerged and that will keep emerging in the 21st century. These developments have necessitated major paradigmatic changes in numerous professions, changes that have been quite revolutionary in some instances like in the case of digital technology.

Meanwhile, paradigms that go back to the nineteenth century, and that the developments in question have turned obsolete in many respects, continue to prevail in all aspects of formal education at all educational levels, and in many parts of the world, from pedagogy and curricula to structure and governance of educational institutions and of entire educational systems. Alternative paradigms of systemic nature help education resonate well with both human cognition and the changing realities of the century in the workplace and elsewhere in daily life.

Each community of practice (CoP) or professional community is characterized by a particular paradigm that governs how the community goes about developing its content and procedural knowledge and deploying it in tackling issues of concern to that community. In academia, a CoP is usually concerned with one distinctive discipline, and disciplines in the same field may share one or more common paradigms. For example, in natural sciences, two paradigms prevail across the board, the so-called classical and modern paradigms that are adapted in specific respects to the particular needs of every discipline. Those paradigms are systemic par excellence, though implicitly for most scientists, because science is primarily concerned with the description, explanation, and extrapolation of patterns in the structure and behaviour of physical systems.

Formal Education

The prime function of formal education is about helping students develop appropriate profiles for self-fulfilment, success in life, and significant contributions to the welfare of others and the ecosystem. That mission is best fulfilled when students are empowered with systemic profiles. At the core of a systemic profile are habits of looking at the world and dealing with it with systemic worldview and mindset. These habits evolve from gradual development of systemic competencies needed to tackle certain tasks that may fall within the scope of a particular discipline or that cut across different disciplines. A systemic competency consists of an appropriate mix of conceptions (concepts and relations among concepts), reasoning skills, sensorimotor skills, and axio-affective controls (in particular, a good value system and constructive attitudes and dispositions) that are necessary to successfully achieve similar tasks with a systemic mindset.

Systemic profiles are further distinguished by particular traits that turn them into what we call 4P profiles. A person with a systemic 4P profile is characterized with a *p*rogressive mind that seeks to develop and constantly enhance *p*roductive habits for systematizing and optimizing the person quest for, and deployment of, *p*rofound knowledge that concentrates on substantial and generic conceptions and processes in any domain, all with a commitment to *p*rincipled conduct in all aspects of life.

Learning involves cognition, and is most meaningful and productive when experiential, i.e., when it takes place through transaction with real world situations and other people, teacher and peers included. Cognition is about memory development that takes place to adapt to new demands through conscious and unconscious mind and brain processes induced or not by external signals detected by our senses. Cognitive outcomes affect how we think, perceive people and things, feel, and act in the future, and thus determine the course and outcomes of prospective learning experiences. Memory development begins with encoding new knowledge in working and short-term memory, and then follows with gradual reinforcement of the new knowledge for integration with existing memory patterns and consolidation or permanent sustainability in long-term memory.

Newly encoded memory is consolidated only after successive retrieval for rehearsal in a variety of situations that continuously impose new but reasonable cognitive demands and that engage a mix of brain regions of distinct function regarding knowledge construction and deployment. All memory processes from encoding to consolidation are modulated by particular brain regions concerned with attention, motivation, emotions, and other metacognitive factors that control how learning proceeds and determine the quality of outcomes it brings about.

Pedagogy

Pedagogy is about systematizing how students learn and about optimizing learning conditions and outcomes. Pedagogy is most effective when systemic, i.e., when it conforms to human cognition and when it helps students develop systemic 4P profiles in systemic learning ecologies. In the first respect, systemic pedagogy helps students explicitly learn how to learn through conscious and systematic encoding, deployment (retrieval and rehearsal in novel contexts), and consolidation of generic content and procedural knowledge. Special attention is then given to systemic knowledge organization and pattern-focused systemic processes for knowledge construction and deployment.

In the second respect, systemic pedagogy engages students individually and collectively in experiential, hands-on, minds-on, learning activities pertaining to real life situations and carried out insightfully in structured but flexible learning cycles with proper teacher mediation. Insightful experiential learning involves continuous evaluation and regulation of student knowledge throughout every learning exercise, and particularly through assessment that is not an end by itself but means for a worthy end: meaningful learning of course materials and development of systemic 4P profiles for success, even excellence in life.

The latter end is the ultimate goal of systemic education that transcends traditional education in practically every respect from curriculum design and implementation to governance of educational institutions and entire educational systems. In systemic formal education, teachers teach not to the test and not to inform students about specific disciplinary knowledge as passed along from one generation to another in traditional textbooks. Curricula are designed and implemented instead under systemic pedagogical frameworks in ways to meet the changing realities of the 21st century.

Any discipline is organized in any curriculum, at any level, around a limited set of powerful conceptual systems and systemic processes that meet students' cognitive potentials at a given age. These conceptual systems preserve and reveal, to the extent that is possible, the paradigmatic rigour of the discipline. As such, systemic curricula allow systematization of learning in the context of individual disciplines and across different disciplines to the extent of realizing what we call differential convergence education. This involves bringing together knowledge from different disciplines, while preserving the integrity and sovereignty of each discipline, in order to tackle real life issues.

Any other form of education that meets the realities of the century require across the board transcendence of traditional education, including the way educational

institutions and entire educational systems are structured and operated. In particular, rigid top-down authoritative governance should be given away in favour of truly systemic governance that allows all organisms and stakeholders in an educational system to readily and autonomously adapt to any change within and outside the system and constantly operate with a hive-mind spirit and shared responsibility. Systemic governance should also provide for educational institutions and all other organisms in the system to work in close partnership with each other and with all sectors of society.

Conclusion

Systemic Cognition and Education (SCE) is about what it takes for education to resonate well with the way the world within us and around us is and works in order to foster graduates who are empowered for excellence in life and are not merely conditioned to pass high-stakes exams. We belong to a world that can be systematically and efficiently conceived and dealt with when we look at ourselves as biological and cognitive systems that constantly affect and are affected by local and global environments made of different sorts of systems. SCE thus calls for transcendence of all traditional paradigms and settings, and for excellence-seeking systemism to prevail throughout educational systems, from pedagogy to governance, and from curricula to organization in partnership with various sectors of society. And, ultimately, in the direction of systemic, praxis-immersive, convergence education (SPICE).

Readings

Bunge, M. (1979). 'A systems concept of society: beyond individualism and holism', *Theory and Decision* 10: 13-30.

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Knox, R. (2016). Mind, brain, and education: A transdisciplinary field. *Mind, Brain, and Education*, 10(1), 4–9.

Pickering, S. (Eds.). (2006). *Working Memory and Education*, Elsevier.

Schwartz, M. (2015). Mind, Brain and Education: A Decade of Evolution. *Mind, Brain, and Education*, 9(2), 64–71.

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, and downloadable, in the OPINION folder at the HPS&ST web site HERE.

Varia

- Larry Laudan (1941-2022) a celebrated US philosopher of science died 23 August 2022. An obituary can be read HERE.
- Thomas Kuhn Lowell Lectures (1951), *The Quest*

for Physical Theory (George Reisch, ed.). These hitherto unpublished eight lectures (170 pp) were the foundation for Kuhn's *Structure of Scientific Revolution* (1962). Reisch has provided an informed 25 pp introduction to the Lectures and more generally to Kuhn's work.

Available gratis HERE

- Michela Massimi, *Perspectival Realism*, Oxford University Press, 2022, 416pp, Open Access

The book offers a realist view that takes the multicultural nature of science seriously and couples it with cosmopolitan duties about how one ought to think about scientific knowledge and the distribution of benefits gained from scientific advancements. Book details and more information HERE

- The New Books Network has a two-part podcast with University of Toronto historian of science Mark Solovey about his recent book *Social Science for What?* Available open access on the publisher's website.

The podcast examines how the NSF became an important yet controversial patron for the social sciences in the U.S., influencing debates over their scientific status and social relevance from the mid-20th century to the present day:

- ***European Journal for Philosophy of Science*** Open Access Articles (139) HERE

- ***Science & Education*** Open Access Articles (96) HERE.

PhD Award in HPS&ST

We welcome publishing details of all PhDs awarded in the field of HPS&ST. Send details (name, title, abstract, supervisor) to editor: m.matthews@unsw.edu.au

Recent HPS&ST Research Articles

Adúriz-Bravo, A., Sans Pinillos, A. (2022). Abduction as a Mode of Inference in Science Education. *Sci & Educ*, 1-28. https://doi.org/10.1007/s11191-022-00366-8 online first

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Yalçınkaya, M. (2022). Globalizing 'science and religion': Examples from the late Ottoman Empire. *The British Journal for the History of Science*, 1-14. https://doi.org/10.1017/S0007087422000292 online first

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Whitaker, E.D., Baccolini, R. Heroes and Helpmeets: Visions of Gender in Italian Instructional Resources on Gametes, Reproductive Systems, and Human Evolution. *Sci & Educ*, 1-26. https://doi.org/10.1007/s11191-022-00378-4

Recent HPS&ST Related Books

Abbate, Janet & Dick, Stephanie (Eds.) (2022). *Abstractions and Embodiments New Histories of Computing and Society*. Baltimore, MD: Johns Hopkins University Press. ISBN: 978-1-421-44437-6

> "Computers have been framed both as a mirror for the human mind and as an irreducible other that humanness is defined against, depending on different historical definitions of "humanness." They can serve both liberation

and control because some people's freedom has historically been predicated on controlling others. Historians of computing return again and again to these contradictions, as they often reveal deeper structures.

"Using twin frameworks of abstraction and embodiment, a reformulation of the old mind-body dichotomy, this anthology examines how social relations are enacted in and through computing. The authors examining "Abstraction" revisit central concepts in computing, including "algorithm," "program," "clone," and "risk." In doing so, they demonstrate how the meanings of these terms reflect power relations and social identities. The section on "Embodiments" focuses on sensory aspects of using computers as well as the ways in which gender, race, and other identities have shaped the opportunities and embodied experiences of computer workers and users. Offering a rich and diverse set of studies in new areas, the book explores such disparate themes as disability, the influence of the punk movement, working mothers as technical innovators, and gaming behind the Iron Curtain.

"*Abstractions and Embodiments* re-imagines computing history by questioning canonical interpretations, foregrounding new actors and contexts, and highlighting neglected aspects of computing as an embodied experience. It makes the profound case that both technology and the body are culturally shaped and that there can be no clear distinction between social, intellectual, and technical aspects of computing." (From the Publisher)

More information at: https://www.press.jhu.edu/books/title/12637/abstractions-and-embodiments

Adriaens, Pieter R., & De Block, Andreas (2022). *Of Maybugs and Men: A History and Philosophy of the Sciences of Homosexuality*. Chicago IL: The University of Chicago Press. ISBN: 978-0-226-82244-0

"Questions about the naturalness or unnaturalness of homosexuality are as old as the hills, and the answers have often been used to condemn homosexuals, their behaviours, and their relationships. In the past two centuries, a number of sciences have involved themselves in this debate, introducing new vocabularies, theories, arguments, and data, many of which have gradually helped tip the balance toward tolerance and even acceptance. In this book, philosophers Pieter R. Adriaens and Andreas De Block explore the history and philosophy of the gay sciences, revealing how individual and societal values have coloured how we think about homosexuality.

"The authors unpack the entanglement of facts and values in studies of male homosexuality across the natural and human sciences and consider the extent to which science has mitigated or reinforced homonegative mores. The focus of the book is on homosexuality's assumed naturalness. Geneticists rephrased naturalness as innateness, claiming that homosexuality is innate—colloquially, that homosexuals are born gay. Zoologists thought it a natural affair, documenting its existence in myriad animal species, from maybugs to men. Evolutionists presented homosexuality as the product of natural selection and speculated about its adaptive value. Finally, psychiatrists, who initially pathologised homosexuality, eventually appealed to its naturalness or innateness to normalize it.

"Discussing findings from an array of sciences—comparative zoology, psychiatry, anthropology, evolutionary biology, social psychology, developmental biology, and machine learning—this book is essential reading for anyone interested in what science has to say about homosexuality." (From the Publisher)

More information at: https://press.uchicago.edu/ucp/books/book/chicago/O/bo181533280.html

Alberti, Samuel J. M. M. (2022). *Curious Devices and Mighty Machines: Exploring Science Museums*. Chicago, IL: The University of Chicago Press.
ISBN: 978-1-789-14640-0

"Science museums have paradoxes at their core. They must be accessible and fun while representing increasingly complex science. They must be both historic and contemporary. Their exhibits attract millions, but most of their objects remain in deep storage, seldom seen. This book delves into these conflicts, revealing the secret lives of science curators; where science objects come from and who uses them; and, ultimately, what science museums are for. With an insider's eye, Samuel J.M.M. Alberti exposes the idiosyncratic past and intriguing current practices of these institutions—and sets out a map for their future." (From the Publisher)

More information at: https://press.uchicago.edu/ucp/books/book/distributed/C/bo184798269.html

Baghramian, Maria, & Martini, Carlo (Eds.) (2022). *Questioning Experts and Expertise.* Abingdon: Routledge. ISBN: 978-0-367-75285-9

> "The role of experts and their expertise, in our personal and social lives, has taken centre stage in the debates about our post-COVID-19 world. Scientific disinformation is rife, and expertise is badly needed to tackle highly complex social problems.
>
> "This book brings together philosophers, sociologists and policy experts to discuss the nature, scope and limitations of expert advice in policy decisions. The chapters collected here address some of the most fundamental questions in the debate on the role of experts. They explore, among others, the definitions of expertise, the role of experts in modern democracies, the dilemma of choosing between equally competent and qualified experts who cannot agree, the objectivity of expert judgements, the relationship between experts and novices in polarised social settings and the conditions on the trustworthiness of experts. These explorations, by some of the best- known academics working in the field, highlight the complexities of the questions they address but also lay down a road map for addressing them.
>
> "The chapters in this book were originally published in *Social Epistemology: A Journal of Knowledge, Culture and Policy*." (From the Publisher)

More information at: https://tinyurl.com/5h6uxecv

Baraghith, Karim (2022). *From Games to Graphs: Synthesizing Generalized Evolution Theory*. Leiden: Brill. ISBN: 978-3-957-43273-5

> "Do social systems evolve similarly to biological ones and societies similarly to organisms? For some time now, an interdisciplinary paradigm has been developing in this regard: the Generalized Evolution Theory. After pointing out differences between biological and cultural evolution, as well as different inheritance strategies, the book proposes a philosophy of science classification of the different approaches in this vast and ever-growing field of research. It leads from generalized microevolution to generalized macroevolution and to their synthesis. As evolution favours groups with high internal cohesion, it will also favour strategies and reward agents responsible for this cohesion. In the long run, generalized evolution selects those populations that exhibit a higher density of interaction." (From the Publisher)

More information at: https://brill.com/view/title/63052?rskey=fEc8W0&result=5

Bod, Rens (2022). *World of Patterns: A Global History of Knowledge (*L. Buell, Trans.). Baltimore, MD: Johns Hopkins University Press. ISBN: 978-1-421-44344-7

> "The idea that the world can be understood through patterns and the principles that govern them is one of the most important human insights—it may also be our greatest survival strategy. Our search for patterns and principles began 40,000 years ago, when striped patterns were engraved on mammoths' bones to keep track of the moon's phases. What routes did human knowledge take to grow from these humble beginnings through many detours and dead ends into modern understandings of nature and culture? In this work of unprecedented scope, Rens Bod removes the Western natural sciences from their often-central role to bring us the first global history of human knowledge.
>
> "Having sketched the history of the humanities in his ground-breaking *A New History of the Humanities*, Bod now adopts a broader perspective, stepping beyond classical antiquity back to the Stone Age to answer the question: Where did our knowledge of the world today begin and how did it develop? Drawing on developments from all five continents of the inhabited world, *World of Patterns* offers startling connections. Focusing on a dozen fields—ranging from astronomy, philology, medicine, law, and mathematics to history, botany, and musicology—Bod examines to what degree their progressions can be considered interwoven and to what degree we can speak of global trends.
>
> "In this pioneering work, Bod aims to fulfil what he sees as the historian's responsibility: to grant access to history's goldmine of ideas. Bod discusses how inoculation was invented in China rather than Europe; how many of the fundamental aspects of modern mathematics and astronomy were first discovered by the Indian Kerala school; and how the study of law provided fundamen-

tal models for astronomy and linguistics from Roman to Ottoman times. The book flies across continents and eras. The result is an enlightening symphony, a stirring chorus of human inquisitiveness extending through the ages." (From the Publisher)

More information at: https://www.press.jhu.edu/books/title/12442/world-patterns

Boeck, Gisela, & Rocke, Alan J. (2022). *Lothar Meyer: Modern Theories and Pathways to Periodicity*. Cham: Birkhäuser Cham. ISBN: 978-3-030-78341-9

"This book provides an English translation of the early fundamental contributions of Lothar Meyer (1830-1895) regarding his independent discovery, coincident with that of Dmitrii Mendeleev, of the periodic system of the elements. Although an English translation of the 5th edition of Meyer´s book *Modern Theories of Chemistry and their Significance for Chemical Statics* was published in 1888, this will be the first time that these crucial early texts will be available in English. These writings reveal details regarding Meyer´s research pathway to the idea of periodicity and to an arrangement of the chemical elements in tables and graphs.

An introductory commentary and interpolated editorial footnotes to the texts clarify the (physico)-chemical background regarding the various shifts in thought during the crucial period from 1860 to the early 1870s. A short biography of Lothar Meyer completes the book.

"The volume includes a complete translation of the first edition of *Modern Theories of Chemistry and their Significance for Chemical Statics* (1864), the ground-breaking paper "The Nature of the Chemical Elements as a Function of their Atomic Weights" in *Annalen der Chemie und Pharmacie*, suppl. vol. 7 (1870), 354-64, and portions of the revised second edition of *Modern Theories of Chemistry and their Significance for Chemical Statics* (1872). (From the Publisher)

More information at: https://link.springer.com/book/10.1007/978-3-030-78342-6#about-this-book

Canales, Jimena (2022). *Bedeviled: A Shadow History of Demons in Science*. Princeton, NJ: Princeton University Press. ISBN: 978-0-691-24168-5

"Science may be known for banishing the demons of superstition from the modern world. Yet just as the demon-haunted world was being exorcized by the enlightening power of reason, a new kind of demon mischievously materialized in the scientific imagination itself. Scientists began to employ hypothetical beings to perform certain roles in thought experiments—experiments that can only be done in the imagination—and these impish assistants helped scientists achieve major breakthroughs that pushed forward the frontiers of science and technology.

"Spanning four centuries of discovery—from René Descartes, whose demon could hijack sensorial reality, to James Clerk Maxwell, whose molecular-sized demon deftly broke the second law of thermodynamics, to Darwin, Einstein, Feynman, and beyond—Jimena Canales tells a shadow history of science and the demons that bedevil it. She reveals how the greatest scientific thinkers used demons to explore problems, test the limits of what is possible, and better understand nature. Their imaginary familiars helped unlock the secrets of entropy, heredity, relativity, quantum mechanics, and other scientific wonders—and continue to inspire breakthroughs in the realms of computer science, artificial intelligence, and economics today.

"The world may no longer be haunted as it once was, but the demons of the scientific imagination are alive and well, continuing to play a vital role in scientists' efforts to explore the unknown and make the impossible real." (From the Publisher)

More information at: https://press.princeton.edu/books/paperback/9780691241685/bedeviled

Challoner, Jack (2022). *Seeing Science: The Art of Making the Invisible Visible*. Cambridge, MA: The MIT University Press. ISBN: 978-0-262-54435-1

"We live among patterns of delicate beauty and exquisite chaos that our eyes can't detect; we are surrounded by invisible particles and shifting fields of matter that permeate all of space. Our very cells are intricate molecular machines, and the story of our origins stretches back through an unimaginable amount of time. How can we see the richness of what lies beyond our sensory perception? Scientists have developed visualization tools

that can make the invisible visible. This bountifully illustrated book demonstrates the power of images to represent the unseeable, offering stunning visualizations of science that range from the microscopic to the incredibly vast.

"With more than 200 color images and an engaging text by leading science writer Jack Challoner, *Seeing Science* explains and illustrates the techniques by which scientists create visualizations of their discoveries. We see the first detection of a black hole as represented by an image from an X-ray telescope, get a direct view of DNA through an electron microscope, and much more. Visualizations are also used to make sense of an avalanche of data—concisely presenting information from the 20,000 or so human genes, for example. Scientists represent complex theories in computer models, which take on a curious beauty of their own. And scientists and artists collaborate to create art from science visualizations, with intriguing results." (From the Publisher)

More information at: https://mitpress.mit.edu/9780262544351/seeing-science/

Dal Prete, Ivano (2022). *On the Edge of Eternity: The Antiquity of the Earth in Medieval and Early Modern Europe*. Oxford, UK: OUP.
ISBN: 978-0-190-67889-0

"It is commonly assumed that the creation story of Genesis and its chronology were the only narratives openly available in medieval and early modern Europe and that the discovery of geological time in the eighteenth century came as a momentous breakthrough that shook the faith in the historical accuracy of the Bible. Historians of science, mainstream geologists, and Young Earth creationists alike all share the assumption that the notion of an ancient Earth was highly heterodox in the pre-modern era. The old age of the world is regarded as the offspring of a secularized science.

"In this book, Ivano Dal Prete radically revises the commonplace history of deep time in Western culture. He argues that the chronology of the Bible always coexisted with alternative approaches that placed the origin of the Earth into a far, undetermined (or even eternal) past. From the late Middle Ages, these notions spread freely not only in universities and among the learned, but even in popular works of meteorology, geology, literature, and art that made them easily accessible to a vernacular and scientifically illiterate public. Religious authorities did not regard these notions as particularly problematic, let alone heretical. Neither the authors nor their numerous readers thought that holding such views was incompatible with their Christian faith. While the appeal of theories centred on the biblical Flood and on a young Earth gained popularity over the course of the seventeenth century, their more secular alternatives remained vital and debated. Enlightenment thinkers, however, created a myth of a Christian tradition that uniformly rejected the antiquity of the world, as opposed to a new secular science ready to welcome it. Largely unchallenged for almost three centuries, that account solidified over time into a still dominant truism.

"Based on a wealth of mostly unexplored sources, *On the Edge of Eternity* offers an original and nuanced account of the history of deep time that illuminates the relationship between the history of science and Christianity in the medieval and early modern periods, with lasting implications for Western society." (From the Publisher)

More information at: https://tinyurl.com/2p99fzwn

Gerken, Mikkel (2022). *Scientific Testimony: Its roles in science and society*. Oxford, UK. OUP.
ISBN: 978-0-198-85727-3

"*Scientific Testimony* concerns the roles of scientific testimony in science and society. The book develops a positive alternative to a tradition famously expressed by the slogan of the Royal Society *Nullius in verba* ("Take nobody's word for it"). This book argues that intra-scientific testimony—i.e., testimony between collaborating scientists—is not in conflict with the spirit of science or an add-on to scientific practice. On the contrary, intra-scientific testimony is a vital part of science. This is illustrated by articulating epistemic norms of intra-scientific testimony and arguing that they are vital to scientific methodology on a par with other scientific norms governing scientific observation and data analysis.

"The book also provides an account of public scientific testimony—i.e., scientific testimony to the lay population. This is done by integrating philosophical resources

with empirical research on the science of science communication. For example, various misconceptions about science and folk epistemological biases are diagnosed as factors that contribute to science scepticism. This diagnosis provides the basis for developing novel norms for science communication that are sensitive to the psychological and social obstacles to laypersons' uptake of it. Finally, the volume discusses how public scientific testimony is best embedded in society and argues that it is critical for societies that pursue the ideals of deliberative democracy. Scientific Testimony draws on philosophy of science, social epistemology, and empirical research to provide a wide-ranging account of the roles of scientific testimony within scientific practice and within the wider society." (From the Publisher)

More information at: https://tinyurl.com/5n7e9une

Girten, Kristin M., & Hanlon, Aaron R. (Eds.) (2022). *British Literature and Technology, 1600-1830*. Lewisburg, PA: Bucknell University Press.
ISBN: 978-1-684-48395-2

"Enlightenment-era writers had not yet come to take technology for granted, but nonetheless were—as we are today—both attracted to and repelled by its potential. This volume registers the deep history of such ambivalence, examining technology's influence on Enlightenment British literature, as well as the impact of literature on conceptions of, attitudes toward, and implementations of technology. Offering a counterbalance to the abundance of studies on literature and science in seventeenth- and eighteenth-century Britain, this volume's focus encompasses approaches to literary history that help us understand technologies like the steam engine and the telegraph along with representations of technology in literature such as the "political machine." Contributors ultimately show how literature across genres provided important sites for Enlightenment readers to recognize themselves as "chimeras"—"hybrids of machine and organism"—and to explore the modern self as 'a creature of social reality as well as a creature of fiction.'" (From the Publisher)

More information at: https://www.rutgersuniversity-press.org/bucknell/british-literature-and-technology-1600-1830/9781684483952

Gonzalez, Wenceslao J. (Ed.) (2022). *The Internet and Philosophy of Science*. Abingdon: Routledge.
ISBN: 978-1-032-16457-1

"This book analyses the Internet from the perspective of philosophy of science. Conceived in a broad sense, it includes three major layers: (i) the technological infrastructure, (ii) the Web, and (iii) cloud computing, along with apps and mobile Internet.

"The book focuses on the network of networks from the viewpoint of complexity, both structural and dynamic. In addition to the scientific side, this volume considers the technological facet and the social dimension of the Internet as a novel design. There is a clear contribution of the Internet to science: first, the very development of the network of networks requires the creation of new science; second, the Internet empowers scientific disciplines, such as communication sciences; and third, the Internet has fostered a whole new emergent field of data and information. After the opening chapter, which offers a series of keys to the book, there are nine chapters grouped into four parts: I) Configuration of the Internet and Its Future, II) Structural and Dynamic Complexity in the Design of the Internet, III) Internal and External Contributions of the Internet, and IV) The Internet and the Sciences.

"*The Internet and Philosophy of Science* will be of interest to scholars and advanced students working in philosophy of science, philosophy of technology, and science and technology studies." (From the Publisher)

More information at: https://tinyurl.com/8yfct449

Guerrini, Anita (2022). *Experimenting with Humans and Animals: From Aristotle to CRISPR* (2nd Ed.) Baltimore, MD: Johns Hopkins University Press.
ISBN: 978-1-421-44405-5

"Experimentation on animals—particularly humans—is often assumed to be a uniquely modern phenomenon. But the ideas and attitudes that encourage biological and medical scientists to experiment on living creatures date from the earliest expressions of Western thought. In *Experimenting with Humans and Animals*, Anita Guerrini looks at the history of these practices and examines the philosophical and ethical arguments that justified them.

"Guerrini discusses key historical episodes in the use of living beings in science and medicine, including the discovery of blood circulation, the development of smallpox and polio vaccines, and recent research in genetics, ecology, and animal behaviour. She also explores the rise of the anti-vivisection movement in Victorian England, the modern animal rights movement, and current debates over gene therapy and genetically engineered animals. We learn how perceptions and understandings of human and animal pain have changed; how ideas of class, race, and gender have defined the human research subject; and that the ethical values of science seldom stray far from the society in which scientists live and work.

"Thoroughly rewritten and updated, with new material in every chapter, the book emphasizes a broader understanding of experimentation and adds material on gene therapy, self-experimentation, and prisoners and slaves as experimental subjects. A new chapter brings the story up to the present while reflecting on the current regulatory scene, new developments in science, and emerging genomics. *Experimenting with Humans and Animals* offers readers a context within which to understand more fully the responsibility we all bear for the suffering inflicted on other living beings in the name of scientific knowledge." (From the Publisher)

More information at: https://www.press.jhu.edu/books/title/12681/experimenting-humans-and-animals

Harel, Kay (2022). *Darwin's Love of Life: A Singular Case of Biophilia*. New York, NY: Columbia University Press. ISBN: 978-0-231-20808-6

"Biophilia—the love of life—encompasses the drive to survive, a sense of kinship with all life-forms, and an instinct for beauty. In this unconventional book, Kay Harel uses biophilia as a lens to explore Charles Darwin's life and thought in deeply original ways. In a set of interrelated essays, she considers how the love of life enabled him to see otherwise unseen evolutionary truths.

"Harel traces the influence of biophilia on Darwin's views of dogs, facts, thought, emotion, and beauty, informed by little-known material from his private notebooks. She argues that much of what Darwin described, envisioned, and felt was biophilia in action. Closing the book is a profile of Darwin's marriage to Emma Wedgwood, his first cousin, a woman gifted in music and medicine who shared her husband's love of life.

"Harel's meditative, playful, and lyrical musings draw on the tools of varied disciplines—aesthetics, astronomy, biology, evolutionary theory, history of science, philosophy, psychiatry, and more—while remaining unbounded by any particular one. Taking unexpected paths to recast a figure we thought we knew, this book offers readers a different Darwin: a man full of love, joy, awe, humility, curiosity, and a zest for living." (From the Publisher)

More information at: https://cup.columbia.edu/book/darwins-love-of-life/9780231208086

Misa, Thomas J. (2022). *Leonardo to the Internet: Technology and Culture from the Renaissance to the Present* (3rd Ed.). Baltimore, MD: Johns Hopkins University Press. ISBN: 978-1-421-44310-2

"Historian Thomas J. Misa's sweeping history of the relationship between technology and society over the past 500 years reveals how technological innovations have shaped—and have been shaped by—the cultures in which they arose. Spanning the pre-industrial past, the age of scientific, political, and industrial revolutions, as well as the more recent eras of imperialism, modernism, and global security, this compelling work evaluates what Misa calls "the question of technology."

"In this edition, Misa brings his acclaimed text up to date by drawing on current scholarship while retaining sharply drawn portraits of individual people, artefacts, and systems. Each chapter has been honed to relate to contemporary concerns. Globalization, Misa argues, looks differently considering today's virulent nationalism, cultural chauvinism, and trade wars. A new chapter focuses on the digital age from 1990 to 2016. The book also examines how today's unsustainable energy systems, insecure information networks, and vulnerable global shipping have helped foster geopolitical risks and instability and takes a look at the coronavirus pandemic from the perspective of Wuhan, China's high-tech district.

"A masterful analysis of how technology and culture have influenced each other over five centuries, Leonardo

to the Internet frames a history that illuminates modern-day problems and prospects faced by our technology-dependent world." (From the Publisher)

More information at: https://www.press.jhu.edu/books/title/12658/leonardo-internet

Mizrahi, Moti (Ed.) (2022). *For and Against Scientism: Science, Methodology, and the Future of Philosophy.* Lanham, MD: Rowman & Littlefield.
ISBN: 978-1-538-16333-7

"The term "scientism" is used in several ways. It is used to denote an epistemological thesis according to which science is the source of our knowledge about the world and ourselves. Relatedly, it is used to denote a methodological thesis according to which the methods of science are superior to the methods of non-scientific fields or areas of inquiry. It is also used to put forward a metaphysical thesis that what exists is what science says exists. In recent decades, the term "scientism" has acquired a derogatory meaning when it is used in defence of non-scientific ways of knowing. In particular, some philosophers level the charge of "scientism" against those (mostly scientists) who are dismissive of philosophy. Other philosophers, however, embrace scientism, or some variant thereof, and object to the pejorative use of the term. This book critically examines arguments for and against different varieties of scientism in order to answer the central question: Does scientism pose an existential threat to academic philosophy? Or should philosophy become more scientific?" (From the Publisher)

More information at: https://tinyurl.com/y5ckw5tr

Mody, Cyrus C. M. (2022). *The Squares: US Physical and Engineering Scientists in the Long 1970s.* [Open Access]. Cambridge, MA: The MIT University Press.
ISBN: 978-0-262-54361-3

"In *The Squares*, Cyrus Mody shows how, between the late 1960s and the early 1980s, some scientists and engineers who did not consider themselves activists, New Leftists, or members of the counter-culture accommodated their work to the rapidly changing social and political landscape of the time. These "square scientists," Mody shows, began to do many of the things that the counter-culture urged: turn away from military-industrial funding, become more interdisciplinary, and focus their research on solving problems of civil society. During the period Mody calls "the long 1970s," ungroovy scientists were doing groovy science.

Mody offers a series of case studies of some of these collective efforts by non-activist scientists to use their technical knowledge for the good of society. He considers the region around Santa Barbara and the interplay of public universities, think tanks, established firms, new companies, philanthropies, and social movement organizations. He looks at Stanford University's transition from Cold War science to commercialised technoscience; NASA's search for a post-Apollo mission; the unsuccessful foray into solar energy by Nobel laureate Jack Kilby; the "civilianisation" of the US semiconductor industry; and systems engineer Arthur D. Hall's ill-fated promotion of automated agriculture." (From the Publisher)

More information at: https://mitpress.mit.edu/9780262543613/the-squares/

Pesic, Peter (2022). *Music and the Making of Modern Science.* Cambridge, MA: The MIT University Press.
ISBN: 978-0-262-54390-3

"In the natural science of ancient Greece, music formed the meeting place between numbers and perception; for the next two millennia, Peter Pesic tells us in *Music and the Making of Modern Science*, "liberal education" connected music with arithmetic, geometry, and astronomy within a fourfold study, the quadrivium. Pesic argues provocatively that music has had a formative effect on the development of modern science—that music has been not just a charming accompaniment to thought but a conceptual force in its own right.

"Pesic explores a series of episodes in which music influenced science, moments in which prior developments in music arguably affected subsequent aspects of natural science. He describes encounters between harmony and fifteenth-century cosmological controversies, between musical initiatives and irrational numbers, between vibrating bodies and the emergent electromagnetism. He offers lively accounts of how Newton applied the musical scale to define the colours in the spectrum; how Euler and others applied musical ideas to develop the wave theory of light; and how a harmonium prepared Max

> Planck to find a quantum theory that re-engaged the mathematics of vibration. Taken together, these cases document the peculiar power of music—its autonomous force as a stream of experience, capable of stimulating insights different from those mediated by the verbal and the visual. An innovative e-book edition available for iOS devices will allow sound examples to be played by a touch and shows the score in a moving line." (From the Publisher)

More information at: https://mitpress.mit.edu/9780262543903/music-and-the-making-of-modern-science/

Roehrlich, Elisabeth (2022). *Inspectors for Peace: A History of the International Atomic Energy Agency*. Baltimore, MD: Johns Hopkins University Press. ISBN: 978-1-421-44333-1

> "The International Atomic Energy Agency, which sends inspectors around the world to prevent states from secretly developing nuclear bombs, has one of the most important jobs in international security. At the same time, the IAEA is a global hub for the exchange of nuclear science and technology for peaceful purposes. Yet spreading nuclear materials and know-how around the world bears the unwanted risk of helping what the agency aims to halt: the emergence of new nuclear weapon states. In *Inspectors for Peace*, Elisabeth Roehrlich unravels the IAEA's paradoxical mission of sharing nuclear knowledge and technology while seeking to deter nuclear weapon programs.
>
> "Founded in 1957 in an act of unprecedented cooperation between the Cold War superpowers, the agency developed from a small technical bureaucracy in war-torn Vienna to a key organization in the global nuclear order. Roehrlich argues that the IAEA's dual mandate, though apparently contradictory, was pivotal in ensuring the organization's legitimacy, acceptance, and success. For its first decade of existence, the IAEA was primarily a scientific and technical organization; it was not until the Treaty on the Non-Proliferation of Nuclear Weapons entered into force in 1970 that the agency took on the far-reaching verification and inspection role for which it is now most widely known. While the Fukushima nuclear disaster and the Iran negotiations made the IAEA's name famous, the organization's remarkable history remains strikingly absent from public knowledge.
>
> "Drawing on extensive archival research, including first-hand access to newly opened records at the IAEA Archives in Vienna, *Inspectors for Peace* provides the first comprehensive, empirically grounded, and independent study on the history of the IAEA. Roehrlich also interviewed leading policymakers and officials, including Hans Blix and Nobel Peace laureate Mohamed ElBaradei, the agency's former heads. This book offers insight not only for students, scholars, and policy experts but for anyone interested in the history of the nuclear age, the Cold War, and the role of international organizations in shaping our world." (From the Publisher)

More information at: https://www.press.jhu.edu/books/title/12352/inspectors-peace

Schaefer, Donovan O. (2022). *Wild Experiment Feeling Science and Secularism after Darwin*. Durham, NC: Duke University Press. ISBN: 978-1-478-01825-4

> "In *Wild Experiment*, Donovan O. Schaefer challenges the conventional wisdom that feeling and thinking are separate. Drawing on science studies, philosophy, affect theory, secularism studies, psychology, and contemporary literary criticism, Schaefer reconceptualises rationality as defined by affective processes at every level. He introduces the model of "cogency theory" to reconsider the relationship between evolutionary biology and secularism, examining mid-nineteenth-century Darwinian controversies, the 1925 Scopes Trial, and the New Atheist movement of the 2000s. Along the way, Schaefer reappraises a range of related issues, from secular architecture at Oxford to American eugenics to contemporary climate denialism. These case studies locate the intersection of thinking and feeling in the way scientific rationality balances excited discovery with anxious scrutiny, in the fascination of conspiracy theories, and in how racist feelings assume the mantle of rational objectivity. The fact that cognition is felt, Schaefer demonstrates, is both why science succeeds and why it fails. He concludes that science, secularism, atheism, and reason itself are not separate from feeling but comprehensively defined by it." (From the Publisher)

More information at: https://www.dukeupress.edu/wild-experiment

Selya, Rena (2022). *Salvador Luria: An Immigrant Biologist in Cold War America*. Cambridge, MA: The MIT University Press. ISBN: 978-0-262-04646-6

> "Blacklisted from federal funding review panels but awarded a Nobel Prize for his research on bacteriophage, biologist Salvador Luria (1912–1991) was as much an activist as a scientist. In this first full-length biography of Luria, Rena Selya draws on extensive archival research; interviews with Luria's family, colleagues, and students; and FBI documents obtained through the Freedom of Information Act to create a compelling portrait of a man committed to both science and society.
>
> "In addition to his work with viruses and bacteria in the 1940s, Luria broke new ground in molecular biology and cancer research from the 1950s to the 1980s and was a leader in calling for scientists to accept an educational and advisory responsibility to the public. In return, he believed, the public should rely on science to strengthen social and political institutions.
>
> "Luria was born in Italy, where the Fascists came to power when he was ten. He left Italy for France due to the antisemitic Laws of 1938, and then fled as a Jewish refugee from Nazi Europe, making his way to the United States. Once an American citizen, Luria became a grassroots activist on behalf of civil rights, labor representation, nuclear disarmament, and American military disengagement from the Vietnam and Gulf Wars. Luria joined the MIT faculty in 1960 and was the founding director of the Center for Cancer Research. Throughout his life he remained as passionate about his engagement with political issues as about his science, and continued to fight for peace and freedom until his death." (From the Publisher)

More information at: https://mitpress.mit.edu/9780262046466/salvador-luria/

Simões, Ana, & Diogo, Maria Paula (Eds.) (2022). *Science, Technology and Medicine in the Making of Lisbon (1840–1940)*. Leiden: Brill. ISBN: 978-9-004-51624-3

> "Why write a book about science, technology, and medicine in Lisbon? No one questions the value of similar studies of European capital cities such as Paris or London, but they are not reflective of the norm. Alongside its unique characteristics, Lisbon more closely represents the rule and deserves attention as such. This book offers the first urban history of science, technology and medicine in Lisbon, 1840–1940. It addresses the hybrid character of a European port city, scientific capital and imperial metropolis. It discusses the role of science, technology, and medicine in the making of Lisbon, framed by the analysis of invisibilities, urban connections, and techno-scientific imaginaries. The book is accompanied by a virtual interactive map." (From the Publisher)

More information at: https://brill.com/view/title/62138?rskey=7Pmqjx&result=4

Tripaldi, Laura (2022). *Parallel Minds: Discovering the Intelligence of Materials*. Cambridge, MA: The MIT University Press. ISBN: 978-1-913-02993-7

> "Is there a way to understand the materials that surround us not as passive objects, but as other intelligences interacting with our own? In *Parallel Minds*, expert in materials science and nanotechnology Laura Tripaldi delivers not only detailed insights into the properties and emergent behaviours of matter as revealed by state-of-the-art chemistry, synthetic biology, and nanotech, but also a rich philosophical reflection that crosses the frontier between nature and culture, where the most cutting-edge scientific syntheses resonate with ancient myth. The result is a technomaterial bestiary full of unexpected encounters with "strange minds"—from cobwebs to kevlar and carbon fibre, from centaurs to amoebas to arachnids, from polycephalic slime to resonating plasmons, from viruses to golems.
>
> "*Parallel Minds* reveals the intelligence at large throughout the natural and technical environment, in the fabric of our devices and dwellings, in our clothes, and even under our skin. Full of lateral ideas and unexpected images, Tripaldi's book imbues the study and synthesis of materials with a new urgency. For not only do the materials that surround us participate actively in the construction of the world in which we live, but harnessing their ability to interact intelligently with their environment could be the key to the future of our species." (From the Publisher)

More information at: https://mitpress.mit.edu/9781913029937/parallel-minds/

Veronese, Keith (2022). *Making Medicine: Surprising Stories from the History of Drug Discovery*. Lanham, MD: Rowman & Littlefield. ISBN: 978-1-63388-753-4

> "How do scientists design the medicine we use to improve our lives? It turns out that many are happy accidents or overlooked mixtures of carbon and hydrogen that go on to not only improve the lives of people the world over, but become million- and billion-dollar makers for pharmaceutical companies.
>
> "In *Making Medicine: Surprising Stories from the History of Drug Discovery*, author Keith Veronese examines fifteen different molecules and their unlikely discovery –or in many cases, their second discovery – en route to becoming invaluable medications. From the famous story of Alexander Fleming's discovery of penicillin, to lesser-known stories surrounding drugs like quinine (derived from the bark of the cinchona tree and responsible for saving the lives of millions in the fight against malaria), Veronese reveals the "how" and the "who" behind the pharmaceutical breakthroughs that continue to impact our world. With subjects including cancer-fighting therapies and over-the-counter pain relievers; hair regrowth creams and antidepressants; readers will no doubt have a personal connection to at least one molecule in this book.
>
> "Like all discoveries made by mankind, the stories behind these breakthroughs and their introduction to the world are often messy, sometimes controversial, and always human. Take digoxin, which correctly prescribed can help heart efficiency, but in higher doses can prove fatal –a fact known all too well by Charles Cullen, a nurse who used digoxin to kill over forty patients.
>
> "*Making Medicine* also details how modern pharmaceutical discovery works, including the monumental challenge and accomplishment of creating a COVID-19 vaccine. This fascinating book highlights the serendipitous nature of the discovery of these miracle molecules, along with how they do (or don't) interact with the human body to produce the desired result." (From the Publisher)

More information at: https://tinyurl.com/2ewbth6f

Zilioli, Ugo (Ed.) (2022) *Atomism in Philosophy: A History from Antiquity to the Present*. London: Bloomsbury Publishing. ISBN: 978-1-350-35505-7

> "The nature of matter and the idea of indivisible parts has fascinated philosophers, historians, scientists and physicists from antiquity to the present day. This collection covers the richness of its history, starting with how the Ancient Greeks came to assume the existence of atoms and concluding with contemporary metaphysical debates about structure, time and reality.
>
> "Focusing on important moments in the history of human thought when the debate about atomism was particularly flourishing and transformative for the scientific and philosophical spirit of the time, this collection covers:
>
> - The discovery of atomism in ancient philosophy
> - Ancient non-Western, Arabic and late Medieval thought
> - The Renaissance, when along with the re-discovery of ancient thought, atomism became once again an important doctrine to be fully debated
> - Logical atomism in early analytic philosophy, with Russell and Wittgenstein
> - Atomism in Liberalism and Marxism
> - Atomism and the philosophy of time
> - Atomism in contemporary metaphysics
> - Atomism and the sciences
>
> "Featuring 28 chapters by leading and younger scholars, this valuable collection reveals the development of one of philosophy's central doctrines across 2,500 years and within a broad range of philosophical traditions." (From the Publisher)

More information at: https://www.bloomsbury.com/uk/atomism-in-philosophy-9781350355057/

Authors of HPS&ST-related papers and books are invited to bring them to attention of the Newsletter's assistant editor Paulo Maurício (**paulo.asterix@gmail.com**) for inclusion in these sections.

Coming HPS&ST Related Conferences

September 19-23, 2022, 41st Symposium of the Sci-

entific Instrument Commission, Athens.

Details, George N. Vlahakis, **HERE**.

March 16-18, 2023, 9th Integrated History and Philosophy of Science Conference, University of South Carolina, Columbia SC.

Details **HERE**

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

Information: Pablo Lorenzano, **HERE**

August 29-Sept.3, 2023, ESERA biennial conference, Cappadocia, Turkey

Details **HERE**

HPS&ST Related Organisations and Websites

IUHPST – International Union of History, Philosophy, Science, and Technology

DLMPST – Division of Logic, Mathematics, Philosophy, Science, and Technology

DHST – Division of History, Science, and Technology

IHPST – International History, Philosophy, and Science Teaching Group

NARST - National Association for Research in Science Teaching

ESERA - European Science Education Research Association

ASERA - Australasian Science Education Research Association

ICASE - International Council of Associations for Science Education

UNESCO – Education

HSS – History of Science Society

ESHS – European Society for the History of Science

AHA – American History Association

ACS HIST – American Chemical Society Division of the History of Chemistry

GWMT - Gesellschaft für Geschichte der Wissenschaften, der Medizin und der Technik

ISHEASTME – International Society for the History of East Asian History of Science Technology and Medicine

EASE - East-Asian Association for Science Education

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

BAHPS - Baltic Association for the History and Philosophy of Science

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&S website at: **HERE**

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

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