HPS&ST Newsletter
February 2023
Vol.36 (1)
ISSN: 2652-2837

CONTENTS

Introduction

The HPS&ST Newsletter is sent monthly to about 10,300 emails of 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, along with RESOURCES, OBITUARIES, OPINION PIECES and more, are lodged at the website: HERE

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

Vale: Kieran EGAN (1942-2022)

Kieran Egan (Philosopher of education, Historian, Educationalist) passed away from a respiratory ailment on May 12, 2022, just shy of his 80th birthday. He was Professor Emeritus in the Faculty of Education at Simon Fraser University in Vancouver, BC, Canada. He leaves behind his wife Susanna, three children and 5 grandchildren.

An internationally recognized educational scholar, winner of the prestigious Grawemeyer Award (in Education, 1991), he published over 100 papers and authored over 20 books (some translated into several languages). He was known for his incisive questioning and upending of many commonly held ideas within the educational system, including cutting critiques of the worth of educational psychology for education (especially Piaget) and of the detrimental impact of Dewey and progressivism, and forms of socialization, on education in general (2002; 1983; 1981).

A creative and original thinker, he developed a novel theory of educational development and drew out its implications for teaching and curriculum. The central aim of this approach, often called *imaginative education (IE)*, is to make the learning experiences of children and teenagers more engaging, enjoyable and meaningful, predominately by stimulating their imaginations while acquiring a deeper acquisition of knowledge (2005a; 1997; 1979). He tied the issues and problems of modern education to an analysis of the philosophical backgrounds and psychological frameworks (inclusive of empirical research) which he had argued adversely affected learners and schooling.

Egan was born in 1942 in Clonmel, Ireland, and grew up in England. He became a Franciscan novice at the age of 18, but this did not last; later he confessed to being an atheist, albeit "a Catholic one". From 1961-63 he taught high school in Warwick, before going on to study the classics, philosophy, anthropology, cognitive psychology and cultural history at the University of London, and received the A.B. in Honours History in 1966.

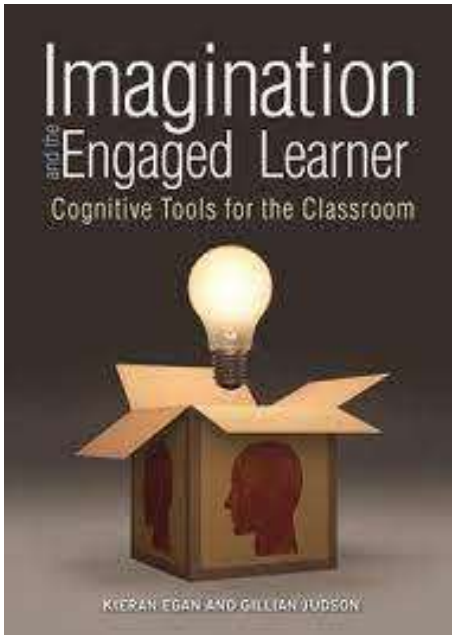
Following graduation he enrolled in the teaching certificate program at Goldsmith College, where two major events shaped the further course of his life (Egan in Waks, 2008, p.53): one, a philosophy of education course taught by a young woman who had gained her PhD under Richard Peters; the other, a visit by a group from the "Centre for Structural Communication." He was fascinated by the Centre's pioneering work in "programmed learning" using the new technology of computing to guide the development of students' higher intellectual processes when working through "study units". The Centre offered him the chance to develop such a unit for the Humanities curriculum, and the result was his first book, *The Tudor Peace* (1969), for high school use. Through the Centre's ties to IBM, Egan won a scholarship to study at Stanford while working one day a week at the computer giant's San Jose and Los Gatos facilities. Some years later, his second book *Structural Communication* (1976) would present ideas based on his experiences and work there.

Unsatisfied with his Stanford experience, he left for Cornell where "Bob Gowin, Ken Strike, and Brian Crittenden provided a rich introduction to the culture of philosophy of education" (Egan in Waks, p.55). He completed a PhD in that field in 1972, and was immediately hired as an assistant professor in the Faculty of Education at Simon Fraser University, founded only a few years previously in Vancouver, BC. This became his permanent academic home, where he eventually became full professor and retired as Emeritus in 2015.

Along the way, in addition to the Grawemeyer Award, he won the Whitworth Award (Canadian Education Association), held a Tier I Canada Research Chair (2001-2015), and was elected as a Fellow of the Royal Society of Canada, and a Foreign Associate member of the U.S. National Academy of Education.

Four key points have characterized Egan's unique contributions to educational studies: i) the importance of imagination; ii) challenging mistaken learning theories; iii) identifying clashing curriculum models as built upon incompatible educational philosophies, and iv) the eagerness to use philosophy of education to directly interrogate both tacit educational theories and popular, dominating psychological theories. It is to be understood these features are deeply

intertwined. (These four issues actually represent fundamental aspects of his own unique *educational theory* of socio-cultural development which I have artificially separated out to focus on them individually). Unless these issues are appropriately tackled, he believed, the crises in modern education will only recycle (his book *The Future of Education* (2008) envisioned schooling across five decades: 2010 to 2060).



i) The significance of the imagination

For educationalists, this is probably his most noteworthy contribution. Egan's central concern echoed throughout his many books, is that education had largely neglected the value and role of student's own imagination in the learning process: "The separation of emotion from intellect, I have argued already, has been educationally dysfunctional" (2007, p.19). Educational research for decades has been preoccupied with other topics (e.g. conceptual change, curricula design, teaching methods, student learning theories, etc.), while the significance of imagination has been underappreciated and little studied.

He admits part of the problem lies with the challenging nature of its *meaning* (its complex Western history), and the problematic character of constructing measurable empirical tests. Also, it's often seen as a mere "frill", at best only relevant to Fine Arts and Arts courses, and incompatible with the drive to improve tests scores.

In an insightful chapter "A very short history of the imagination" (1992, pp.9-43, which serves as a *basis* for his own developmental theory) he investigated the topic starting with Biblical and early Greek sources (also Nordic myth) through to the Enlightenment, Romantic, and Modern periods, including contemporary psychological work. Generally, imagination was seen as dangerous, as rebellion against divine order, or undermining reason—this was in stark contrast to preceding oral cultures that relied heavily on myth, memory and emotion both as a source of knowledge and as cultural "glue" which held the tribe and society together. (Here the "great power of story" gave rise to the beginning of our literature as found in Homeric epics and Germanic sagas). From its beginnings as Greek "phantasma" to Latin "imaginatio" it was considered to be a weak form of the mind, needing strict control by reason, because of its distracting use of mental images and mimetic (copying) ability. While Descartes had a low opinion of it, with Kant, Herder and the Romantics emerged our modern conception, involved in perception and the emotions, as a positive power of creative insight and intuition, of generation of new ideas, images and future possibilities.

Though the Romantics held up the artist as its paragon and disparaged reason, it was Wordsworth's view, repeatedly emphasized by Egan, that imagination and reason are not incompatible, rather it's "Reason in her most exalted mood." Modern philosophers (like Sartre) have even untied imagination from its customary association with *imagery* and visualization, and as a distinct faculty of mind, to instead *a way in which* the mind itself functions. Imagination as an intentional act of consciousness, rather than a thing *in* consciousness (Husserl). "If the mood of imagination is the subjunctive, its trope is metaphor" (1992, p.30). Hence a concept of mind away from being a kind of *mirror* to a *lamp*.

How these insights were to be worked out in practical, useful ways for learners in schools and classrooms is clarified by the bulk of his writings employing his theory of *Imaginative Education (IE).* He consistently endeavored to write specific cross-curricular lesson frameworks for practical use by elementary and secondary teachers (2015; 2005a).

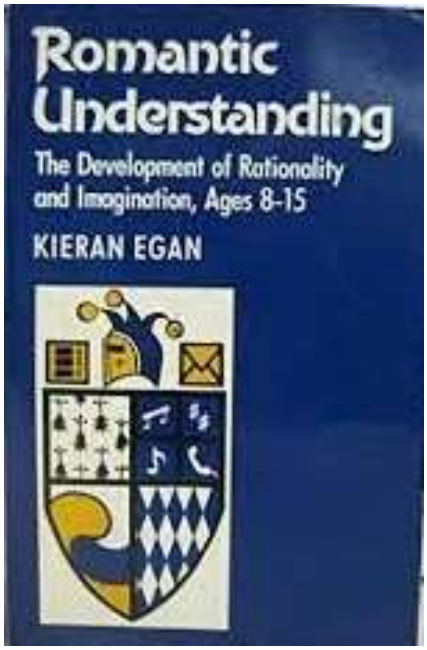
ii) Learning Theory

With regard to *learning*, schooling worldwide has embraced ad hoc principles, such as, that learning proceeds "from the concrete to the abstract, from simple to complex, from the known to the unknown, from active manipulation to symbolic representation" (1986, p.28). To overturn such principles, including Piagetian ideas that "children learn best from concrete hands-on experiences" or that "abstract concepts in general are difficult for young children", he countered with the Cinderella story and children's ability to understand such abstract and conflicting concepts as fear/hope, kindness/cruelty and good/evil.

Moreover, learning is mistakenly based on a kind of information processing model, analogous to recording symbols in the mind for later retrieval. (There are good reasons why such models refer to the problem of "cognitive load"). Indeed the *meaning* of learning in schools today is still taken to be how faithful the retrieval process occurs by using numerical values on quizzes and standardized tests at the end of a unit or course, in the technology-analogous sense of mechanical storage and repetition.

Further, the *model of curriculum* planning assumes knowledge to be a static entity with little room for the role of the imagination in how it was originally created, or how it might be advanced or changed in the future. "Objectives [driven curriculum] models are products of a particular phase of industrialization. They are the result of attempts to technologize teaching in inappropriate ways." On this last point he was of course, not an isolated critic, but took it in a wholly different and original direction.

For academic learning, the reliance on science textbooks is ubiquitous. Yet they clearly represent technical and encyclopedic storage devices, especially at the upper secondary and tertiary levels, and teaching can presume a storage–retrieval model. Worse, the structure and composition of "… textbooks presuppose that imagination and emotion are largely irrelevant …" (2007, p.19). But "good education" (meaningful learning) should be about having such detailed knowledge come alive again in the living mind of the young—not as mere inert and isolated facts (decontexualized knowledge) soon forgotten, so typical in classrooms—rather through a process only possible Egan argued, when engaging their emotions with the topics and ideas through personal meaning making (e.g. should the concept of gravity be approached solely with mathematical equations, or linking such equations with historical conceptual conflict and controversy? Should the story of calculus include the fact that "infinitesimals" were once considered heretical?)



Yet the human mind is not a mirror, nor acts like a computer, and memory of course does not generally function in such a storage-retrieval fashion, though occasionally it may with rote-memorization. Rather, memory acts more like a sorting and mixing mechanism for facts, images, ideas and values, imbued with emotion and meaning-making: "virtually nothing emerges from the human memory in the same form it was initially learned" (1992, p.50).

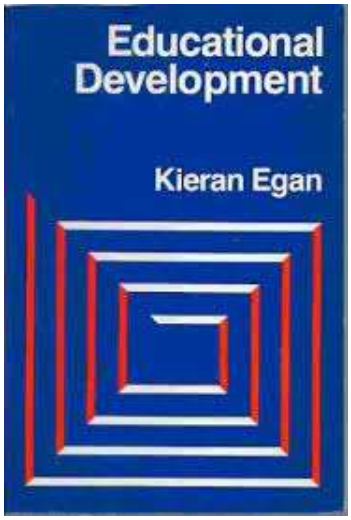
Learning then is not about mirroring what is outside the mind, but fundamentally about *constructing* and *composing*—each mind with its own unique perspective—within students' meaning-making structures already in place. "And it is in … ascribing meaning that … identifies one of the fundamental activities of the imagination" (ibid, p.51).

It is recognized of course that constructivist researchers have for decades identified learning obstacles regarding student preconceptions and epistemology, but they have overall failed to link the cognitive with the affective domains in ways Egan described to resolve the issues.

It is these key convictions that had driven Egan to emphasize the value of "Teaching as story telling" (2005a, 1988, 1986), for which he is internationally most renowned. Here learning becomes pleasurable. Furthermore, with the discovery of the "Narrative mind" (by some psychologists, e.g. Bruner, and several educators), being essentially an involved cognitive and affective region of meaning making, brought Egan to the view that more attention can (should) now be placed on imagination "because the imagination is more evident in the composition of narratives and their construction of possibilities" (1992, p.63). These aspects are today equally embraced by some science educators (Hadzigeorgiou and Schulz, 2019, 2014), especially those who emphasize the integration of history and philosophy of science (HPS) into curricular topics, using historical science stories (Clough, 2011) and/or a narrative approach (Metz et al, 2007; Norris et al, 2005).

iii) Clashing curriculum models and lack of educational theory

Egan had argued (1997) that schools in the West as educational projects are ineffectual primarily because they are entangled by three chief objectives which effectively serve to check or undermine each other's intended educational aims: whether to teach science for i) intellectual development (of mind), or 2) for individual fulfillment (character, values), or 3) for socio-political (or /and socioeconomic) ends. These in turn, he has identified with corresponding, usually tacitly-held, educational-philosophical theories underlying such aims: the first with the "Platonic project" of knowledge accumulation as sole ends, the second with Rousseau (and its various modern guises in progressivism, i.e. "child-centered learning"), and the last with the cross-cultural expectation of society to socialize the young into its norms, values and beliefs for social utility (i.e. find jobs, serve the economy or democracy, etc).



But a conundrum is created in schools because the three aims are largely incompatible, and the need to find a "balance", he argued, is an illusion. The incongruities result for different reasons: #3 conflicts with #1 because socialization seeks conformity to society's values and beliefs while the latter in the search for truth and knowledge encourages questioning of these; #3 conflicts with #2 because the "Rousseauian project" argues that personal growth requires it own pace for intense individualized child-centered development whose values may differ from society and the demands of institutionalized learning.

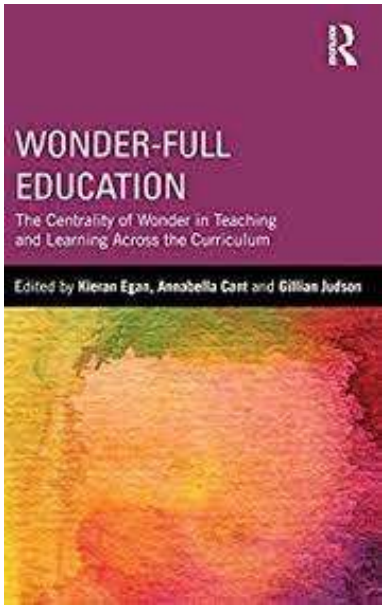
Finally, #1 conflicts with #2 because the former assumes an epistemological model of learning and development, and the latter a psychological one. In the former mind is socio-culturally *created* and the aim is knowledge, in the latter it develops *naturally* (on its own), requiring proper guidance, and the aim is self-actualization.

Not only have curriculum models and developers failed to address these serious conflicts (if they've been acknowledged at all), they've usually defaulted to one or the other (or a combination of two over against a third), through various "reform waves" and by socio-economic pressures, or relied on inadequate psychological theories or had convinced themselves that some sort of "balance" was achievable (1997). Furthermore, none of the three theories had accounted for imagination, the generative feature of mind that actually drives learning (but has logical and psychological constraints).

Even worse, he insisted, they failed to recognize that what was truly needed to resolve the impasse was an *educational theory* (or metatheory—versus a psychological one; Schulz, 2009a; Aldridge, et al, 1992) shaped by and for educators to address the problems created in-house by the *discipline* of education itself. In other words, the field of *philosophy of education* needed to, and should have, come to their aid. In his capacity as a philosopher of education, Egan had developed exactly such a theory, as mentioned—*imaginative education* (1997; 1979). In it he tied educational means to educational ends, and not toward psychological or social utility ends.

iv) The role of philosophy of education

Egan held that what was currently missing in the field was a lack of original philosophizing on the "grand scale" as in the tradition of former great educational theorists like Plato, Rousseau and Dewey. He certainly saw himself as continuing in that tradition of creating "grand theories" or metatheories for the discipline. (The contrast between Dewey's and Egan's educational philosophies is provided by Polito, 2005). He vehemently rejected any talk that education was not a discipline in its own right and only a mere "field of interest" upon which other disciplines have rightful bearing (e.g. psychology, sociology, ethics, etc; Schulz, 2009a; Egan, 1983). In fact educational metatheory "shows how to realize in individuals a certain conception of education. Without some such conception, all research findings in the world are educationally blind, and with such a conception, it is unclear what research findings have to offer" (2002, p.181).



Egan as a thinker was among the few to help bridge the gap between philosophy of education and educational theory and practice. He showed by cogent and careful arguments that when education defaults to metatheories whether in psychology directly via behaviorism or Piagetian theory (2005b, 1983), or indirectly via progressivism (2002), the debasement of practice and a wide-ranging impoverishment of the field must necessarily result. Against principles asserting that teachers should start from concrete operations (Piaget), or from learners' immediate experience and what they already know (Dewey and constructivism) he argued instead that they should start with what learners can *imagine* (2003).

Egan's theory was in part an argument to separate education from the influence of scientific psychology and its theories, with the claim that educational development and psychological development need not in fact align at all. This claim was based on two arguments: firstly, unlike the psychological premise, there exists no natural educational process to describe or explain, rather "an educational process exists only as we bring it into existence" (1983, p.3). Psychology must assume a natural process of some sort, that's why it claims to be a "science", it's descriptive and biological, but education is socio-culturally determined and hence educational theory is prescriptive and normative. In fact, Egan was suspicious of what psychology could offer and

cautioned against "psychological description constraining educational prescription."

As an example, he attacked Piagetian influenced researchers who insisted that some abstract ideas (like "religion", or "science", or "history") should not be taught until the appropriate "stage" has been reached, what he called the "psychological fallacy." In his later works he seriously questioned the worth of empirical research studies emerging from psychology and its dependent daughter sub-discipline, educational psychology, pertaining to student learning, motivation and development (2005b). "We have suffered from tenuous inferences drawn from insecure psychological theories for generations now, without obvious benefit" (2002, p.100).

Even terms like "learning" and "development" could have completely different connotations in the two separate disciplines. His second argument focused on the age-old and mistaken quest for the "biologized mind" (beginning with Aristotle). Piaget's stage theory of cognitive development was postulated upon the view that a common human nature could be unearthed beneath the domineering layers of cultural influence, premised on the biological development of organisms, and hence would be common among all learners.

Alternatively, his own IE-based theory was founded on Vygotsky's insights, the socio-cultural school in psychology (Bruner, Cole Kozulin), and a "strong culturalism" view of mind (Bakhurst, 2005). In sum, its hallmark is characterized by the function of three central ideas: imagination, the mediation of socio-culturally developed (and language–based) cognitive tools, and recapitulation. It seeks to better align curriculum with childrens' growth and age-specific imaginative stages through their ability (and guided by the teacher) to recognize and use their own developing language-based cognitive tools (somatic, mythic, romantic, philosophic, ironic; Schulz, 2014a,b; 2009b).

Critiques of Egan's ideas and theory have been few, mostly in philosophy of education circles (Phillips, 2007, 2005). Heated disagreements and public debates have certainly occurred with at least one eminent educational psychologist at his university. Some had earlier cited the lack of empirical evidence to support the claims of his educational theory, though at least one data-based controlled school study in science education did show positive results (Hadzigeorgiou et al., 2011). Since then a wide range of research conducted in primary through to post-secondary level educational contexts, and across disciplines, has shown the incredible applicability of Egan's ideas, and has revealed how IE pedagogy emotionally engages learners (not only in science education; Hadzigeorgiou, 2016).

From engineering and STEM (Ellis et al, 2020); to social studies (Egan and Judson, 2009a); to ecological and environmental education (Hadzigeorgiou and Judson, 2017; Judson, 2015; Hrennikoff, 2006), to educational leadership (Judson and Dougherty, 2023), and to language and literacy learning (Emjawer and Al-Jamal, 2016)— IE pedagogy emotionally engages learners.

Concluding remarks

As a graduate student in his PhD seminar on the "History of Education" the breadth of required books to read was extensive (Plato, Locke, Rousseau, Wollstonecraft, Dewey—with excursions of readings from Aristotle, Aquinas, Kant, Romanticism, Oakeshott). The seminar discussions were a fascinating display of intellectual gymnastics and one that deeply enriched me and was formative for my own intellectual development.

Kieran's extensive knowledge on diverse subjects (classics, anthropology, language studies, philosophy, psychology, cognition, cultural history) and depth of understanding was remarkable. He personally came across as unassuming, loved to joke and relished the value of Socratic irony. Later in life he concerned himself with his Buddhist garden (2000) and wrote poetry. I once asked him why he mentioned the value of Latin in his 1997 book, and he laughed and said it was to poke progressivism in the eye, since they all happily believed they had buried this curriculum fossil, but had completely failed to grasp its value for creating mind.

Kieran was always civil in those public disputes I witnessed, and never appeared overbearing or dismissive of others. The actual experience in real school classrooms always remained a central priority, and he scolded educational academics

who, while successful in the solitary halls of academia had lost the link to the classroom. He showed a real care and concern for his graduate students. He remained concerned for learners, especially young children, and worked steadily with classroom teachers, educators, philosophers of education (e.g. Robin Barrow), grad students and some administers, during seminars, conferences, speaking engagements and international tours.

These took place across Canada and the U.S., also U.K., Greece, Netherlands, Sweden, Italy, Israel, Romania, Chile and Australia—if not to test and spread his ideas, then to encourage leaders and learners to seek a new approach to make education meaningful and enjoyable.

His awards and stature allowed him to establish a research institute at Simon Fraser University, *The Imaginative Education Research Group* (IERG), which organized a noteworthy series of international conferences on imagination and education (2003-2009, 2013-2014). After he later retired IERG transitioned into the *Centre for Imagination in Research, Culture and Education* (CIRCE), which continues to develop and spread his ideas, work and theory.

Roland M. Schulz, CIRCE, Simon Fraser University, Vancouver

Acknowledgement: I would like to thank SFU Faculty of Education Associate Professor Dr. Mark Fettes and Assistant Professor Dr. Gillian Judson for having contributed to improving and updating aspects of the content of this obituary.

Websites: CIRCE: www.circesfu.ca

imaginED www.educationthatinspires.ca

Kieran's posts: https://www.educationthatinspires.ca/thoughts-on-education/kieran-egans-posts-on-teaching-learning-imagination-more/

Books:

Imagination and the engaged learner: Cognitive tools for the classroom. (With G. Judson) (2015). New York: Teachers College Press.

Whole school projects: Engaging imaginations through interdisciplinary inquiry. (2014a). New York: Teachers College Press

Wonder-full education: The centrality of wonder in teaching and learning across the curriculum. (With A. Cant and G. Judson). (2014b). NY: Routledge.

Learning in Depth: A simple innovation that can transform schooling. (2010). Chicago: University of Chicago.

The Future of Education: Reimagining our schools from the ground up. (2008). New Haven: Yale.

Teaching and learning outside the box. (With M. Stout and K. Takaya, Eds). (2007). New York: Teacher College Press.

Teaching literacy: Engaging the imagination of new readers and writers. (2006). Thousand Oaks, CA: Corwin.

An imaginative approach to teaching. (2005a). San Francisco: Jossey-Bass (Translated into Korean, Japanese, Indonesian, Spanish).

Getting it wrong from the beginning: Our progressivist inheritance from Herbert Spencer, John Dewey, and Jean Piaget. (2002). New Haven: Yale University.

Building my Zen garden. (2000). Boston: Houghton Mifflin.

Children's minds, talking rabbits, and clockwork oranges. (Selected articles. Solicited. Forward by Elliot Eisner.) (1999). New York: Teachers College.

The educated mind: How cognitive tools shape our understanding. (1997). Chicago: University of Chicago. (Translated into Portuguese, Swedish, Danish, Hebrew, Spanish, Russian, Greek).

Imagination in teaching and learning. (1992). London, Ontario: Althouse.

Romantic understanding. The development of rationality and imagination, ages 8-15. (1990). New York and London: Routledge.

Primary understanding: Education in early childhood. (1988). New York and London: Routledge.

Imagination and teaching. (With Dan Nadarer, Eds.). (1988). N.Y: Teachers Press.

Teaching as story telling. *An alternative approach to teaching and curriculum in the elementary school* (1986). London, Ontario: Althouse.

Literacy, society, and schooling. (With S. de Castell and A. Luke, Eds.). (1986).

Education and psychology: Plato, Piaget, and scientific psychology. (1983). N.Y: Teachers College.

The erosion of education: Socialization and the schools. (With D. Nyberg). (1981). N.Y: Teachers Press.

Educational development. (1979). N.Y: Oxford.

Ethics and educational policy (With K.A. Strike, Eds.). (1978). Routledge.

Selected Secondary Literature

Aldridge, J., Kuby, P. and Trevy, D. (1992). Developing a metatheory of education. *Psychological Reports, 70,* 683-687.

Bakhurst, D. (2005). "Strong culturalism." In: Erneling, C.E. and Johnson, D.M. (Eds.). *The mind as a scientific object between brain and culture.* Oxford: OUP.

Clough, M.P. (2011). "The story behind the science: Bringing science and scientists to life in post-secondary science education." *Science & Education, 20(7),* 701-718.

Ellis, G.W. et al. (2020). "Developing transmedia engineering curricula using cognitive tools to impact learning and the development of STEM identity." Paper presented at the *American Society for Engineering Education Annual Conference* (Virtual Conference). http://www.circesfu.ca/wp-content/uploads/2020/05/ASEE-2020-submittrd.pdf

Emjawer, S. and Al-Jamal, D. (2016). An imaginative approach to teaching grammar. *Journal of Educational Sciences, 28*(1), 183-202.

Hadzigeorgiou, Y. and Schulz, R.M. (2019). Engaging students in science: The potential role of "narrative thinking" and "romantic understanding." *Frontiers in Education,* May, Vol.4, pp.1-10.

Hadzigeorgiou, Y. and Judson, G. (2017). Toward more effective storytelling for raising environmental awareness in young students. *Journal of Advances in Education Research, 2(1),* 13.

Hadzigeorgiou, Y. (2016). *Imaginative science education.* Springer.

Hadzigeorgiou, Y. and Schulz, R.M. (2014). Romanticism and romantic science: Their contribution to science education. *Science & Education, 23(10),* 1963-2006.

Hadzigeorgiou, Y., Klassen, S. and Froese-Klassen, C. (2011). Encouraging a 'romantic understanding' of science: The effect of the Nikola Tesla story. *Science & Education, 21(8),* 1111-1138.

Hrennikoff, M. (2006). Implementing an imaginative unit: Wonders of the water cycle. *Educational Perspectives, 39*(2), 27-33.

Judson, G. and Dougherty, M. (Eds.) (2023). *Cultivating imagination in leadership: Transforming schools and communities.* Teachers College Press.

Judson, G. (2015). *Engaging imagination in ecological education: Practical strategies for teaching.* UBC Press.

Metz, D., Klassen, S., Mcmillan, B., Clough, M. and Olson, J. (2007). Building a foundation for the use of historical narratives. *Science & Education, 16*(3-5), 313-334.

Norris, S., Guilbert, S., Smith, M., Hakimelahi, S. and Phillips, L.M. (2005). A theoretical framework for narrative explanation in science. *Science Education, 89*, 535-563.

Schulz, R.M. (2014a). *Rethinking science education. Philosophical perspectives.* IAP

Schulz, R.M. (2014b). "Philosophy of education and science education: A vital but underdeveloped relationship." In: M.R. Mathews (ed.), *International handbook of research in history, philosophy and science teaching, 3Vols* (pp.1259-1315). Springer.

Schulz, R.M. (2009a). Reforming science education: Part I. The Search for a philosophy of science education. *Science & Education, 18*, 225–249.

Schulz, R.M. (2009b). Reforming science education: Part II. Utilizing Kieran Egan's educational metatheory. *Science & Education, 18*, 251–273.

Phillips, D.C. (2007). Getting it wrong from the beginning, but maybe (just maybe) it's a start. *Philosophy of Education,* 319-322.

Phillips, D.C. (2005). The contested nature of empirical educational research (and why philosophy of education offers little help). *Journal of Philosophy of Education, 39*(4), 577-597.

Polito, T. (2005). Educational theory as theory of culture. A Vichian perspective on the educational theories of John Dewey and Kieran Egan. *Educational Philosophy and Theory,*

37(4), 475-494.

European Philosophy of Science Association, Belgrade Conference, 20-23 September

The European Philosophy of Science Association invites submissions for its next conference, EPSA23, to be held in Belgrade (Serbia) from **20 to 23 September 2023**. You will find all the details regarding submission guidelines and rules on our dedicated webpage.

Please note that the deadline for all submissions is by **1 March 2023, 11:55pm GMT**.

Stéphanie Ruphy, President

European Society for the History of the Human Sciences (ESHHS), Rome Conference 4-7 July, 2023

The European Society for the History of the Human Sciences (ESHHS) invites submissions to its 42nd conference to be held from **Tuesday 4 July to Friday 7 July, 2023**.
We will meet at the Villa Mirafiori in central Rome, which is home to the philosophy department of the Sapienza University:

Università La Sapienza - Dipartimento Filosofia
Via Carlo Fea, 2, 00161 Roma RM
Details **HERE**

Oral presentations, posters, sessions or workshops may deal with any aspect of the history of the human, behavioral and social sciences or with related historiographic and methodological issues. **Deadline** for submissions is **March 15, 2023**.

A limited number of travel stipends will be available for students, or scholars that otherwise might be in need of economic support. Only those presenting a paper (including in an organised session) or poster are eligible. If you wish to apply for a travel stipend please indicate this clearly in your submission email and complete the application form here:
https://forms.gle/NESfSF2KSQ8GDNHq5

Registration fees are typically €70-100 for students and €100-150 for regular registration, with the conference dinner paid separately. More details on registration will be available in March. If you have any questions about the conference and the organization on site, please also get in contact with eshhs2023@gmail.com.

HPS&ST in Latin America

Colloquium to celebrate the 50 years of collaboration of Hugh Lacey and the Philosophy Department of the University of São Paulo (USP) October 18-21, 2022.

The colloquium was held to mark the launching of Hugh Lacey's new book, *Valores e Atividades Científicas 3*. This completed the trilogy that was largely written in Brazil and in interaction with professors and students of philosophy of USP; and to celebrate his introduction of the philosophy of science into the program of USP's Philosophy Department during the years, 1970-71, and Lacey's 50 years of collaboration that has been decisive for the consolidation of philosophy of science in Brazil.

Programme and details available **HERE**

Latin American Studies on the Life Sciences and Medicine

We are pleased to announce the publication of the book *Handbook of the Historiography of Latin American Studies on the Life Sciences and Medicine*, edited by Professor Ana Barahona, with an introduction by Professor Kapil Raj and the editor.
Details HERE

5th International Conference on History, Philosophy and Science Teaching in Latin America (IHPST-LA 2023)

History, Philosophy, Sociology and Science Teaching in times of Scientific Denial

The IHPST-LA will be held in Porto Alegre (Brazil) from August 9th to 11th, 2023. It will gather researchers from all Latin America to discuss HPS&ST and its contemporary challenges. More information is available **HERE**.

We have observed growing movements of denial of scientific knowledge and attacks on academic and research institutions. In a world marked by great social inequalities and increasingly complex problems, in which the scientific and social dimensions are present, what are the paths, challenges and potential that the field of research in History, Philosophy, Sociology and Science Teaching have presented?

The IHPST-LA is an event organized by the International Group of History, Philosophy, Sociology and Science Teaching and aims to bring together researchers and teachers of basic and higher education from all over Latin America, to discuss research that have been developed in this field of study. The congress will therefore have different spaces designed to promote dialogue and reflection. We invite researchers, postgraduate and undergraduate students and Basic Education teachers to join us in this space for dialogue, communication and collective construction.

The event will take place at the headquarters of the Institute of Physics of the Federal University of Rio Grande do Sul, in Porto Alegre, from August 9th to 11th, 2023. Paper submissions will be accepted until April 2nd, 2023. registration, submission rules, dates, are available on the event website: www.ufrgs.br/ihpstla2023/ .

Our objective is to promote a plural event, in which different theoretical, epistemological and methodological perspectives, as well as the specificities of research in the different regions of Latin America, can meet for a broad dialogue. In this sense, the themes of the speeches and round tables, as well as the guests for these spaces, seek to contemplate this diversity.

Lecture 1 of the event, with the theme History of Science, Post-Colonialism and the Sociopolitical Turn, will be given by Professor Thomas Haddad (University of São Paulo). Lecture 2 of the event, with the theme Feminism, Science and Science Education, will be given by Professor Johanna Camacho González (Universidad de Chile). We will also have a round table, Research in History, Philosophy, Sociology and Science Education – Challenges and Possible Paths, which will be composed by prof. Leonardo Galli (University of Buenos Aires), prof. Andreia Guerra (CEFET-RJ and current *past president* of IHPST), and Prof. Cláudio Dalbosco (University of Passo Fundo). The event will also feature a Teachers' Session focused on discussing the History, Philosophy and Sociology of Science in Basic Education, a space organized to think about the demands of this context and reflect on possible partnerships between university and school, which will be mediated by prof. Hermann Schiffer (CEFET-RJ and current representative of basic education teachers at IHPST). The event will also feature

three mini-courses, whose theme and lecturer will be announced close to the event, giving participants the opportunity to enroll in the desired mini-course.

Finally, throughout the event we will have poster sessions, oral presentation session and symposium. These spaces will provide an opportunity for dialogue and reflection on the research, as well as the possibility of circulating knowledge and integrating the Latin American community. Papers presented at the event may be submitted to a special issue of the journal Investigações em Ensino de Ciências (IENCI), which will be specifically focused on discussions at the event. Papers submitted to IENCI will undergo the traditional blind peer review process (and participation in the event does not guarantee acceptance by the journal).

We hope that the IHPST-LA 2023 event will be a space for dialogue, communication, meeting, in which we can overcome barriers and difficulties to further strengthen our research community. In difficult times like the ones we are experiencing, consolidating and advancing in the promotion of research and research and teaching institutions is a powerful way of contributing to building a better and fairer world. We are waiting for everyone in August in Porto Alegre for this moment.

5ª Conferência Internacional de História, Filosofia e Ensino de Ciências da América Latina (IHPST-LA 2023)
História, Filosofia, Sociologia e Ensino de Ciências em tempos de Negação Científica

Temos acompanhado movimentos crescentes de negação dos conhecimentos científicos e de ataques às instituições acadêmicas e de pesquisa. Em um mundo marcado por grandes desigualdades sociais e por problemas cada vez mais complexos, em que as dimensões científicas e sociais se fazem presentes, quais são os caminhos, desafios e potencialidades que o campo de pesquisa em História, Filosofia, Sociologia e Ensino de Ciências têm apresentado?

O IHPST-LA é um evento organizado pelo Grupo Internacional de História, Filosofia, Sociologia e Ensino de Ciências e tem por objetivo reunir pesquisadores(as), e professores(as) da educação básica e superior de toda América Latina, para discutir as pesquisas que vêm sendo desenvolvidas nesse campo de estudos. O congresso, assim, terá diferentes espaços destinados a promover o diálogo e a reflexão. Convidamos os(as) pesquisadores(as), alunos(as) de pós-graduação, graduação e professores(as) da Educação Básica para se juntarem a nós nesse espaço de diálogo, comunicação e construção coletiva.

O evento ocorrerá na sede do Instituto de Física da Universidade Federal do Rio Grande do Sul, em Porto Alegre, nos dias 09 a 11 de agosto de 2023. As submissões de trabalho vão até o dia 02 de abril de 2023. Todas as informações sobre inscrições, regras de submissão, datas, estão disponíveis no site do evento: www.ufrgs.br/ihpstla2023/.

Nosso objetivo é promover um evento plural, em que diferentes perspectivas teóricas, epistemológicas e metodológicas, bem como as especificidades da pesquisa das diferentes regiões da América Latina possam se encontrar para um amplo diálogo. Nesse sentido, as temáticas das falas e mesas redondas bem como os convidados para esses espaços buscam contemplar essa diversidade.

A palestra 1 do evento, com tema História da Ciência, Pós-Colonialismo e Virada Sociopolítica, será ministrada pelo professor Thomas Haddad (Universidade de São Paulo). A palestra 2 do evento, com tema Feminismo, Ciência e Educação em Ciências, será ministrada pela professora Johanna Camacho González (Universidad de Chile). Teremos, ainda, uma mesa redonda, Pesquisa em História, Filosofia, Sociologia e Educação em Ciências – Desafios e Caminhos Possíveis, que será composta pelo prof. Leonardo Galli (Universidade de Buenos Aires), prof. Andreia Guerra (CEFET-RJ e atual *past president* do IHPST), e prof. Cláudio Dalbosco (Universidade de Passo Fundo). O evento ainda contará com uma Sessão de Professores voltada para discussão sobre a História, Filosofia e Sociologia da Ciência na Educação Básica, um espaço organizado para pensar as demandas desse contexto e refletir sobre possíveis parcerias entre universidade e escola, que será mediado pelo prof. Hermann Schiffer (CEFET-RJ e atual

representante dos docentes da educação básica no IHPST). O evento ainda contará com três minicursos, cuja temática e ministrante serão divulgados próximo ao evento, dando oportunidade dos participantes se inscrevem no minicurso desejado.

Por fim, ao longo do evento teremos as sessões de pôster, sessão de apresentação oral e simpósio. Esses espaços darão oportunidade para o diálogo e reflexão sobre as pesquisas bem como a possibilidade de fazer circular o conhecimento e integrar a comunidade da América Latina. Os trabalhos que forem apresentados no evento poderão ser submetidos para um número especial da revista Investigações em Ensino de Ciências (IENCI), que será voltado especificamente para as discussões do evento. Os trabalhos submetidos para IENCI passarão pelo processo tradicional de avaliação às cegas por pares (e a participação no evento não garante o aceite na revista).

Esperamos que o evento IHPST-LA 2023 seja um espaço de diálogo, de comunicação, de encontro, em que possamos superar as barreiras e dificuldades para fortalecermos ainda mais a nossa comunidade de pesquisa. Em tempos difíceis como os que vivemos, consolidar e avançar na promoção da pesquisa e das instituições de pesquisa e ensino é uma forma potente de contribuirmos para a construção de um mundo melhor e mais justo. Esperamos todos(as) em agosto em Porto Alegre para esse momento.

V Congreso Internacional de Enseñanza de la Historia, la Filosofía y las Ciencias en América Latina (IHPST-LA 2023)

Historia, Filosofía, Sociología y Enseñanza de las Ciencias en tiempos de Negación Científica

Hemos sido testigos de movimientos crecientes de negación del conocimiento científico y ataques a instituciones académicas y de investigación. En un mundo marcado por grandes desigualdades sociales y problemas cada vez más complejos, en el que las dimensiones científica y social están presentes, ¿cuáles son los caminos, desafíos y potencialidades que ha presentado el campo de la investigación en Historia, Filosofía, Sociología y Didáctica de las Ciencias?

El IHPST-LA es un evento organizado por el Grupo Internacional de Enseñanza de la Historia, Filosofía, Sociología y Ciencias y tiene como objetivo reunir a investigadores y docentes de educación básica, secundaria y superior de toda América Latina, para discutir las investigaciones que se han desarrollado en este campo de estudio. El congreso contará, por lo tanto, con diferentes espacios destinados a promover el diálogo y la reflexión. Invitamos a investigadores, estudiantes de posgrado, pregrado; a docentes de Educación Básica y secundaria a acompañarnos en este espacio de diálogo, comunicación y construcción colectiva.

El evento tendrá lugar en la sede del Instituto de Física de la Universidad Federal de Rio Grande do Sul, en Porto Alegre, del 9 al 11 de agosto de 2023. Se recibirán trabajos hasta el 2 de abril de 2023. inscripción, reglas de envío, fechas, están disponibles en el sitio web del evento: www.ufrgs.br/ihpstla2023/ .

Nuestro objetivo es promover un evento plural, en el que las diferentes perspectivas teóricas, epistemológicas y metodológicas, así como las especificidades de la investigación en las diferentes regiones de América Latina, puedan encontrarse para un diálogo amplio. En ese sentido, las temáticas de los discursos y mesas redondas, así como los invitados a estos espacios, buscan contemplar esta diversidad.

La 1º conferencia del evento, con el tema Historia de la ciencia, poscolonialismo y giro sociopolítico, será impartida por el profesor Thomas Haddad (Universidad de São Paulo). La 2º conferencia del evento, con el tema Feminismo, Ciencia y Educación Científica, estará a cargo de la profesora Johanna Camacho González (Universidad de Chile). También tendremos una mesa redonda, Investigación en Historia, Filosofía, Sociología y Educación Científica – Desafíos y Caminos Posibles, que estará compuesta por el profesor Leonardo Galli (Universidad de Buenos Aires), la profesora Andreia Guerra (CEFET-RJ y *pasado actual presidente* del IHPST), y el profesor Cláudio Dalbosco (Universidad de Passo Fundo). El evento también contará con una Sesión de Profesores enfocada en discutir la Historia, Filosofía y Sociología de la Ciencia en la Educación Básica, un espacio organizado para pensar las demandas de este contexto y reflexionar sobre posibles alianzas entre la universidad y la escuela, que será mediada por profesor Hermann Schiffer (CEFET-RJ y actual representante de los profesores de educación básica y secundaria del

IHPST). El evento también contará con tres minicursos, cuyos temas y disertantes serán anunciados antes del evento, dando a los participantes la oportunidad de inscribirse en el minicurso deseado.

Finalmente, a lo largo del evento tendremos sesiones de posters, sesión de presentaciones orales y simposios. Estos espacios brindarán una oportunidad de diálogo y reflexión sobre la investigación, así como la posibilidad de hacer circular el conocimiento e integrar a la comunidad latinoamericana. Los trabajos presentados en el evento podrán ser enviados a una edición especial de la revista Investigações em Ensino de Ciências (IENCI), que se centrará específicamente en las discusiones del evento. Los trabajos enviados a IENCI se someterán al tradicional proceso de revisión ciega por pares (y la participación en el evento no garantiza la aceptación por parte de la revista).

Esperamos que el evento IHPST-LA 2023 sea un espacio de diálogo, comunicación, encuentro, en el que podamos superar barreras y dificultades para fortalecer aún más nuestra comunidad investigadora. En tiempos difíciles como los que estamos viviendo, consolidar y avanzar en el fomento de la investigación y de las instituciones de investigación y docencia es una forma poderosa de contribuir a la construcción de un mundo mejor y más justo. Los esperamos a todos en Porto Alegre, el mes de agosto, para este momento.

ENPEC 2023 (Encontro Nacional de Pesquisa em Educação em Ciências).
The XIV ENPEC will be held in Caldas Novas, Goiás (Brazil) from October 2nd to 6th . Conference paper submission is available until November 15th, 2022. More information is available **HERE**.

Do you have any contributions about HPS&ST in Latin America?

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.

HPS&ST in Asia

● From October 20 to 21, 2022, the Ministry of Science and Information Communication Technology of Japan, the National Association for Science and Technology Research, and the Department of Education of Daejeon City held the 7th World Science and Culture Forum in Hall 2 of Daejeon Convention Center (DCC). The forum carried out exchanges and discussions on global scientific topics with great social impact on the future of Korean society, aiming to promote the integration of science and culture and the popularization of science.
Details of the conference can be found HERE

● From January 10 to January 11, 2023, the Jeju Institute of Future Education and the National Science Teachers Association will hold a big gathering of Korean science teachers at Jeju High School in Korea. The gathering is divided into six areas, include student-centered class operation cases, process-oriented evaluation operation cases, experiment development case show, science festival experience program, Jeju nature exploration, and special session (experience classes for children of participants).
Details of the conference can be found HERE

● If you have any information about events, publications, research groups or books about HPS&ST in Asia and want to submit a brief note to be published in the HPS&ST Newsletter, please contact first Xiao Huang (Zehjiang Normal University) **HERE** or secondly Michael Matthews **Here**.

Opinion Page: Philipp Frank: The Humane Face of Logical Positivism

GEORGE REISCH AND ADAM TAMAS TUBOLY

George Reisch received his PhD from the University of Chicago and is author of *How the Cold War Transformed Philosophy of Science* (Cambridge 2005) and T*he Politics of Paradigms* (SUNY 2019). He is currently Managing Editor of *The Monist* and associated with the MTA Lendület Values and Science Research Group.

Adam Tamas Tuboly is leader of the MTA Lendület Values and Science Research Group and researcher at the Institute for Transdisciplinary Discoveries at the Medical School, University of Pécs. He published numerous papers and edited several volumes about the history of philosophy of science. Currently he is working with George Reisch on the very first intellectual biography of Philipp Frank.

Contact: Adam Tamas Tuboly **HERE**

1. A forgotten storyteller

Philipp Frank was an accomplished physicist and philosopher. He was a biographer of Einstein, Einstein's successor to the Chair of the Department of Physics in Prague, a member of the Vienna Circle, a fixture in philosophical life at Harvard University, and—to some extent—in the intellectual life of the postwar United States. Indeed Frank played an important role in developing the Vienna Circle's scientific world-conception in Vienna and later in Prague with Rudolf Carnap.

He disseminated the ideas of logical empiricism and modern scientific thought to laypeople and continued this task in the United States through his institutionalization of Otto Neurath's unity of science movement and his many publications. His friend in America, the philosopher of science Paul Feyerabend remembered, "Philipp Frank was a delight. He was widely informed, intelligent, witty, and excellent raconteur. Given the choice of explaining a difficult point by means of a story or of an analytical argument, he would invariably choose the story. Some philosophers didn't like that".

Yet because of that and for many various socio-cultural and philosophical reasons, Frank and his writings did not enter the mainstream and canon of twentieth-century philosophy of science. He is known usually—and simply—as Einstein's biographer and, sometimes, as a logical empiricist who belonged to the Vienna Circle. Despite the extent and variety of Frank's work, he has been forgotten.

To help revive Frank's significance and to reconsider his roles in philosophy and history of science, his last manuscript, conceived and written basically within 1953 and 1962, has been made available recently—*The Humanistic Background of Science*, a book Frank intended to publish, we believe, but which lay unpublished in the archives for more than a half century. (It was edited by the current authors and published by SUNY Press in late 2021, the sections below are taken from our introduction that was published along with Frank's edited text.) To put the manuscript in context, we offer here an overview, both personal and philosophical, of Frank's life and work. But we do believe that *The Humanistic Background of Science*, while its intellectual roots extend to Europe, should be understood largely as a product of Frank's professional and intellectual circumstances in the United States.

2. The multilayered significance of *The Humanistic Background*

It cannot be emphasized enough that Frank's recognition and his influence is among the most curious issues in the history of twentieth-century philosophy of science, in general, and the history of logical empiricism, in particular. Frank had, beyond doubt, a very basic and general institutional recognition in the United States: many reviews appeared of his books; he was often invited to conferences, seminars, workshops, and even churches and art galleries. Nonetheless, most of these were related to his local contexts in Boston and New York, and to his well-known

biography of Einstein. Among mainstream analytic philosophers in the 1950s and early 1960s pursuing relatively formal studies of theories and methods, Frank was neglected, and his reputation declined, as illustrated by dismissive and sometimes acerbic reviews of his books.

His eclectic and synthetic approach to understanding science remained dominant only among those in New York and Boston who knew him—including Robert S. Cohen and Marx W. Wartofsky. Besides dedicating the second volume of *Boston Studies in the Philosophy of Science* to Frank as a *Festschrift*, they organized and chaired the Boston Colloquium for the Philosophy of Science that "construes the philosophy of science broadly, as [Frank] had advised us to do." In the first few years, Frank was a relatively stable attendee of the meetings, and his *HBS* may be of particular interest today for the insights and methods it illustrates, as something that originated from such a context and milieu. More broadly, the history of positivism that Frank presents seems poised to improve our understanding of how contemporary science studies, shaped by historical as well as intellectual factors, inherited its current practices and disciplines.

That said, *HBS* is not a systematic methodological treatise. Instead, it shows Frank making integrative sociological and historical points as he appeals to a uniquely broad and eclectic range of primary and secondary sources, including personal and scientific correspondence, biographies, textbooks, handbooks, unpublished materials, journals, and newspapers. He had a sense of where a given story might lead, and the fact that he did not back up his investigations with detailed archival work suggests this general interpretation of his lifework: Frank laid down a new approach to understanding science that emphasized equally its epistemic and social aspects, and that science is primarily a human undertaking.

On this view, Frank remained relatively obscure because he did not have a fully executed and detailed research program that could unite and inspire his colleagues. He additionally lacked organizational skills and often did not follow through on projects (such as a book series in philosophy of science that Frank was to edit for Harvard University Press, a vocabulary of operational definitions with Karl Deutsch, both in the early 1950s). Though his name was often mentioned in the philosophical literature, outside of Boston the success of Carnap, Feigl, Hempel and others overshadowed Frank's work. His influence was real, but not evident for those who had not known him or had not carefully examined the literature of the 1940s and 1950s.

Although this professional neglect may be explained by various factors, it remains to ask how *HBS* might have been received by pragmatists, philosophically sensitive sociologists, and historically inclined scientists had it been published in Frank's lifetime. Frank had made some of the book's main points in scattered papers he wrote in the 1940s and 50s, but we cannot but wonder whether the collected, sustained, and often provocative treatment of these themes in *HBS* might have helped to preserve Frank's reputation for later generations—and possibly kept on philosophy's table some of his interdisciplinary and cultural ambitions.

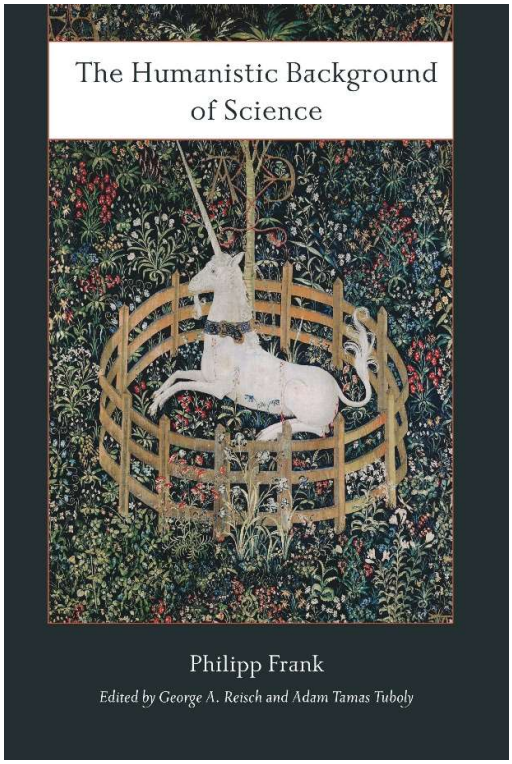
3. The Main Theses and Approach of *The Humanistic Background*

In broadest outline, the book comprises in part one an exposition of Frank's mature philosophy of science and, in part two, applications of that philosophy of science a number of issues and problems. Given Frank's somewhat mosaical style of writing and assembling chapters, exceptions to this organizational scheme abound and different readers may well identify different issues and problems as central. Indeed Frank himself, in the first chapter of Part I, identifies at least four separate (though related) goals for "the present book":

> (1) "[The] chief topic of the present book will be the pragmatic approach to present day science including the line of descendance from which our present science has originated."
> (2) "[W]e have also to study the meaning of these [scientific] symbols as expressions of human aspirations. Thus, the variety of meanings which have been attributed to scientific symbols is a main topic in the present book."
> (3) "We shall discuss, in the present book, the ways in which these philosophical groups attempt to trace their 'genealogy,' back to scientific theories."

(4) “We shall learn in the book that when one knows which philosophical approach should be supported, one will find a way to get this support out of several physical or biological theories.”

The first two topics indicate Frank’s interest in philosophical pragmatism (of Dewey, Peirce, Bridgman, and others) and in the philosophical study of symbols in human life (then strongly represented by the work of Charles Morris). The third and fourth topics capture the relative uniqueness of *HBS* in so far as Frank extends and applies these interests to the sociology of philosophical schools or, as he put it here, “philosophical groups” and to the interpretive uses (and abuses) of scientific theories by leaders and representatives of social and national movements who seek scientific legitimacy for their agendas. “We shall discuss in the present book,” as Frank put it in yet another formulation, “the role which the symbols of scientific discourse have played in the struggle for moral and political goals”.



To illustrate these struggles, Frank singles out three philosophical schools for extended analysis. The first two are Thomism, endorsed by Hutchins and Adler at the University of Chicago, and pragmatism in its various forms, which Frank gathers under the umbrella of “positivism.” The third, Dialectical Materialism, takes Frank not only outside of academic philosophy, but into the ideological core of the United States’ cold war enemy, the Soviet Union. Frank treats each of these schools and the factions within them sympathetically—surprisingly so in the cases of Thomism and Soviet philosophy, especially given the nation’s popular suspicion of Soviet ideology. With something of a sociological or anthropological objectivity, Frank quotes extensively from each school’s internal literature and portrays them as trying to organize and improve society and to “guide human conduct” in ways that inherit the authority and prestige of modern science.

By dedicating long stretches of the book to this subject, Frank attempted to critically enlighten the very publics that advocates of these schools aimed to convert to their respective worldviews and to enlist in their movements. In this aspect, Frank’s project joined the “Conference on Science, Philosophy and Religion” project and the Humanist movement in aiming to educate and enlighten the public about science and its philosophical interpretation and to continue Otto Neurath’s life-long efforts to educate and inform the public about science and its roles in the modern world.

Frank’s hopes for *HBS* to join ongoing discourse about science and democracy were necessarily joined to an internal critique of academic philosophy of science. This critique was surrounded and made urgent by public anxiety about science after World War II. Writing soon after the public learned of the atomic bomb and the threat of nuclear annihilation, Frank understood how this anxiety was often blamed on the nuclear physicists and chemists of the Manhattan Project whose Promethean hubris could only lead to tragic consequences—“A great many people would wish that the vultures get at the livers of the nuclear scientists,” too, Frank writes in his introduction. But philosophers of science, including those in the Vienna Circle and allied groups, had also contributed to science’s postwar reputation. Philosophical accounts of modern theories as formalizable systems of statements devoid of emotion or value encouraged critics of science (including neo-Thomists) to argue that modern science is essentially harmful to cherished human values or to cultural progress.

The most notable American critique of Vienna Circle philosophy in this vein had ome from John Dewey, who contested logical positivism's strict cognitivism and its disregard of norms and values. Frank's *HBS* can be seen through a similar lens: an effort to persuade American philosophers of science that in fundamental ways Dewey's critique was important and not to be placed aside if postwar philosophy of science were to have credibility and influence in the modern world.

The task for philosophy of science was not simply to reform itself along naturalist, pragmatist lines or to replace texts by Carnap or Reichenbach with texts by Peirce or Dewey. Frank urged instead the adoption of a historical perspective within which American pragmatism as well as European scientific philosophy could be seen as allied descendants of the original positivist movement. Alongside its analyses of philosophical schools, *HBS* also surveys Comtean positivism and its development—including predecessors, such as La Mettrie in France, and descendants, such as Mach in Austria and Peirce in the United States. This synoptic picture provides Frank a way to unify European logical positivism and American pragmatism within a single "positivist" framework. Thus *HBS* contains a long chapter about how to integrate logical empiricism into American pragmatism and how their common sources could be made explicit.

This unification preserves important innovations of Vienna Circle philosophy (primarily its rejection of "picture theory" epistemology, and recognition of the basic unity of the sciences) and yet tempers the formalism that was fast dominating academic philosophy of science in the 1950s. Logical positivists who wield logical symbols, as well as artists and humanists intimidated by those symbols, can see within this larger framework that logical and scientific proofs as well as poems and works of art meaningfully draw on a larger humanistic background.

Frank's impulse to portray philosophy of science as a powerful, unified project can perhaps be understood as his response to the growth and, especially, the continuing diversification of scientific philosophy in the postwar United States. What Frank believed should be a unified philosophical front was potentially splintering in different substantive and stylistic directions. Here Frank noted one of these developments— Quine's now-famous argument that the positivist distinction between analytic and synthetic statements was untenable—and appropriately dedicated parts of *HBS* to his own more holistic and behavioristic view of theories and their components. This view does not overrate this distinction, much less regard it as a foundational dogma on which scientific philosophy either stands or falls.

This impulse to portray philosophy of science as a still-powerful, unified project, we believe, led Frank to often minimize, if not sometimes ignore, what are today recognized as important differences and disagreements among notable philosophers; and to portray other philosophers in a very pragmatist-friendly light. On the other hand, Frank did not hesitate to spar with his colleagues and perhaps step on some toes. Although he shows that Carnap's criticism of metaphysics could be read and interpreted along pragmatist lines, Frank does not hesitate to suggest that Carnap's formalism ignores at its peril the historical and sociological contexts that shape scientific theory and reasoning.

Even Neurath, whose anti-formalist sensibilities Frank shared, comes in for a quiet yet firm reprimand on the issue of metaphysics. To be sure, Frank remained a proponent of science and a critic of anti-scientific, metaphysical claims. But he finds inspiration in Peirce, Dewey, and Pierre Duhem to suggest that the logical positivist movement was mistaken—in at least two different senses—to categorically dismiss metaphysics as "unscientific" or meaningless noise as it had in the 1920s and early 30s. On the one hand, such a dismissal is historically insensitive to how the historical evolution of knowledge. The same theoretical claim may be seen as cutting-edge science awaiting confirmation, everyday common sense, or antique, outdated knowledge—depending on its context and overall place in the historical evolution of the sciences.

According to Peirce, Frank explains, metaphysical knowledge—properly understood—emerges from common-sense knowledge and experience. Frank thus turns the tables on his colleagues to imply that Carnap's ordinary "thing language" and Neurath's "universal jargon"—upheld as

empirical, objective, and non-metaphysical platforms for science—are themselves metaphysical, albeit not in a way that invalidates science or harms its progress. As soon as Frank arrived in the United States in 1938, he wrote to Neurath and reported surprising observations about metaphysical thinking on the part of his students that lead Frank to reconsider metaphysics. Some of these developments are visible in one of Frank's early publications, but they are worked out in more detail in *HBS*.

By examining a wide array of American philosophers, all of whom are more sympathetic to metaphysics than most logical positivists, it becomes clear to the reader that neither a critical analysis of metaphysical concepts (a la Carnap) nor prohibitions on metaphysical terms (a la Neurath's infamous *Index Verborum Prohibitorum*) will serve scientific philosophy well in the American intellectual context that Frank had come to know well by the 1950s. They were handicapped by a blindness to the historical, sociological, and practical needs and purposes served by metaphysical beliefs and metaphysical interpretations of modern science, so they could never succeed in productively engaging, much less, eliminating metaphysics as the movement had pledged to do, for example, in the Vienna Circle's manifesto, *Wissenschaftliche Weltauffassung*, or in early antimetaphysical writings by Carnap, in particular. Frank's *HBS* suggests, therefore, that "the elimination of metaphysics through the logical analysis of language" was a more complex task than logical empiricism had first envisioned.

4. *The Humanistic Background* in the American Scene

Frank's choice for a title also helps to situate his unpublished book in the intellectual milieu of postwar United States. The word "humanism" had become current in the 1940s with the humanist movement, its magazine, and its original manifesto of 1941. The manifesto, written by the philosopher Roy Wood Sellars and the Unitarian minister Raymond Bragg, called for a new, humanist religion built upon a naturalist, evolutionary worldview and dedicated to "the complete realization of human personality" within "a socialized and cooperative economic order". Reflecting the socialist ideals that many Americans had warmed to during the depression-era, the manifesto was signed by a roster of scientists, theologians, and philosophers.

The most notable philosopher to sign was Dewey, whose anti-Thomist article "The New Failure of Nerve" (coauthored with Hook and Nagel) echoed the manifesto's call "to elicit the possibilities of life, not flee from them." The movement also influenced Frank's colleague Charles Morris who offered his own humanist prescriptions in his book *Paths of Life: Preface to a World Religion*.

In 1956, Frank was interviewed in the pages of *The Humanist*, where he discussed themes dominant in *HBS*—science's thoroughly naturalistic worldview, the compatibility of modern science and contextual, non-absolute ethics, and essential roles for values in the scientific enterprise. The interviewer, Edwin H. Wilson, joined Frank in appreciating logical empiricism as an ally of the movement ("I knew, through the interest of such men as Rudolf Carnap, Herbert Feigl and Charles Morris, as well as Frank himself," he wrote as he introduced Frank to his readers, "that logical positivism is one of the various philosophical methods that arrives at an ethical position essentially compatible with humanism") and concluded the interview with a ringing endorsement of logical positivism as "essentially humanistic."

As historians of philosophy now acknowledge, however, both philosophical pragmatism as well as public political engagements of the sort that Dewey, Hook, Hutchins, and others routinely undertook in the 1930s and early 40s declined rapidly in the years after the war. With few exceptions, the advent of the cold war and the nation's prosperity (relative to the depression of the 1930s) inaugurated for most scholars a new professionalism that prized internal, scholarly research and debate and that minimized (if not stigmatized) public advocacy and even scholarly engagements with controversial, politically-charged subjects, such as Marxism or atheistic humanism.

Against this backdrop of increasing professionalism and depoliticization, *The Humanistic Background* stands in bold relief and documents Frank's sustained interest in politically perilous topics (such as Marxism and Dialectical

Materialism) and his relative lack of interest in the professional and disciplinary boundaries then growing stronger in the American academy. This includes, for example, boundaries between philosophy and history, literature, religion, and the then-nascent field of Russianism; and, within philosophy, between analytic, continental, pragmatic, and sociological approaches to knowledge.

At a time when most established philosophers of science were narrowing their disciplinary methods and goals, Frank's manuscript glides easily—maddeningly, contemporary readers may find—from discussions of important philosophers (Carnap, Quine, Whitehead, Dewey, Peirce, Neurath, and others) to sequential expositions of subjects like Thomism, Marxism, sociology of knowledge, historicism, theology, and even interpretation of the Bible.

Owing to Frank's multilingualism, *HBS* is also unique for the quotations it contains and the sources it might have brought to wider attention, were it published in its time. These include passages from George Lukacs's *History and Class Consciousness*, an influential book first published in English in 1971. It also includes quotations and summaries of French writers, including Édouard Le Roy, Edmond Goblot, Émile Littré, Henri Bergson, and Abel Rey, as well as quotations from writings by Frank's colleagues Schlick, Hahn, and Neurath that were not yet translated into English. Frank's knowledge of Russian allowed him to translate and quote writings by the Soviet philosophers and physicists Sergei Vavilov, Abraham Ioffe, and Mark Borisovich Mitin. Any reader of *HBS* who did not read Russian would also have learned about Russian university textbooks (scientific and philosophical) and the Great Soviet Encyclopedia.

5. *The Humanistic Background,* Thomas Kuhn and the Socio-Historical Approach to Scientific Knowledge

Sustained attention to the sociology of scientific knowledge in *The Humanistic Background* will legitimately lead to comparisons with Thomas Kuhn's influential and well-known book, *The Structure of Scientific Revolutions*, traditionally credited with inaugurating interest in the historical, sociological, and psychological study of science. This comparison is not abstract, for Frank's mature philosophy of science, his activities on behalf of the unity of science movement, and Frank himself—the friendly, talkative fixture in and around Harvard Yard—belonged to the intellectual landscape in which Kuhn became a historian of science and began to write *Structure*. As an undergraduate, Kuhn arrived at Harvard in 1940, one year after Frank, and studied with him, most likely in the physics department. After completing his Ph.D. in physics, however, Kuhn became a historian of science and, beginning in the late 1940s, taught alongside Frank within President Conant's General Education Program.

Besides their proximity to each other and their shared interests in physics and philosophy, both Frank and Kuhn had important relationships with Conant. Frank, we noted, owed his position at Harvard to Conant, and Kuhn did, as well. Conant and his then-new General Education Program offered Kuhn a welcomed opportunity to leave physics and to teach the history of science. Behind both Frank's and Kuhn's theorizing about science, moreover, lay Conant's book *On Understanding Science*, a book that introduced Kuhn to the case-study approach to teaching history of science that he implemented in *Structure*, and whose central concept of "conceptual schemes" tacitly circulates in both *Structure* and *HBS*.

The path that would lead Kuhn toward writing *Structure* also involved Frank and the unity of science movement. For the book was originally commissioned in the early 1950s as a pamphlet in Neurath's *International Encyclopedia of Unified Science.* Frank was at this time an official editor of the encyclopedia (succeeding Neurath after his death), but no evidence exists showing that Frank and Kuhn discussed his contribution. It was rather Frank's co-editors, Charles Morris and, to a lesser extent, Rudolf Carnap who shepherded *The Structure of Scientific Revolutions* to its eventual publication.

In *Structure* itself there is scant reference to philosophical writings by Frank. There is some evidence, however, that Kuhn formed his ideas partly through collaboration and discussion with Frank. One archival document, for example, is an invitation from Frank to collaborate within Frank's Institute for the Unity of Science on a new

committee to promote and organize research in sociology of science. The committee already had on board two of Frank's close friends, namely the sociologist Robert Merton and the philosopher Ernest Nagel. Frank included a short description of "possible research topics for sociology of science" that includes interpretation of data and the metaphysics behind verbal differences; the relation between conceptual innovations and experiments; scientists' resistance to discoveries; the factor of scientists' age scientific research; and roles and effects of specialization.

Frank's new committee was active for a while and tried to organize actual research, but it is obvious that it was Frank who took these topics seriously and worked on them for years. *HBS* can perhaps be profitably read as the final result of the research done in this 'sociology of science' group from a logical empiricist point of view. However much or little this group may have sparked or influenced Kuhn's developing ideas, given Kuhn's aim in *Structure* to reform, if not dramatically refute, logical positivist orthodoxy, and given Frank's stature at Harvard as a Vienna Circle logical positivist, it seems likely that this encounter guided and encouraged Kuhn as he began to theorize the nature of science as a professional historian of science.

While there is some anecdotal evidence for Frank and Kuhn's personal acquittance as well, more importantly for those who are interested in the origins and germination of Kuhn's influential ideas and, more broadly, the midcentury history of philosophy of science in America, it is *HBS* that may repay careful reading. For there can be little doubt that it illustrates a kind of integrated philosophy-history-sociology of science a decade or more before it became popular in the 1970s.

6. Evaluating *The Humanistic Background* Today

Perhaps the greatest strength of *HBS* is the way Frank's external and internal critiques join and call for a common remedy. In broadest strokes, the reason why complaints and misperceptions about science issuing from dictators (Joseph Stalin), popular theologians (Fulton Sheen), Thomist philosophers (Jacque Maritain), and poets (Archibald MacLeish) were so influential at midcentury—the external critique—had much to do with the enduring formalism and epistemological purism—the internal critique—that helped to professionalize, but publicly marginalize, scientific philosophy in this postwar landscape. In this largest aspect, then, *HBS* can be seen as Frank's attempt to Americanize the philosophical movement he had helped to create in Europe so that it may yet achieve the jointly intellectual and cultural goals of the Enlightenment that it pursued decades before.

That said, *HBS* is no lost masterpiece. However one assesses Frank's programmatic vision for midcentury philosophy of science, the scholarship behind it is occasionally sloppy. At its worst, it sometimes lacks clarity and coherence. Whether or not this is best understood as due to Frank's incipient health problems, his last book occasionally presents the reader with puzzles, false dichotomies, and overstatements—some of which Frank himself confesses are "flippant." Frank's eagerness to reconcile American pragmatism and logical empiricism seems to get the better of him, for example, when he writes, "That our pictures of the physical universe are not based upon intellectual research, but are influenced by our moral and political ideas, has been strongly upheld and lucidly presented by John Dewey". Or, in his enthusiasm for the sociology of science, Frank occasionally loses sight of empiricism: "We have learned, however, that the ultimate decisions between hypotheses in astronomy or physics are determined by sociological arguments".

Many readers may be puzzled not only by the book's unconventional themes and subject matters, but its two-part architecture to which Frank added a relatively short tribute to Albert Einstein that he labeled "Appendix." We present it as the book's "conclusion," even though it does not contain doctrinal summaries and proclamations one might expect to find at the end of a philosophical book about science. For one way to make sense of the Appendix is to suppose that Frank chose not to conclude his book by taking a stand on one or more doctrinal positions or theses. He chose instead to introduce Einstein—as he did in *The Humanist* magazine—as an exemplary philosopher of science whose personal "cosmic religion" draws on the array of epistemological, methodological, and cultural issues covered in *HBS*. The concluding thrust of

Frank's book, that is, is not to embrace a doctrinal position (a la Thomism or dialectical materialism), but to find one's own way in life, or in science, as Einstein had, with an awareness of the intellectual as well as practical resources available within our shared humanistic background.

This is what Paul Feyerabend meant, we suggest, when he recalled that "given the choice of explaining a difficult point by means of a story or of an analytical argument," Frank "would invariably choose the story" (Feyerabend 1995, 103). Frank endorsed stories not because he was unable to produce sophisticated and sharp formal arguments, or because he believed that they are unimportant. He believed rather that the stories we tell ourselves allow better access to science's humanistic background. That background, in turn, guides our understanding of the world, our place in it, and the potentialities it offers. The stories Frank provided and applauded may be sometimes inconsistent, or filled with tensions that pull in different directions. But as his experiences of the Mach-Boltzmann debate and the interpretations of Einstein's theories had taught him, theoretical mosaics can be put together in many different ways.

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

- Lecture, *Pendulum Swings: Models and Metaphors*, Arthur Eisenkraft **HERE**
- Open access book: *The Arsenal of Eighteenth-Century Chemistry: The Laboratories of Antoine Laurent Lavoisier (1743-1794)* Marco Beretta & PaoloBernni, Brill Publishers **HERE**
- History of Science Society (USA) Newsletter, available **HERE**
- Michael Matthews (2022), 'Thomas Kuhn and Science Education. Learning from the Past: The Importance of History and Philosophy of Science' *Science & Education* online **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, web link) to editor: m.matthews@unsw.edu.au

Recent HPS&ST Research Articles

Ahn, E.-J. (2022). Finding the Invisible Workers in Astronomy: The Case of Mount Wilson Observatory, 1900–1930. *Historical Studies in the Natural Sciences*, *52* (5): 555–588. https://doi.org/10.1525/hsns.2022.52.5.555

Binali, T., Chang, CH., Chang, YJ. et al. (2022). High School and College Students' Graph-Interpretation Competence in Scientific and Daily Contexts of Data Visualization. *Sci & Educ*, 1-23. https://doi.org/10.1007/s11191-022-00406-3

Binney, N. (2023). Ludwik Fleck's reasonable relativism about science. *Synthese*, 1-27. https://doi.org/10.1007/s11229-022-04018-w

Canlas, I.P., Molino-Magtolis, J. (2022). Views on the Nature of Science, Beliefs, Trust in the Government, and COVID-19 Pandemic Preventive Behavior among Undergraduate Students. *Int J of Sci and Math Educ*, 1-30. https://doi.org/10.1007/s10763-022-10343-w

Capocci, M. (2023). Human genetics in post-WWII Italy: blood, genes and platforms. *HPLS*, 1-17. https://doi.org/10.1007/s40656-022-00555-2

Casalbuoni, R., Dominici, D. & Mazzoni, M. (2022). A brief history of Florentine physics from the 1920s to the end of the 1960s. *EPJ H*, 1-20. https://doi.org/10.1140/epjh/s13129-022-00048-7

Chi, S., Wang, Z. & Qian, L. (2023). Scientists in the Textbook: Development and Validation of an Analytical Framework for Analyzing

Scientists' Portrayals in an American Chemistry Textbook. *Sci & Educ*, 1-26. https://doi.org/10.1007/s11191-022-00414-3

Demirel, Z.M., Sungur, S. & Çakıroğlu, J. (2022). Science Teachers' Views on the Nature of Science and its Integration into Instruction. *Sci & Educ*, 1-33. https://doi.org/10.1007/s11191-022-00409-0

Forstner, C. (2023). Laboratory Life Instead of Nuclear Weapons: A New Perspective on the German Uranium Club. *Phys. Perspect*., 1-27. https://doi.org/10.1007/s00016-022-00294-8

Giannini, G. (2023). Establishing an experimental agenda at the Accademia del Cimento: Carlo Rinaldini's book lists. *Annals of Science*. https://doi.org/10.1080/00033790.2023.2168060

Guzzardi, L. (2022). Epistemology in Practice: Ernst Mach's Experiments on Shock Waves and The Place of Philosophy. *J Gen Philos Sci*, 1-20. https://doi.org/10.1007/s10838-022-09602-9

Hamza, K., Wojcik, A., Arvanitis, L., Haglund, K, Lundegård, I., & Schenk, L. (2022). Nature of science in students' discussions on disagreement between scientists following a narrative about health effects of the Fukushima Daiichi accident. *International Journal of Science Education*, 1-22.

Izquierdo-Acebes, E., Taber, K.S. (2023). Secondary Science Teachers' Instructional Strategies for Promoting the Construction of Scientific Explanations. *Sci & Educ*, 1-47. https://doi.org/10.1007/s11191-022-00412-5

Jack, B.M., Hong, ZR., Lin, Hs. et al. (2022). Ecological Stimuli Predicting High School Students' Genuine Interest in Socio-Scientific Issues. *Sci & Educ*, 1-21. https://doi.org/10.1007/s11191-022-00413-4

Matthews, M.R. (2022). Thomas Kuhn and Science Education: Learning from the Past and the Importance of History and Philosophy of Science. *Sci & Educ*, 1-70. https://doi.org/10.1007/s11191-022-00408-1

Miśkowiec, P. (2022). Name game: the naming history of the chemical elements—part 1—from antiquity till the end of 18th century. *Found Chem*, 1-23. https://doi.org/10.1007/s10698-022-09448-5

Miśkowiec, P. (2022). Name game: the naming history of the chemical elements: part 2—turbulent nineteenth century. *Found Chem*, 1-20. https://doi.org/10.1007/s10698-022-09451-w

Miśkowiec, P. (2022). Name game: the naming history of the chemical elements—part 3—rivalry of scientists in the twentieth and twenty-first centuries. *Found Chem*, 1-17. https://doi.org/10.1007/s10698-022-09452-9

Park, W., Erduran, S., Song, J., & Kim, M. (2022) "It's a lesson with no correct answer": design issues in preservice teachers' use of history of science for lesson planning. *International Journal of Science Education*, 1-24 https://doi.org/10.1080/09500693.2022.2154132

Plummer, J. D., & Ricketts, A, (2022) Preschool-age children's early steps towards evidence-based explanations and modelling practices. *International Journal of Science Education*. https://doi.org/10.1080/09500693.2022.2151854

Raza, K., Li, S. & Chua, C. (2023). A Conceptual Framework on Imaginative Education-Based Engineering Curriculum. *Sci & Educ*, 1-14. https://doi.org/10.1007/s11191-022-00415-2

Schizas, D., Psillos, D., & Stamou, G. (2023) Exploring secondary school biology teachers' conceptions of scientific laws and methods. *International Journal of Science Education*. https://doi.org/10.1080/09500693.2023.2166373

Šmidrkalová, M. (2023) Celebrating the Czechoslovak atom: from 'Atoms for Peace' to Expo 58, Annals of Science. https://doi.org/10.1080/00033790.2022.2164616

Soysal, Y. (2022). Science Teachers' Challenging Questions for Encouraging Students to Think and Speak in Novel Ways. *Sci & Educ*, 1-41. https://doi.org/10.1007/s11191-022-00411-6

Yalçın, V. (2022). Design-Oriented Thinking in STEM education: Exploring the Impact on Preschool Children's Twenty-First-Century Skills. Sci & Educ, 1-22. https://doi.org/10.1007/s11191-022-00410-7

Zetterqvist, A., & Bach, F. (2023) Epistemic knowledge – a vital part of scientific literacy?, *International Journal of Science Education*. https://doi.org/10.1080/09500693.2023.2166372

Zhu, Y., & Tang, A. (2023) An analysis of the nature of science represented in Chinese middle school chemistry textbooks. *International Journal of Science Education*. Doi: https://doi.org/10.1080/09500693.2022.2160939

Zummo, L. (2022). Climate Change and the Social World: Discourse Analysis of Students' Intuitive Understandings. *Sci & Educ*, 1-20. https://doi.org/10.1007/s11191-022-00416-1

Recent HPS&ST Related Books

Andersen, H. K., & Mitchell, S.D. (Eds.) (2023). *The Pragmatist Challenge: Pragmatist Metaphysics for Philosophy of Science*. Oxford, UK: Oxford University Press. ISBN: 9780198805458

"*The Pragmatist Challenge* lays out a programmatic view for taking a pragmatist approach to topics in philosophy of science and metaphysics. Pragmatism involves a collection of specific views as well as comprising a general approach that can be applied to multiple topics. For topics at the intersection of philosophy of science and metaphysics, pragmatism as explored in this volume is an effective way to take entrenched debates and re-frame them in ways that move past old dichotomies and offer more fruitful paths forward. Each chapter explores a dual vision of pragmatism: specific pragmatist views are developed, demonstrating how to take a distinctively pragmatist approach to some particular issue or subfield; and the general shape of what it means to take a pragmatist approach is elucidated as well. The chapters thus tend to be synoptic in scope. Collectively, they offer a new approach that can be taken up in constructively reframing other discussions, ready to be applied to new specific topics.

"Pragmatism is an especially potent tool that sits at the interface between methodological and applied questions coming directly from sciences, and the underlying ontological or metaphysical commitments that are implied by or support the methodological discussions. The goal of the volume is to articulate a variety of ways to be a pragmatist without having to commit to a single specific set of -isms in order to make use of it, while highlighting the common themes that manifest across different discussions. The chapters offer a heterogenous yet programmatic approach to pragmatism." (From the Publishers)

More information HERE

Anstey, P., & Vanzo, A. (2023). *Experimental Philosophy and the Origins of Empiricism*. Cambridge: Cambridge University Press. ISBN: 9781009030236

"The emergence of experimental philosophy was one of the most significant developments in the early modern period. However, it is often overlooked in modern scholarship, despite being associated with leading figures such as Francis Bacon, Robert Boyle, Isaac Newton, Jean Le Rond d'Alembert, David Hume and Christian Wolff. Ranging from the early Royal Society of London in the seventeenth century to the uptake of experimental philosophy in Paris and Berlin in the eighteenth, this book provides new terms of reference for understanding early modern philosophy and science, and its eventual eclipse in the shadow of post-Kantian notions of empiricism and rationalism. *Experimental Philosophy and the Origins of Empiricism* is an integrated history of early modern experimental philosophy which challenges the rationalism and empiricism historiography that has dominated Anglophone history of philosophy for more than a century." (From the Publishers)

More information HERE

Bowman, D., Ludlow, K., & Johnson, W.G. (Eds.) (2023). *Reproduction Reborn: How Science, Ethics, and Law Shape Mitochondrial Replacement Therapies*. Oxford, UK: Oxford University Press. ISBN: 9780197616208

"Advances in assisted reproductive technologies have sparked global policy debates since the birth of the first so-called "test tube baby" in 1978. Today, mitochondrial replacement therapies represent the most recent advancement in assisted reproductive technologies, allowing some women with

mitochondrial diseases to birth babies without those diseases. In the past decade, mitochondrial replacement therapies have captured public sentiment, reigniting debates around social views of reproductive rights and the appropriate legal and political response.

"Reproduction Reborn guides readers through the history and science of mitochondrial replacement therapies and the various attempts to control them. Leading experts from medicine, genetics, ethics, law, and policy explore the influence of public debate on the evolving shape of these technologies and their subsequent regulation. They highlight case studies from both developed and developing countries across the globe, including recent legislation in Australia and China. They further identify the ethical, legal, and societal norms that need to be addressed by policymakers and communities as more and more people seek to gain access to these treatments. Given the importance of reproduction in family life and cultural identity, clinicians and policymakers must understand how regulatory regimes around mitochondrial replacement therapies have evolved to illuminate the processes and challenges of governing reproduction in a fast-moving world.

"Informative and global in scope, *Reproduction Reborn* explores how advancements in assisted reproductive technologies challenge core values surrounding the rights and responsibilities of modern-day family units." (From the Publishers)

More information HERE

Gray, J. (2023). *Henri Poincaré: A Scientific Biography*. Princeton, NJ: Princeton University Press. ISBN: 9780691242033

"Henri Poincaré (1854–1912) was not just one of the most inventive, versatile, and productive mathematicians of all time—he was also a leading physicist who almost won a Nobel Prize for physics and a prominent philosopher of science whose fresh and surprising essays are still in print a century later. The first in-depth and comprehensive look at his many accomplishments, *Henri Poincaré* explores all the fields that Poincaré touched, the debates sparked by his original investigations, and how his discoveries still contribute to society today.

"Math historian Jeremy Gray shows that Poincaré's influence was wide-ranging and permanent. His novel interpretation of non-Euclidean geometry challenged contemporary ideas about space, stirred heated discussion, and led to flourishing research. His work in topology began the modern study of the subject, recently highlighted by the successful resolution of the famous Poincaré conjecture. And Poincaré's reformulation of celestial mechanics and discovery of chaotic motion started the modern theory of dynamical systems. In physics, his insights on the Lorentz group preceded Einstein's, and he was the first to indicate that space and time might be fundamentally atomic. Poincaré the public intellectual did not shy away from scientific controversy, and he defended mathematics against the attacks of logicians such as Bertrand Russell, opposed the views of Catholic apologists, and served as an expert witness in probability for the notorious Dreyfus case that polarized France.

"Richly informed by letters and documents, *Henri Poincaré* demonstrates how one man's work revolutionized math, science, and the greater world." (From the Publishers)

More information HERE

Gribenski, F. (2023). *Tuning the World: The Rise of 440 Hertz in Music, Science, and Politics, 1859–1955*. Chicago, IL: The University of Chicago Press. ISBN: 9780226823263

"Now commonly accepted as the point of reference for musicians in the Western world, A 440 hertz only became the standard pitch during an international conference held in 1939. The adoption of this norm was the result of decades of negotiations between countries, involving a diverse group of performers, composers, diplomats, physicists, and sound engineers. Although there is widespread awareness of the variability of musical pitches over time, as attested by the use of lower frequencies to perform early music repertoires, no study has fully explained the invention of our current concert pitch. In this book, Fanny

Gribenski draws on a rich variety of previously unexplored archival sources and a unique combination of musicological perspectives, transnational history, and science studies to tell the unknown story of how A 440 became the global norm. *Tuning the World* demonstrates the aesthetic, scientific, industrial, and political contingencies underlying the construction of one of the most "natural" objects of contemporary musical performance and shows how this century-old effort was ultimately determined by the influence of a few powerful nations."

More information HERE

Kitcher, P. (2023). *What's the Use of Philosophy?* Oxford, UK: Oxford University Press. ISBN: 9780197657249

"*What's the Use of Philosophy?* Philip Kitcher here grapples with an essential philosophical question: what the point of philosophy is, and what it should and can be.

"Kitcher's portrait of the discipline is not a familiar defense of the importance of philosophy or the humanities writ large. Rather, he is deeply critical of philosophy as it is practiced today, a practice focused on narrow technical questions that are far removed from the concerns of human life. He provides a penetrating diagnosis of why exactly contemporary philosophy has come to suffer this crisis, showing how it suffers from various syndromes that continue to push it further into irrelevance. Then, taking up ideas from William James and John Dewey, Kitcher provides a positive roadmap for the future of philosophy: first, as a discipline that can provide clarity to other kinds of human inquiry, such as religion or science; and second, bringing order to people's notions of the world, dispelling confusion in favor of clarity, and helping us think through our biggest human questions and dilemmas. Kitcher concludes with a letter to young philosophers who wonder how they can align their aspirations with the hyper-professionalism expected of them." (From the Publishers)

More information HERE

Li, J.J. (2023). *Conquest of Invisible Enemies: A Human History of Antiviral Drugs*. Oxford, UK: Oxford University Press. ISBN: 9780197609859

Public response to the COVID-19 pandemic has demonstrated that misinformation about viruses is widespread. Vaccine skepticism is rampant, and many people have been quick to accept bogus claims unsupported by science. In his latest book, Jie Jack Li sets the record straight by revealing the science and history behind antiviral drugs.

"*Conquest of Invisible Enemies: A Human History of Antiviral Drugs* guides readers through the history of viruses, vaccinations, and treatments. Readers learn about the discovery of viruses and diseases, such as HIV/AIDS, hepatitis, influenza, and SARS-CoV-2 (COVID-19). The first chapter takes an expansive look at how viruses have shaped human history. Subsequent chapters narrow in on specific viruses, diseases, and drug treatments. For example, chapter four, on influenza, looks at the 1918 Spanish flu pandemic, the history of vaccination efforts, and influenza drugs and vaccines today. Chapter five, on coronaviruses, considers drug treatments for SARS, MERS, and SARS-CoV-2. It also discusses the development of COVID-19 vaccines and drugs.

"*Conquest of Invisible Enemies: A Human History of Antiviral Drugs* focuses on the human drama behind drug discovery. Written in an engaging and accessible style, Li's timely book dispels common misconceptions about viruses and treatments and places the COVID-19 pandemic in historical context." (From the Publishers)

More information HERE

Loewer, B., Weslake, B., & Winsberg, E. (Eds.) (2023). *The Probability Map of the Universe: Essays on David Albert's Time and Chance*. Cambridge, MA: Harvard University Press. ISBN 9780674967878

"In the twenty-odd years since its publication, David Albert's *Time and Chance* has been recognized as one of the most significant

contemporary contributions to the philosophy of science. Here, philosophers and physicists explore the implications of Albert's arguments and debate his solutions to some of the most intractable problems in theoretical physics.

"Albert has attempted to make sense of the tension between our best scientific pictures of the fundamental physical structure of the world and our everyday empirical experience of that world. In particular, he is concerned with problems arising from causality and the direction of time: defying common sense, almost all our basic scientific ideas suggest that whatever can happen can just as naturally happen in reverse. Focusing on Newtonian mechanics, Albert provides a systematic account of the temporal irreversibility of the Second Law of Thermodynamics, of the asymmetries in our epistemic access to the past and the future, and of our conviction that by acting now we can affect the future but not the past. He also generalizes the Newtonian picture to the quantum-mechanical case and suggests a deep potential connection between the problem of the direction of time and the quantum-mechanical measurement problem.

"The essays included in *The Probability Map of the Universe* develop, explore, and critique this account, while Albert himself replies. The result is an insightful discussion of the foundations of statistical mechanics and its relation to cosmology, the direction of time, and the metaphysical nature of laws and objective probability. (From he Publishers)

More information HERE

Maddy, P. (2023). *A Plea for Natural Philosophy. And Other Essays*. Oxford, UK: Oxford University Press. ISBN: 9780197508855

"The philosopher Penelope Maddy is well-known for her pursuit of 'Second Philosophy', a form of naturalism that sees the methods of philosophy as indistinguishable from those of the empirical sciences. This volume collects eleven of her recent essays (five new and six reprinted), exploring a wide range of philosophical topics—from methodology, epistemology, and the philosophy of science, to the philosophies of logic, arithmetic, and higher mathematics. Though the topics vary widely, each essay bears in one way or another on the description, exploration, or application of Second Philosophy, revealing the underlying systematic character of Maddy's thought.

"The title essay traces the source of second-philosophical thinking to the 'natural philosophy' of the early modern period, when 'science' and 'philosophy' weren't separate disciplines; a companion essay, drawing second-philosophical morals for the realism/instrumentalism debate in the philosophy of science rounds out the opening section on philosophical method. The second section, on external world skepticism, is largely historical: an essay comparing the naturalistic credentials of Hume and Reid, then one each on Moore and Wittgenstein. A second-philosophical examination of debates over truth and reference, starring J. L. Austin, opens the section on language and logic, followed by a broad-brush description of historical landmarks in the philosophy of logic and an executive summary of the Second Philosopher's view. The concluding section on mathematics begins with an essay addressed to undergraduates on the ontology of number and another assessing the bearing of contemporary developmental psychology on the philosophies of logic and arithmetic. The concluding essay is an attempt to revive the often-ridiculed if-thenist position in the philosophy of mathematics.

"Maddy's second-philosophical essays offer new insight into long-standing questions in the philosophy of science, epistemology, the philosophies of language, logic, mathematics-all with an eye to the methodological themes that connect them." /From the Publisher)

More information HERE

Morel, T. (2022). *Underground Mathematics: Craft Culture and Knowledge Production in Early Modern Europe*. Cambridge: Cambridge University Press. ISBN: 9781009267274

"Thomas Morel tells the story of subterranean geometry, a forgotten discipline that developed in the silver mines of early modern Europe. Mining and metallurgy were of great

significance to the rulers of early modern Europe, required for the silver bullion that fuelled warfare and numerous other uses. Through seven lively case studies, he illustrates how geometry was used in metallic mines by practitioners using esoteric manuscripts. He describes how an original culture of accuracy and measurement paved the way for technical and scientific innovations, and fruitfully brought together the world of artisans, scholars and courts. Based on a variety of original manuscripts, maps and archive material, Morel recounts how knowledge was crafted and circulated among practitioners in the Holy Roman Empire and beyond. Specific chapters deal with the material culture of surveying, map-making, expertise and the political uses of quantification. By carefully reconstructing the religious, economic and cultural context of mining cities, *Underground Mathematics* contextualizes the rise of numbered information, practical mathematics and quantification in the early modern period." (From the Publishers)

More information HERE

Mukharji, P. B. (2023). *Brown Skins, White Coats: Race Science in India, 1920–66*. Chicago, IL: The University of Chicago Press. ISBN: 9780226823010

"There has been a recent explosion in studies of race science in the twentieth and twenty-first centuries, but most have focused either on Europe or on North America and Australia. In this stirring history, Projit Bihari Mukharji illustrates how India appropriated and repurposed race science to its own ends and argues that these appropriations need to be understood within the national and regional contexts of postcolonial nation-making—not merely as footnotes to a Western history of "normal science."

"The book comprises seven factual chapters operating at distinct levels—conceptual, practical, and cosmological—and eight fictive interchapters, a series of epistolary exchanges between the Bengali author Hemendrakumar Ray (1888–1963) and the protagonist of his dystopian science fiction novel about race, race science, racial improvement, and dehumanization. In this way, Mukharji fills out the historical moment in which the factual narrative unfolded, vividly revealing its moral, affective, political, and intellectual fissures." (From the Publishers)

More information HERE

Regis, E. (2023). *Science, Secrecy, and the Smithsonian: The Strange History of the Pacific Ocean Biological Survey Program*. Oxford, UK: Oxford University Press. ISBN: 9780197520338

"During the 1960s, the Smithsonian Institution undertook a large-scale biological survey of a group of uninhabited tropical islands in the Pacific. It was one of the largest and most sweeping biological survey programs of all time, a six-year-long enterprise during which Smithsonian personnel banded 1.8 million birds, captured live specimens and took blood samples, and catalogued the avian, mammalian, reptile, and plant life of 48 Pacific islands.

"But there was a twist. The study had been initiated, funded, and was overseen by the U.S. Biological Laboratories at Fort Detrick, Maryland. The home of the American biological warfare program. In signing the contract to perform the survey, the Smithsonian became a literal subcontractor to a secret biological warfare project. And by participating in the survey, the Smithsonian scientists were paving the way for top-secret biological warfare tests in the Pacific.

"Critics charged the Smithsonian with having entered into a Faustian bargain that made the institution complicit in the sordid business of biological warfare, a form of combat which, if it were ever put into practice and used against human populations, could cause mass disease, suffering, and death. The Smithsonian had no proper role in any such activities, said the critics, and should never have undertaken the survey.

"Science, Secrecy, and the Smithsonian: The Strange History of the Pacific Ocean Biological Survey *Program* explores the workings of the survey program, places it in its historical context, describes the military tests that

followed, and evaluates the critical objections to the Smithsonian's participation in the project." (From the Publishers)

More information HERE

Rosenkranz, Z. (2023). *The Travel Diaries of Albert Einstein: South America, 1925.* Princeton, NJ: Princeton University Press. ISBN: 9780691201023

"In the spring of 1925, Albert Einstein embarked on an extensive lecture tour of Argentina before continuing on to Uruguay and Brazil. In his travel diary, the preeminent scientist and humanitarian icon recorded his immediate impressions and broader reflections on the people he encountered and the locations he visited. Some of the most confounding passages reveal his uncensored views on his host nations. This edition makes available the complete journal Einstein kept on his three-month journey.

"In these remarkable pages, Einstein enthuses about the stunning vistas of lush vegetation in Rio de Janeiro. His flight in the skies over Buenos Aires thrills him, and he enjoys the cozy atmosphere of Montevideo. He expresses genuine admiration for the Uruguayans, harsh condescension toward the Argentinians, and ambivalent affection for the Brazilians. The illustrious visitor seeks calm refuge on the long ocean voyages, far from the madding crowds of Europe, but the grueling lecture schedule and the adoration of the local masses exhaust him.

"This edition features stunning facsimiles of the diary's pages accompanied by an English translation, an extensive historical introduction, numerous illustrations, and editorial annotations. Supplementary materials include letters, postcards, statements, and speeches as well as a chronology, a bibliography, and an index." (From the Publishers)

More information HERE

Steingart, A. (2023). *Axiomatics: Mathematical Thought and High Modernism*. Chicago, IL: The University of Chicago Press. ISBN: 9780226824208

"Why did abstraction dominate American art, social science, and natural science in the mid-twentieth century? Why, despite opposition, did abstraction and theoretical knowledge flourish across a diverse set of intellectual pursuits during the Cold War? In recovering the centrality of abstraction across a range of modernist projects in the United States, Alma Steingart brings mathematics back into the conversation about midcentury American intellectual thought. The expansion of mathematics in the aftermath of World War II, she demonstrates, was characterized by two opposing tendencies: research in pure mathematics became increasingly abstract and rarified, while research in applied mathematics and mathematical applications grew in prominence as new fields like operations research and game theory brought mathematical knowledge to bear on more domains of knowledge. Both were predicated on the same abstractionist conception of mathematics and were rooted in the same approach: modern axiomatics.

"For American mathematicians, the humanities and the sciences did not compete with one another, but instead were two complementary sides of the same epistemological commitment. Steingart further reveals how this mathematical epistemology influenced the sciences and humanities, particularly the postwar social sciences. As mathematics changed, so did the meaning of mathematization.

"*Axiomatics* focuses on American mathematicians during a transformative time, following a series of controversies among mathematicians about the nature of mathematics as a field of study and as a body of knowledge. The ensuing debates offer a window onto the postwar development of mathematics band Cold War epistemology writ large. As Steingart's history ably demonstrates, mathematics is the social activity in which styles of truth—here, abstraction—become synonymous with ways of knowing." (From the Publishers)

More information HERE

Zadeh, T. (2023). *Wonders and Rarities: The Marvelous Book That Traveled the World and*

Mapped the Cosmos. Cambridge. MA: Harvard University Press. ISBN 9780674258457

"During the thirteenth century, the Persian naturalist and judge Zakariyyāʾ Qazwīnī authored what became one of the most influential works of natural history in the world: *Wonders and Rarities*. Exploring the dazzling movements of the stars above, the strange minutiae of the minerals beneath the earth, and everything in between, Qazwīnī offered a captivating account of the cosmos. With fine paintings and leading science, *Wonders and Rarities* inspired generations as it traveled through madrasas and courts, unveiling the magical powers of nature. Yet after circulating for centuries, first in Arabic and Persian, then in Turkish and Urdu, Qazwīnī's compendium eventually came to stand as a strange, if beautiful, emblem of medieval ignorance.

"Restoring Qazwīnī to his place as a herald of the rare and astonishing, Travis Zadeh dramatically revises the place of wonder in the history of Islamic philosophy, science, and literature. From the Mongol conquests to the rise of European imperialism and Islamic reform, Zadeh shows, wonder provided an enduring way to conceive of the world—at once constituting an affective reaction, an aesthetic stance, a performance of piety, and a cognitive state. Yet through the course of colonial modernity, Qazwīnī's universe of marvels helped advance the notion that Muslims lived in a timeless world of superstition and enchantment, unaware of the western hemisphere or the earth's rotation around the sun.

"Recovering Qazwīnī's ideas and his reception, Zadeh invites us into a forgotten world of thought, where wonder mastered the senses through the power of reason and the pleasure of contemplation." (From the Publishers)

More information HERE

Winther, R. (2022). *Our Genes: A Philosophical Perspective on Human Evolutionary Genomics*. Cambridge: Cambridge University Press. ISBN: 9781316756324

"Situated at the intersection of natural science and philosophy, *Our Genes* explores historical practices, investigates current trends, and imagines future work in genetic research to answer persistent, political questions about human diversity. Readers are guided through fascinating thought experiments, complex measures and metrics, fundamental evolutionary patterns, and in-depth treatment of exciting case studies. The work culminates in a philosophical rationale, based on scientific evidence, for a moderate position about the explanatory power of genes that is often left unarticulated. Simply put, human evolutionary genomics - our genes - can tell us much about who we are as individuals and as collectives. However, while they convey scientific certainty in the popular imagination, genes cannot answer some of our most important questions. Alternating between an up-close and a zoomed-out focus on genes and genomes, individuals and collectives, species and populations, *Our Genes* argues that the answers we seek point to rich, necessary work ahead." (From the Publishers)

More information HERE

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.

Third International Congress on the History of Science in Education, 4-6 September 2023

We are pleased to invite you to save the date for the 3rd International Congress on the History of Science in Education (3CIHCE), taking place at the University of Algarve (UAlg) in Faro, between the **4th and 6th of September 2023**. The Congress is organised by the UAlg in collaboration with the University of Trás-os-Montes and Alto Douro (UTAD), the University of Coimbra (UC) and Higher Education Institutions from Brazil and Spain.

Maintaining the objectives of previous editions, the 3CIHCE aims to bring together researchers, professors and students interested in the history and teaching of Biology, Geology, Chemistry, Physics and Mathematics, as well as Educational Sciences, Engineering, Agricultural Sciences, Pharmacy/Pharmaceutical Sciences, Medicine, Dental Medicine, Veterinary Medicine, Nursing, Biochemistry, Nutrition and Food Sciences, Anthropology, Astronomy, Psychology, Economics, Sociology, Ecology, Cellular and Molecular Biology and Nanosciences, among others, in an enriching and multidisciplinary debate.

The conference is intended for undergraduate, master, and doctoral students, professors of the 1st, 2nd and 3rd cycles of basic education and secondary education, university professors, researchers, and the public, and will be carried out in a hybrid format (face-to-face and videoconference).

We cordially invite you to submit your abstract until **May 31, 2023**, and registration for the congress can be performed until July 31, 2023. The submitted works will be evaluated by the Scientific Committee led by Professor Isilda Rodrigues from UTAD.

Please note that abstracts must contain the title, names of authors and their affiliations, a maximum of 250 words, up to 5 keywords, be written in English and Portuguese, in Arial font, size 11 and with 1.5 line spacing. The website, program and other relevant information will be available soon.

Isilda Teixeira Rodrigues <isilda@utad.pt>

Isilda Teixeira Rodrigues
Education
University of Trás-os-Montes
isilda@utad.pt

Newsletter Assistant Editor (Europe) Required

A Newsletter Assistant Editor (Europe) is sought to better promote information about HPS&ST publications, conferences, activities and research programmes in Europe; to bring the newsletter to the attention of European HPS scholars and science educators; and to seek out European authors for the monthly Opinion Page.

The newsletter serves two communities. First, those historians, philosophers, educators, and teachers interested in the connection of history and philosophy of science to theoretical, curricular, and pedagogical issues that arise in science teaching. Second, philosophers and historians interested in making the teaching of their discipline more engaging, interesting, and effective.

Inquiries, with brief biographical statement, can be made direct to the Editor.

Coming HPS&ST Related Conferences

.

March 2-6, 2023, Philosophy of Education Society (USA), Annual Conference, Chicago
Details **HERE**

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

April 18-21, 2023, NARST Annual Conference, Chicago
Details **HERE**

April 20-21, Conference *Gravitational Constant: From Local to Universal*, St Andrews, Scotland
Details **HERE**
May 5-7, 2023, 'Science, Values and Society', Postgraduate Philosophy Student Conference, Alberta, Canada
Details: **HERE**
June 8-9, 2023, 10th International Philosophy of Medicine Roundtable, Bologna, Italy
Details **HERE**
June 9-11, 2023, Eighth Annual Conference on the History of Recent Social Science, Uppsala, Sweden
Details **HERE**
June 27-30, 2023, ASERA Annual Conference, Cains, Australia
Details **HERE**
July 4-7, 2023, European Society for the History of the Human Sciences, Rome conference
Details **HERE**
July 24-29, 2023, 17th DLMPST Congress, University of Buenos Aires
Information: Pablo Lorenzano, **HERE**
August 9-11, 2023, IHPST-LA regional conference, Porto Alegre, Brazil
Details **HERE**
August 14-18, 2023, International Committee for History of Technology, 50th Conference, Tallinn, Estonia
Details **HERE**
August 29-Sept.3, 2023, ESERA biennial conference, Cappadocia, Turkey
Details **HERE**
September 4-6, 2023, 3rd International Conference on History of Science and Education, Algrave, Portugal.
Details, Isilda Teixeira Rodrigues
September 20-23, 2023, European Philosophy of Science Association (EPSA23), Belgrade, Serbia
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&ST website at: **HERE**

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

HPS&ST NEWSLETTER PERSONNEL

Editor	**Michael Matthews**
Assistant Editor (Publications & Website	**Paulo Maurício**
Regional Assistant Editor (North America)	**Sophia Jeong**
Regional Assistant Editor (Latin America)	**Nathan Lima**
Regional Assistant Editor (Asia)	**Huang Xiao**