Biographies in the History of Physics: Actors, Institutions, and Objects

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Organization: German Physical Society, Division for the History of Physics

PD Dr. habil. Christian Forstner
Goethe-Universität Frankfurt am Main
SFB 1095„Schwächediskurse und Ressourcenregime“
Gräfstraße 78 | 60486 Frankfurt | Postfach 104
Tel: +49 (0) 171 18 262 13
forstner@em.uni-frankfurt.de

Prof. Dr. Dieter Hoffmann
MPI für Wissenschaftsgeschichte
Boltmannstr. 22
14195 Berlin
dh@mpiwg-berlin.mpg.de

Prof. Dr. Mark Walker
Department of History, Union College
807 Union Street
Schenectady, NY,12308
USA
walkerm@union.edu

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Program

TUESDAY MAY 22		
15:00-15:30	Christian Forstner, Dieter Hoffmann, Mark Walker	Welcome
15:30-16:15	Thomas Söderqvist	Autobiography as history, curriculum vitae, or ars moriendi?
16:15-16:45		Coffee Break
16:45-17:30	Joanna Behrmann	Bridging Personal and Professional: Margaret Maltby's Life in Early Twentieth Century Physics
17:30-18:15	Julia Bloemer	The Monastic Natural Philosopher – An Eighteenth Century Scientific Persona
18:15-19:00	Richard Staley	Comment
WEDNESDAY MAY 23		
8:30-9:15	Michael Eckert	Ludwig Prandtl: Pioneer of Fluid Mechanics and Science Manager
9:15-10:00	Vanessa Osganian	Rudolf Tomaschek: An exponent of the '*Deutsche Physik'* movement
10:00-10:30		Coffee Break
10:30-11:15	Amelia Bonea	Microphotography as Transnational Scientific Method: Ruchi Ram Sahni's Radioactivity Research in Germany and Britain
11:15-12:00	Enric Pérez	Erwin Schrödinger in Spain
12:00-12:45	Arne Schirrmacher	Comment
	Lunch Break	
14:30-15:15	Catherine Westfall	Whose Biography Is It Anyway?: The Intersection of Biographies of Institutions, Leaders, and Instruments
15:15-16:00	Roberto Lalli	Institutionalizing Einstein's Theory During the Cold War: Toward a Biography of the

		International Society on General Relativity and Gravitation
16:00-16:30		Coffee Break
16:30-17:15	Raphael Schlattmann	Marxism-Leninism and Relativity: Science and Ideology in Hans-Jürgen Treder's early academic career
17:15-18:00	Falk Müller	Comment
THURSDAY MAY 24		
8:30-9:15	Carsten Reinhardt	A "Biography of the Max Planck Society:" The development of research clusters
9:15-10:00	Eckhard Wallis	Institutional biographies in time and frequency metrology: the case of the French Laboratoire National de Radioélectricité
		Coffee break
10:30-11:15	Jaume Navarro	A biographical sketch of the last days of the ether
11:15-12:00	Markus Ehberger	The Biography of a Concept – The "Birth" of Virtual Particles as a Case Study
12:00-12:45	Friedrich Steinle	Comment
	Lunch Break	
14:30-15:15	Mark Walker	The Biography of the German Atomic Bomb
15:15-16:00	Valentina Roberti	The colour top and the distinction between additive and subtractive colour mixing
	Coffee Break	
16:30-17:15	Daniel Belteki	Lost in the production of time and space: the transformation of the Airy Transit Circle from a working telescope to a museum object
17:15-18:00	Myles Jackson	Comment
	Dinner Break	
20:00-22:00	Dieter Hoffmann	Round table discussion
	Greg Good (AIP)	Biographical Ressources in Archives

	Christian Joas (NBA)	
	Wilhelm Füßl (DMM)	
	Danny Weber (Leopoldina)	
	Karl Grandin (Nobel Archives)	
FRIDAY MAY 25		
8:30-9:15	Peter Heering	The transformation of research experiments into teaching devices
9:15-10:00	Takis Lazos	Scientific instruments turning into toys. From Franklin's palm glass to dipping birds
		Coffee break
10:30-11:15	Johannes Hagmann	Comment
11:15-12:00		Final Discussion

Abstracts

Autobiography as history, curriculum vitae, or ars moriendi?
Thomas Söderqvist, Medical Museion, University of Copenhagen

Biographies and autobiographies/memoirs of scientists are old, well-established and closely related scholarly genres that have undergone a renaisssance in the last decades. But whereas the renewed interest in scientific biography has been accompanied by a scholarly interest in the history and poetics of the genre, including questions concerning its historically shifting aims and genre characteristics, the genre of scientific autobiographies/memoirs has so far received much less scholarly attention. Drawing on my own experiences of autobiographical writing, I will discuss the genre of scientific autobiography/memoirs, with special emphasis on what role such writing can have for scientists and the scientific community today. Are scientific memoirs primarily a source material for the history of science (an ancilla historiae), or do autobiographies of scientists have other important aims as well? Can memoirs serve as case-studies for the philosophy of science? Are autobiographies good material for the public engagement with science? Are they a kind of extended curriculum vitae by which scientists try to secure their reputation and a long article in Wikipedia? Or does memoir writing also provide an opportunity for scientists to reflect upon their life and work, get a perspective on their career, and cope with the anxieties of being increasingly irrelevant and forgotten? And what can younger scientists learn from the existential issues that older scientists are confronted with they look back on their life in science?

Bridging Personal and Professional: Margaret Maltby's Life in Early Twentieth Century Physics
Joanna Behrman, Johns Hopkins University Baltimore, Maryland USA

"What I aspired to be / And am not, comforts me." So wrote Margaret Maltby in a letter to Svente Arrhenius, describing her resolution to remain unmarried and continue research and teaching.
Maltby has usually been studied as one individual among many noteworthy female "firsts." Maltby is best known as one of the first women to earn a B.S. from MIT, the first woman to earn a Ph.D. in physics from any German university, the first woman to be named as a research assistant at the Physikalish-Technische Reichsanstalt, etc. To these "firsts" could be added her long tenure as an influential physics professor at Barnard College in New York City, her activism in the Association of American University Women, or her collaboration with many noted physicists such as Walter Nernst, Friedrich Kohlrausch, and Arthur Webster. Similarly to many historical women in science, she appears in numerous compendia of short biographies, yet deserves further attention as a multifaceted individual, rather than as a statistic. A look into her life reveals a fascinating and self-reflective woman who meditated on gender, research, and the social culture of science.

In those lines pulled from Robert Browning's poem "Rabbi ben Ezra," Maltby expressed her feeling of acceptance, tinged with loss, over her unmarried status. Using previously overlooked letters and personal papers held by her descendants, I will use Maltby as a case study to investigate how women in physics balanced personal and professional lives. I will explore the conflict and contradictions unavoidable for female physicists of the early twentieth century, who encountered barriers whether as part of a scientific couple or as an "unappropriated blessing." Maltby's life gives insight into the difficulties (and occasionally triumphs) of early twentieth century women in physics as she navigated research, teaching, and even unwed motherhood in Germany and the United States. Despite a promising early career, opportunities to do research slipped away for Maltby, and she found partial fulfillment instead in being a mother and mentor for other female scientists.

The Monastic Natural Philosopher – An Eighteenth Century Scientific Persona
Julia Bloemer, LMU Munich

Historical accounts usually present three types of eighteenth century natural philosophers: the university professor, the academy member, and the amateur. One central figure is missing, at least for southern Germany: the monastic scholar.
Instead of focusing on a specific actor, my paper presents the monastic natural philosopher as a scientific persona that emerges in the eighteenth century. This concept – introduced, among others, by Lorraine Daston – establishes an intermediate between individual biography and socio-cultural collective. What were the expectations on a natural philosopher and how could monks realize them within their abbey walls? Benedictines, Augustine Canons, and others aspired to meet the requirements of a scientific role that had been formed outside the monasteries. At the same time they themselves shaped the image of the man of science. Astronomical and meteorological observations led to role conflicts as well as role interactions, thus influencing communication channels and habitual behavior. Based on a case study, I present the characterology of the monastic natural philosopher and argue for its advantageous use in the history of physics. This will lead to a re-evaluation of established narratives about knowledge production and observation practices in the eighteenth century.

Ludwig Prandtl -- Pioneer of Fluid Mechanics and Science Manager
Michael Eckert, Deutsches Museum Munich

Ludwig Prandtl (1875-1953) is celebrated as a pioneer of modern fluid mechanics. Prandtl's boundary layer theory, his mixing length approach in the theory of turbulence and numerous other notions and theories that have been named after him provide evidence for his enduring impact in science and technology. The names of his pupils like Theodore von Kármán, Heinrich Blasius, Walter Tollmien and others speak for his role as founder of an important research school. Furthermore, Prandtl established new institutions, such as the Aerodynamische Versuchsanstalt, and became a sought-after advisor for research policy.

Nevertheless, he characterized himself as unpolitical. Prandtl's biography provides concrete examples that illustrate how science and policy interact -- from the Wilhelmian Empire via the Weimar Republic to Nazi Germany.

Rudolf Tomaschek: An exponent of the 'Deutsche Physik' movement
Vanessa Osganian, LMU Munich

Rudolf Tomaschek's appointment as professor for experimental physics at the TH Munich in 1939 was considered a victory – or at least a reinforcement – for the so-called 'Deutsche Physik' movement. Being a member of this group was the decisive factor for Tomaschek's appointment, both for the TH Munich itself and for the NSDAP. Recent historical research has ascribed to Rudolf Tomaschek a central role regarding this movement as well. But surprisingly, he has never been the object of a detailed study and has only been mentioned occasionally so far.
My talk aims to answer the question of how Tomaschek tried to integrate his scientific work into ideologically influenced physics. On this basis a continuative investigation is concentrated on the people he networked with.
I will show that Rudolf Tomaschek did not dismiss his former beliefs after the so-called 'Munich synod' in 1940. He rather remained rooted in a network of scientists devoting themselves to do some kind of 'völkisch' sciences. What can be observed, however, is that he shifted to other reference people within this network and also tried to maintain the contacts he had outside this 'Deutsche Physik' movement.
Therefore, I will try to open up the category of 'Aryan physics' as such by showing that the networks in which Tomaschek operated were much more complex than the term 'Deutsche Physik' indicates.

Microphotography as Transnational Scientific Method: Ruchi Ram Sahni's Radioactivity Research in Germany and Britain
Amelia Bonea, University of Oxford

This paper uses the career and thought of Indian chemist and physicist Ruchi Ram Sahni (1863-1948), in particular his experiments with microphotography in Karlsruhe and Manchester in 1914, as a lens through which to explore the European and Asian networks that underpinned research on radioactivity during the first two decades of the twentieth century. Born at Dera Ismail Khan (now in Pakistan), Sahni studied physics and chemistry at Government College, Lahore, and Presidency College, Calcutta, before returning to the former institution as a Professor of Science from 1887 until his retirement in 1918. Belonging to the first generation of English-educated Punjabis, he was a pioneer both as a teacher of science and as an institution builder, nowadays remembered, among others, for founding the Punjab Science Institute in 1885.
The paper examines Sahni's intellectual exchanges with a group of radioactivity scientists that revolved around the persona of Nobel Prize winner Ernest Rutherford and included his

students Kasimir Fajans and Suekichi Kinoshita. It reconstructs the transnational networks of collaboration in the field of radioactivity not only from the perspective of Sahni's scientific biography, but also from that of the material culture of nuclear physics, namely the use of microphotography to capture the action of alpha, beta and gamma particles on photographic films. Attempts to render the world of radiation visible drew on a longer tradition of using photography to study radioactivity, including the work of C. T. R. Wilson, the inventor of the cloud chamber, and Suekichi Kinoshita, a former student of Rutherford's and Professor of Physics at Tokyo Imperial University. In 1910, Kinoshita produced the first detailed study of the action of alpha rays on photographic films. His method of counting alpha particles was used and adapted by other European and colonial scientists, including Sahni, who familiarized himself with microphotography in the course of a research visit to Germany and Britain shortly before the outbreak of WWI. The paper evaluates Sahni's radioactivity research against the background of his career as a colonial scientist and the institutional constraints he faced in India as well as the broader intellectual contribution of Asian scientists to the field of radioactivity in the first two decades of the twentieth century.

Erwin Schrödinger in Spain

Enric Pérez, University of Barcelona

I will give an overview of the relation of Erwin Schrödinger with Spain. It is known -although not deeply studied- that the Viennese physicist visited Spain two times, in the years 1934 and 1935. During the first trip he gave a brief course on quantum mechanics at the International University of Santander, in August 1934. Previously, he had attended a meeting of the Spanish Association for the Advancement of Science in Santiago de Compostela. He liked Spain so much that the next year he decided to make a second and longer trip, along with his wife Annie. In addition to deliver three lectures in the National Institute of Physics and Chemistry (the so-called Rockefeller Institute) and another in the Academy of Exact Sciences in Madrid, this time he (they) visited different Spanish cities travelling in their own car. As we can see in the correspondence Schrödinger maintained with the Spanish physicist Blas Cabrera, with whom he established a close friendship, he planned to make a third trip in 1936, but the Spanish Civil war prevented him from doing so. We can also see how seriously he considered to aim to an academic position in Spain and, even, due to the turbulent political situation, in a Latin American country, like Peru.

The core of this research is to study a very interesting and poorly studied episode of the biography of Schrödinger. I will also discuss the physical content of Schrödinger's lectures in Spain, and try to put them in context, especially in relation to his critique to the orthodox interpretation of quantum mechanics, which mainly appeared in the famous cat's paper in Die Naturwissenschaften in 1935.

However, the historical location of this episode also raises interesting questions on the situation of the Spanish scientific institutions during the republican years. This period started in 1931, and the Spanish government fostered scientific research to improve the scientific competence of the country. The creation of the International University in Santander, as well as the invitation to Schrödinger, has to be considered under the light of that spirit.

Whose Biography Is It Anyway?: The Intersection of Biographies of Institutions, Leaders, and Instruments

Catherine Westfall, Michigan State University

This paper will describe my experiences as an in-situ laboratory historian while writing the early history of Fermilab in Illinois and Jefferson Laboratory in Virginia. I will focus in particular on the sometimes productive, sometimes awkward, and always enlightening experience of up-close-and-personal contact with the larger-than-life founding directors of these institutions, Robert Wilson and Hermann Grunder. This work, which straddles the boundary of biography and autobiography, aims to complement my published work on laboratory history to show case the professional dilemmas and opportunities of the laboratory historian and shed new light on how leaders shape institutions. In particular I seek to give a true accounting of my efforts to give a faithful accounting of events that happened where I was alongside the heavy hitters who made it all happen.

Institutionalizing Einstein's Theory During the Cold War: Toward a Biography of the International Society on General Relativity and Gravitation

Roberto Lalli, Max Planck Institute for the History of Science, Berlin

The talk presents a biographical account of the International Committee on General Relativity and Gravitation (ICGRG) from its establishment in 1959 until its transformation into a full-fledged international society with its own, original statute and by-laws in 1974. The biographical approach to studying the activities of the ICGRG sheds new light on the process known as the post-World War II "renaissance" of general relativity. On the one hand, I will argue that the community-building activities in the international arena and their institutional representations were essential element in the process of promoting and developing the field of general relativity, which still occupied a marginal position in the physics landscape when these activities began. On the other hand, it will be shown that these attempts of building an international community of "relativists" were deeply embedded in the political climate of the time and the evolution of the Cold War. As a result, the historical development of the ICGRG was mired in multiple tensions of a surprisingly varied nature, ranging from cultural differences to generational conflicts, from epistemic divisions to political contrasts. The combination of all these different tensions and the efforts to solve them played a fundamental role in the final transformation from the ICGRG into the International Society on General Relativity and Gravitation as well as in shaping the structure itself of the newly established society. The case of the ICGRG provides an occasion to reflect upon the many methodological and conceptual challenges of writing a biography of an international institution of this kind, operating in the international arena during the Cold War and characterized by a spontaneous and unregulated structure.

Marxism-Leninism and Relativity: Science and Ideology in Hans-Jürgen Treder's early academic career

Raphael Schlattmann, TU Berlin

Based on nineteenth-century concepts of physics, Marxism-Leninism was always communicated as a scientific worldview that represented and guaranteed progress, while the integration of fundamental questions raised by relativity and quantum theory led to great difficulties. Basic statements and interpretations of modern physical theories were almost or completely incompatible with the "classics" of materialism. In effect, scientific discussions of these concepts always contained considerable political aspects. To successfully establish the new ideology in East Germany after World War II the philosophical foundations had to be reconciled with recent scientific findings, a task for cadres equally qualified in the sanctioned philosophy and other areas of science, like physics. Denazification and reconstruction of political structures in the post-war years were therefore largely reflected in the transformation of higher education in the SBZ/GDR. The development of a new socialist intelligentsia as the elite and future bearer of the system to be set up received great attention. This translated into specific recruitment policies of students and young scientists by the SMAD which also characterize Hans-Jürgen Treder's academic career. He was a theoretical physicist, scientific organizer and Marxist who's early personal and institutional Sponsorship correlated with his efforts to interpret relativity in terms of dialectic materialism.

A "Biography of the Max Planck Society:" The development of research clusters.

Carsten Reinhardt, University of Bielefeld

The Max Planck Society (MPG) is one of the most important research organizations worldwide. The institutes of the MPG show a broad spectrum of research activities. Nevertheless, we recognize focus areas, while some fields are weakly represented, or not covered at all. In my talk, I will present the concept of research cluster, and will show how the concept works to analyze the history of the MPG in its scientific and political context. The basis of the talk are works undertaken by the program on the history of the MPG (GMPG).

Institutional biographies in time and frequency metrology: the case of the French Laboratoire National de Radioélectricité

Eckhard Wallis, Sorbonne Université, Paris

It has been noted that one strength of a biographical approach in the history of science is its potential to fully bring out social, political – brief: external – dimensions of scientific activity, by understanding "one man in his many contexts"1. In my paper, I propose to analyze the many dimensions of the practice of official time and frequency measurement after World

War II by investigating the trajectory of an institutional actor: the Frequency department of the French Laboratoire National de Radioélectricité between 1945 and 1965.
The Frequency department was the national reference for precise frequency measurement in the radio domain and had close ties to the international Time Bureau at the Paris Observatory. I will present the efforts this department carried out in order to establish itself as a first center of timekeeping with atomic clocks, culminating in the acquisition of the first atomic clock in France and the hosting of a research group working on atomic clocks in 1958 – and their eventual failure with the suppression of the frequency department in its previous form in the mid-1960s.
Based on my study of the LNR case I moreover want to conclude with a reflexion on two methodological points. Firstly, I want to discuss the thesis that official metrology is particularly well-suited for biographical approaches due to the central role of institutions in the establishment, negotiation and control of standards. Secondly, I want to address the difficulty of distinguishing the biography of an institution from a biography of its central actors: The Frequency department is closely tied to the activities of its director Bernard Decaux, to the extent that the end of his tenure eventually sound the death knell of his department. I therefore want to reflect on the question of how to avoid the source bias introduced by the increased visibility of prominent figures and what could be gained through a truly institutional biography.

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1 Terrall, Mary. "Biography as Cultural History of Science." Isis 97, (2006): 306–13.

A biographical sketch of the last days of the ether
Jaume Navarro, University of the Basque Country, Donostia

In the 1920s, an agonising ether made a comeback in the world of physics and the public sphere at large thanks to the emergence of new technologies such as wireless, the relevance of some attacks on relativity and new explorations in the modern arts, among other milieus. In this paper I shall explore the demise of the ether qua epistemic object in the first third of the twentieth century.

The Biography of a Concept – The "Birth" of Virtual Particles as a Case Study
Markus Ehberger, TU Berlin

In the history of science, a biographical approach has not only been applied to persons, material objects, or institutions; the notion of the biography has for example been extended to "scientific objects" (Daston 2000) or "theoretical entities" (Arabatzis 2006). In this contribution, the focus will lie on the formation of the concept of the virtual particle, using it as a case study for probing the historiographical approach of a concept- biography.
Some steps in the development of the concept of the virtual particle, like the inception of the intermediate states by Dirac in 1927 or their application in the study of light by light scattering by Hans Euler in 1935/36, will be presented, taking the theoretical concepts as protagonists in the story. Using the historic material as a basis, the metaphorical use of

terms like “birth”, “character”, or “identity” shall be judged, as well as the benefits of a biographical approach in revealing aspects of the history of a concept, that can be identified through the lenses of the biographer, but which might have otherwise slipped the attention of the historian of science.

The Biography of the German Atomic Bomb
Mark Walker, Union College
This talk will tell the life history of the German atomic bomb, which passed through several stages and often meant different things to different people: (1) beginning through the experimental discovery of nuclear fission by Otto Hahn and Fritz Strassmann and its theoretical explanation, first of all by Lise Meitner and Otto Frisch; (2) potential during the Blitzkrieg phase of the war, when German scientists led by Werner Heisenberg and Paul Harteck explored the possibilities of nuclear reactors and isotope separation; (3) probability, when Heisenberg and Carl Friedrich von Weizsäcker saw by the end of 1941 that atomic bombs were probably feasible and represented both a possible boon and threat; (4) scapegoat used by Samuel Goudsmit after the war to criticize German science’s collaboration with National Socialism; (5) defense by Heisenberg after the war to justify what he and his colleagues did during the Third Reich; (6) rehabilitation by Robert Jungk’s book *Brighter than a Thousand Suns* (1956/1958); and (7) political vehicle for Weizsäcker through the Göttingen Manifesto and his essay “Living with the Bomb.”

The colour top and the distinction between additive and subtractive colour mixing
Valentina Roberti, University of Padova

A brief overview of the history of the colour top as research instrument will be provided. Specific focus will be given to James Clerk Maxwell’s experiments, that allowed him to obtain the first colorimetric equations using this simple device, and to Hermann von Helmholtz’s use of the top to exhibit in a very simple and clear manner the difference between additive and subtractive colour mixture.
As a matter of fact, among Maxwell’s and Helmholtz’s key contributions to the theory of colour it is worth mentioning that they clarified, for the first time and independently from one another, the distinction between additive and subtractive colour mixing, eliminating definitively Newton’s confusion between optical and pigment mixture of colours.
A few words will be also dedicated to Maxwell’s colour box, an experimental device built exploiting Newton’s crucial experiences with lenses, prisms and mirrors in order to obtain more accurate and reproducible colour equations and that could show directly the effect of mixing different coloured lights.
Although nowadays there is no practical application of disk mixture left, the colour top allows us to combine simplicity with effectiveness to exhibit the distinction between additive and subtractive colour mixture, that renders it particularly suited therefore to become a valid teaching instrument.

Scientific instruments turning into toys. From Franklin's palm glass to dipping birds.
Takis Lazos, University of Athens, Greece

This paper presents the circular route that began with an invention of Franklin and resulted in modern toys through intermediate stops in significant scientific instruments of basic research and instruments for teaching physics.
Benjamin Franklin invented in 1768 something that lied on the borderline between scientific instruments and toys. The Franklin's palm glass consists of a closed and airtight U-shaped glass tube ending in two spheres. Its interior is filled at about one third of its volume with a quantity of volatile liquid such as ethanol. When someone holds the one sphere inside his palm the temperature of the liquid increases and the pressure of its vapors inside the sphere increases as well. As a result, the liquid starts to move towards the second sphere, where the pressure is lower.
Almost 40 years later, Sir John Leslie and Benjamin Thomson, Count Rumford built almost simultaneously (1803) two similar instruments. These were the first differential thermometers. The intense controversy that erupted between the two scientists about the paternity of the instrument continues somehow till today, since there is no about the right name of these instruments.
Nevertheless, the structure of the two thermometers is almost the same and in their basic part they strongly resemble the Franklin's palm glass. They consist of a U-shaped glass tube, the two ends of which end in glass spheres. The spheres contain air while the tube is somewhat liquid. Depending on the manufacturer, the liquid may be mercury, alcohol or water, while Leslie uses sulfuric acid colored red. The whole layout is closed and does not communicate with the atmosphere. Also, there is a temperature scale. The difference between the two thermometers is that on the Leslie thermometer the horizontal part of the U is small and the temperature scale is located on one vertical leg (in some variations there is a scale in each of the vertical legs) while in the Rumford thermometer the horizontal part of U is larger and it bears the temperature scale.
Differential thermometers were strongly used, along with Leslie cube, in the frontier of research. Specifically, they played a significant role in the study of the propagation of "thermal" radiation in the first decades of the 19th century. The invention of the thermopile by the Italian physicist Leopoldo Nobili in 1835 put them in the margins of research, although they continued to be used in education due to their low cost, ease of operation and supervisory nature.
During the 20th century, the basic idea behind their operation reappeared in the form of toys like hand boiler and dipping birds. The seeming simplicity and the elegance of these toys can be a strong tool in physics education.

The transformation of research experiments into teaching devices
Peter Heering, Europa Universität Flensburg

Quite a number of experiments from the history of physics are even nowadays relevant in teaching contexts – be that at school or university level. Most of these experiments are

mentioned in textbooks and are dealt with in a more or less theoretical manner. However, there are also some teaching devices which refer explicitly to historical experiments, be that Coulomb's torsion balance or Millikan's oil drop experiment which both are still found today in many labs and even still can be purchased from major companies.
However, one may ask what these instruments have in common with the ones that were initially used in research, and, possibly more interesting, what are the differences between these devices. Likewise, one may ask what the relation between the practice with the research instrument and the teaching device is. In comparing cases where studies on research instruments and the related practice were made with the replication method and the respective teaching devices, the potential of such a comparison becomes evident. This comparison does not just help to develop a better understanding of the teaching devices, but also helps in reflecting on the development in case of the research instruments.

Lost in the production of time and space: the transformation of the Airy Transit Circle from a working telescope to a museum object

Daniel Belteki, University of Kent

The Airy Transit Circle of the Royal Observatory at Greenwich is best known for being the instrument that was the headquarter of British time and space. It not only defined the Greenwich Prime Meridian, but also served as the starting point for the production of Greenwich Time.
While these narratives are widely promoted among the exhibitions and guidebooks of the Royal Museums Greenwich (which the Observatory today forms part of), its contribution to the history of physics has been relatively overlooked. For instance, the exhibitions and the museum publications mention neither Karl Pearson utilising the production and dissemination of time at the Royal Observatory to illustrate his point about relativity, nor Simon Newcomb analysing data supplied by the same instrument to determine Mercury's rate of precession. The paper attempts to reconstruct this lost narrative of the Transit Circle and highlight how the instrument contributed to astronomical developments by providing "big data" to nineteenth-century astronomers.
In order to reconstruct this overlooked narrative, the paper begins by providing an overview of the discord between the ways in which the Transit Circle was communicated to the public and to the astronomical community during the instrument's "working life". While the public was told about the practical applications of the instrument (e.g. Longitude Zero, or Greenwich Time), the astronomical community engaged in theoretical debates about instrumental errors in connection to providing ever more precise big data to astronomers. The paper then demonstrates how during the transformation of the instrument into a museum object only the practical application of the instrument was emphasised by the newly appointed museum staff, which led to the loss of scientific narrative that remained nurtured only by the astronomers who no longer shaped the Observatory as a museum.