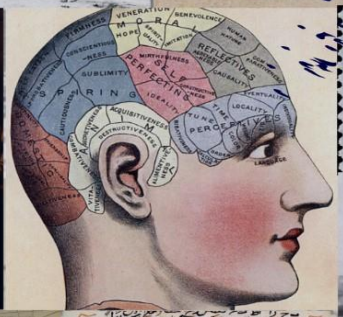





EUROPEAN SOCIETY FOR THE HISTORY OF SCIENCE

2nd EARLY CAREER SCHOLARS CONFERENCE

September 20-22nd, 2021

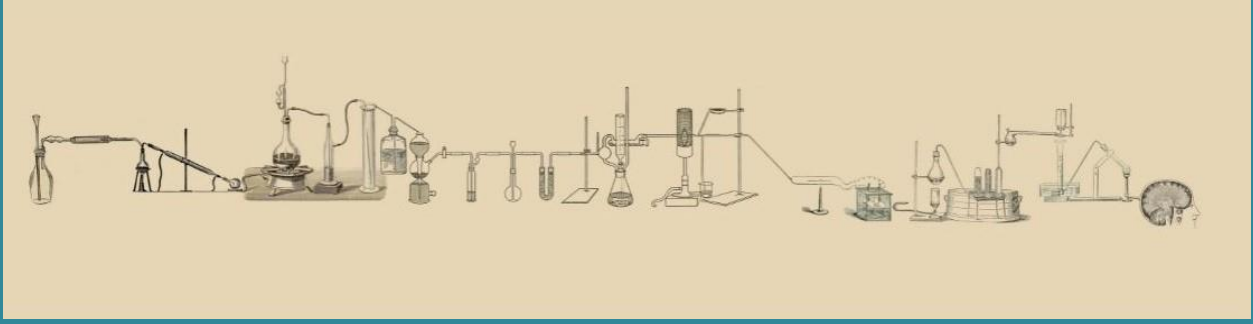
Science and its Enemies: Exploring Conflicts and Alliances in the History of Science

BOOK OF ABSTRACTS

ΕΘΝΙΚΟ ΙΔΡΥΜΑ ΕΡΕΥΝΩΝ
National Hellenic Research Foundation

HELLENIC REPUBLIC
National and Kapodistrian University of Athens
EST. 1837

Content



Welcome Message

Dear colleagues,

After our successful first meeting in Paris in 2019, we are very excited to announce the opening of the second Early Career Scholars Conference of the European Society for the History of Science (ESHS). Our network was founded to better integrate graduate students and early career researchers in the activities of the Society and in the field of History of Science. Although the second conference was initially planned to happen in Athens; due to the development of the SARS-CoV-2 pandemic, and the uncertainties related to it, the conference will be held online. However, it won't be a virtual conference like all of the others: we will try our best to organize a virtual conference that is as sociable and entertaining as possible.

As we received an impressive number of abstracts from all around the world, we are mostly delighted that our three days agenda powerfully covers a great array of themes and topics related to the history of science.

Our conference would not be possible without the support of several scholars and institutions. We are especially grateful for the financial support given by the European Society for the History of Science, which enables us to continue to strengthen or network. We would also like to thank the National Hellenic Research Foundation and the Kapodistrian University of Athens for offering technical support. We are most grateful to the keynote speakers Theodore Arabatzis, Maria Paula Diogo, and Kostas Gavroglu for accepting our invitation and sharing with us their latest research projects. Finally, we would like to express our gratitude to Mathieu Husson from the board of the ESHS for his support throughout the organizational process and the editors of *Centaurus* for continuing to provide us the mentorship program.

This conference is meant for us young scholars to meet, connect and exchange ideas to support the postgraduate community of the History of Sciences. We wish you all an exciting event!

The Organizing Committee

Beatriz Martínez-Rius, Benjamin Wilck, Jelena Stanulovic, Grigoris Panoutsopoulos, Cosmin Koszor-Codrea

Social Media and Zoom Guidelines

The European Society of the History of Sciences Young Scholars Network welcomes and supports people of all backgrounds and identities. This includes – but is not limited to – members of any ethnicity, nation, culture, social background, immigration status, sexual orientation, gender identity, age, size, family status, religious and political belief, as well as mental and physical ability. We strive to provide a welcoming and inspiring environment for all.

To provide a safe and productive conference for all participants, we expect everybody to act appropriately, which includes conference-related social events and social media comments. The organizing committee will use social media to accompany the conference to inform people who are not able to attend the conference or parallel sessions.

We encourage participants to do likewise to engage with the talks. To ensure that the conference social media use is an affirmative and positive experience for all participants and non-participants we request social media users to follow our guidelines:

First and foremost: Think before you tweet, be respectful and polite and keep in mind that a tweet is not suited for expanding criticism. Keep in mind the Golden Rule: Tweet unto others as you would have them tweet unto you.

Be generous with compliments and feel free to connect with your colleagues' work by sharing interesting links to other projects and sources.

Questions, comments and constructive feedback should be made on social media with professionalism and scholarly values of intellectual collegiality and accuracy. Always avoid misrepresentation and appropriation. Your questions and comments should always be related to the content of the presentation, not to the person presenting.

Please respect the presenter's wishes. Do not tweet, if they ask their paper not to be posted about, for example, because of unpublished results. Please also respect if a presenter does not want to have taken pictures from their slides or themselves.

If you have a Twitter handle or want to use a hashtag for your presentation, put it on your first slide. If you want to tweet on other presentations, always refer to the name and – if possible – the hashtag to make them easily findable. Also use the Hashtag of the conference #eshsys2021.

These guidelines serve to extend the communication at our conference and beneath in a constructive and openly inspiring way. If you notice inappropriate social media use, please do not engage at all with such tweets and inform a member of the ESHS Young Scholars

Guidelines for participants

The ESHS Early Career Conference is organized by early career researchers, for early career researchers.

Each session is designed to create a friendly environment, where we can present our respective research, open new questions, and meet other people.

We welcome all kinds of presentation – from finished papers to work in progress.

What's most important is to share it with the community of early career researchers, and to enjoy the meeting!

Time

Each presentation should not exceed 15 minutes.

Please bear this time in mind, as extending your talk won't make it better, and it would disadvantage the other presenters of your panel.

It is better to present a clear and direct point, rather than attempting to fit everything in your talk. Your audience will appreciate it.

Panels

Each panel is normally constituted by 3 or 4 speakers, plus one chair.

Presentations will go first, and then the chair will open the floor for a collective Q&A (30 minutes), where attendants have the opportunity to ask questions about the individual talks.

If you are presenting yourself, please access your virtual room 10 minutes before the session starts. If you are attending as a listener, please try to enter the room at least a few minutes before the session starts.

Performance

Feel free to use a PowerPoint presentation. Have it ready before your talk and make sure it works.

Make sure you speak clearly and at a peace that allows listeners to keep up with you. Remember that most of the audience is not a native English-speaker; thus, try to make your talk understandable for everybody.

We recommend presenters to avoid reading their presentations. Since in virtual conferences we are devoid of non-verbal forms of communication (i.e. body position, eye contact, etc.), your major way of engaging with your audience is through your tone of voice and pace of speech. Reading usually renders talks monotonous, which can be tedious for listeners.

If your presentation includes sensitive material, please warn your audience about it in advance.

Attendants

Attendants are invited to ask questions at the end of every session, whether through the Zoom chat or directly.

Please bear in mind that, when you present, you would like listeners to engage with your topic, suggest new ideas or approaches, or open new questions. Please behave in the same way – that will make the conference more lively and interesting!

We also invite attendants to turn on their webcams during the introduction of each session, and during the Q&A. This is completely voluntary, but for presenters is always nicer to see friendly and attentive faces than to speak to black squares.

Zoom Technicalities

We are using Zoom.

Note that all hours are in EET (Athens time). 10 am in Athens is 9 am in Berlin, and 8 am in London.

The conference will take place in a single Zoom session (click here to access). Four breakout rooms are open for concurrent panels (Room 1, Room 2, Room 3), plus one room for coffee time and social activities.

Once in the Zoom session, you can access the room you wish to attend by clicking on the breakout rooms button (at the bottom of the screen), and cliking “join” next to the room’s title. Our team will be available for help via the Zoom meeting’s chat.Please mute yourself unless you are asking, or discussing, a question, but feel free to turn on your webcam.

If your internet connection is unstable, we strongly recommend using an ethernet cable.

Also, we recommend using a microphone during your talk.

And last, but not least: we encourage all of you to actively participate in the Discord group!

Keynote Speakers

Day 1. Monday, September 20th, 18.00:

Theodore Arabatzis (National and Kapodistrian University of Athens)

History of Science in the Age of Post-Truth

Theodore Arabatzis is Professor of History and Philosophy of Science at the National and Kapodistrian University of Athens, and president of the European Society for the History of Science (2020–2022). He is the author of *Representing Electrons: A Biographical Approach to Theoretical Entities* (University of Chicago Press, 2006), co-editor of Kuhn's *The Structure of Scientific Revolutions Revisited* (Routledge, 2012), and co-editor of *Relocating the History of Science: Essays in Honor of Kostas Gavroglu* (Springer, 2015). He has served as co-editor of the journal Metascience (2010–2014). In 2017 he was awarded the IUHPST Essay Prize in History and Philosophy of Science by the International Union of History and Philosophy of Science and Technology, for his essay entitled "What's in it for the historian of science? Reflections on the value of philosophy of science for history of science". In May 2019 he was elected corresponding member of the International Academy of the History of Science.

http://scholar.uoa.gr/tarabatz/home

Day 2. Tuesday, September 21st, 18.00:

Maria Paula de Diogo (NOVA University of Lisbon)

Time, Crisis and the Anthropocene

Maria Paula Diogo is Full Professor of History of Technology at the Department of Applied Social Sciences, Faculty of Sciences and Technology, NOVA University of Lisbon (FCT NOVA), and coordinator of the Interuniversity Centre for the History of Science and Technology (CIUHCT). She is co-author of *Inventing a European Nation: Engineers for Portugal, from Baroque to Fascism* (Morgan & Claypool, 2020) and of Europeans Globalizing: Mapping, Exploiting, Exchanging (Palgrave Macmillan, 2016). She pioneered the field of History of Technology in Portugal and has written extensively on the history of engineering in Portugal and its agency in the Portuguese empire during the 19th century. She holds leadership positions in several research projects and is a member of the main international research networks and scientific societies.
https://www.cienciavitae.pt/portal/E412-2EDB-3AAD

Day 3. Wednesday, September 22nd, 18.00:

Kostas Gavroglu (National and Kapodistrian University of Athens)

The dire consequences of constructing utopias

Kostas Gavroglu is Professor of History of Science at the National and Kapodistrian University of Athens. His research fields are the history of physical chemistry, the history of quantum chemistry, the history of artificial cold as well as issues related with the appropriation of scientific ideas and practices by the European periphery from the 18th century. He is the co-author of *Neither Physics nor Chemistry: A History of Quantum Chemistry 1927–1977* (MIT Press, 2011), co-editor of *Positioning the History of Science* (Springer, 2007), and of numerous other books in History of Science. He is also co-editor of the series History and Philosophy of Science (Springer), and of the series History of Science (Brill), as well as a member of the editorial boards of a number of scientific journals in the history of science. In 2015, he was co-founder and President of the Scientific Committee of the Research Centre for the Humanities, based in Athens, Greece, a non-profit organisation aiming to support young researchers in the Humanities. In September 2015 he was elected MP with SYRIZA. He served as president of the Standing Committee on Education of the Greek Parliament. From November 2016 until the elections of 7th July 2019, he was Ministerof Education, Research and Religious Affairs.

https://gavroglu.gr/en/

Panels Timetable

Monday, September 20th 2021

EET			
9:30-10:00	Coffee Chat		
10:00-10:30	Introduction and greetings		
10:35-11:45	**1A** Controversies about Race	**1B** The Newtonian Legacy	**1C** Sciences & Geopolitics
11:45-12:15	Coffee Break		
12:15-13:40	**2A** Science Diplomacy During the Cold War	**2B** Text-based History of Science	**2C** (Post-)Colonialism
13:40-15:00	Lunch time & Social Activities		
15:00-16:25	**3A** Frictions and practices in academic contexts	**3B** Epistemology and Scientific Practices	
16:30-17:40	**4A** The liberal Arts in Late-Antiquity and Middle Ages	**4B** Medicine	**4C** Wartime Science
18:00-19:00	**Keynote Lecture: Theodore Arabatzis: *History of Science in the Age of Post-Truth***		

Please, note that all times are in **Eastern European Time** (EET)

Tuesday, September 21st 2021

EET			
10:00-10:30	Coffee Chat		
10:35-11:45	**1A** Early Modern Controversies about the Life Sciences	**1B** The Emergence of New Scientific Actors	**1C** Taming Nature
11:45-12:15	Coffee Chat		
12:15-13:40	**2A** Science Obstructed	**2B** History of Physics	**2C** Conflicts and Alliances in Sciences
13:40-15:00	Lunchtime & Social Activities		
15:00-16:25	**3A** Socialist States and Sciences	**3B** History Mathematics	**3C** The Aristotelian Legacy
16:30-17:40	ESHS Early Career Researchers Networking Hour		
18:00-19:00	**Keynote Lecture: Maria Paula de Diogo: Time, Crisis and the Anthropocene**		

Please, note that all times are in **Eastern European Time** (EET)

Wednesday, September 22nd 2021

EET			
10:00-10:30	Coffee Chat		
10:35-11:45	**1A** Gender Approaches to the History of Science	**1B** The Role of Art in Sciences	**1C** Sciences of the Mind
11:45-12:15	Coffee Break		
12:15-13:40	**2A** Science Defied: Conspiracies and Pseudoscience	**2B:** Philosophy & Science	**2C:** Reading stars: history of astronomy and astrology
13:40-15:00	Lunchtime & Social Activities		
15:00-16:10	**3A** Education in sciences	**3B** Biology and Evolution Theory	**3C** Imperialism & Knowledge on the Natural World
16:30-17:40	Roundtable: Publishing in *Centaurus*		
18:00-19:00	**Keynote Lecture: Kostas Gavroglu: The Dire Consequences of Constructing Utopias**		

Please, note that all times are in **Eastern European Time** (EET)

Panels and Abstracts

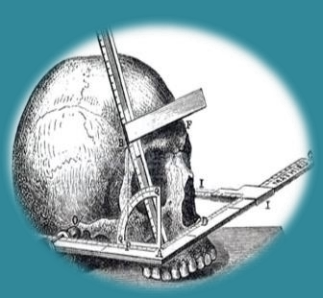
Panel 1A: Controversies about Race, Monday 20th (10:35-11:45)

Marriage, morality, and population growth: the Catholic way to eugenics in the first half of 19th century

Carlo Bovolo

University of Eastern Piedmont, Vercelli, Italy

Abstract: The paper deals with the Catholic approaches and attitudes towards eugenics in the first half of the 20th century, focusing on the Italian and European context. The eugenics studies and policies produced strong discussions and oppositions also within Catholics. Their opposition were scientific, political, theological: they criticized the lack of scientific basis in some eugenic hypotheses and defended the human freedom from the interventions of the governments, in order to safeguard the role and the influence of the Catholicism and its morals in the culture and society. Catholics opposed mostly towards the Nordic current of eugenics, spread in the Anglo-Saxon and German world, characterized by strong interventions (sterilization, abortion, birth-control) and by the idea of an artificial selection of the humankind. A Latin current of eugenics, however, based mostly education, prevention, and demographic growth, and spread in Catholic Countries, gained consideration from sector of the Catholic movement, like Agostino Gemelli, key figure of the Catholic science in 20th century. Condemning and refusing the Nordic eugenics policies, Catholic scientists and intellectuals (such as Gemelli, Gerrard, Fallon, Muckermann, Jordan, Boldrini) approved and embraced the Latin eugenics, stating that the Catholic morals represented the best and most effective eugenic principle. They claimed the cultural, social, political, scientific, and medical role of the Church and of Catholicism in an issue involving many fields (theology, medicine, biology, sexuality, (bio)politics). Catholics tried to build a Catholic way to eugenics, in accordance with the Faith, and consequently to gain a public recognized role in the eugenic debates. The paper intends to examine the complex and even ambiguous reception of eugenics (opposition to negative eugenics; support and adhesion to the positive eugenics), underline the contributions of Catholic scientists in the eugenic debate and policies and evaluate the circulation of eugenic arguments among Italian and European Catholicism.



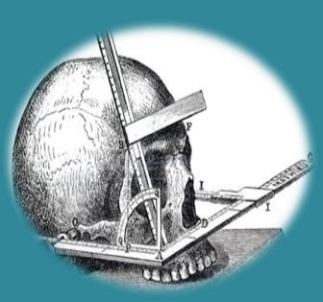
Panel 1A: Controversies about Race, Monday 20th (10:35-11:45)

Racism in interwar Romanian press. Disseminators and influences in *Societatea de mâine*: A case study

Flavia Craioveanu

Babeș-Bolyai University, Cluj-Napoca, Romania

Abstract: This study analyses the particularities of racist discourse in a Romanian interwar press magazine, in order to identify the manner and the openness with which the modern notion of race was taken over in the Romanian public discourse. To this end, a quantitative, qualitative and discursive analysis was conducted on the Romanian periodical *Societatea de mâine*. First of all, the study measures the amount of racist articles and the frequency with which they were published. Secondly, it draws collective and individual portraits of the authors of racist articles and interprets their discourse and the level of "radicality" of the messages conveyed by their articles. From a theoretical point of view, the study tries to frame the production and dissemination of racist ideas in the interwar Romanian press in the context of Greater Romania's peripheral position in relation to the Western world. The peripheral position referred to in this article is not just a geographical one, but rather one of ideas and currents of thought. The results of this study show that, in the periodical analysed, racist articles were published with an average frequency of two articles in each issue of the magazine in the first half of the 1920s, then decreased to about one article per issue in the second half of the decade. Most of the time, the racialising discourse had three main topics. First of all, the affiliation of the Romanian ethnic group to the western, modern culture, and the denial of the Balkan heritage of the Romanian people. Secondly, the Romanian ethnic superiority over the Roma population, considered subhuman, and, thirdly, the racial struggle against the Jewish population, seen as a dangerous invasion for the supremacy of the Romanian element, dominant in the new state of Greater Romania.



Panel 1A: Controversies about Race, Monday 20th (10:35-11:45)

Racial Ontologies, Bias, and Surveillance in Machine Learning for Facial Recognition

Anna Skarpelis

University of Basel, Switzerland

Abstract: Vision – as cognitive, physical, computational, and psychological process – is an exercise in distilling signal from noise, of foregrounding that which matters from that which does not. If Galileo could "see" the craters of the moon through a telescope where Harriot observed only a sphere, this is because Galileo possessed a different kind of vision from that of the Englishman, a period eye (Baxandall) embedded in a specific historical context. This article analyzes a particular form of the period eye, Racial Vision, which I use to denote the ways in which historically and culturally embedded understandings of what race "is" inform both human and scientific modes of seeing. By drawing on how contemporary computer vision engineers try to capture "race" through facial recognition algorithms, I disentangle the production of vision and perception as it pertains to the idea of race within scientific practice.

Both artificial intelligence and science and technology studies literatures acknowledge that classification is culturally and historically specific. For example, recent work has established how subjective assessments filter through data annotation and classification practices. Thus, it is not surprising that researchers' perceived understandings of what race "is" find their way into algorithms, whether this be through an analysis of skin tone pixels, face silhouettes, or face format. However, attempts by computer vision engineers to mitigate known racial bias in machine learning image datasets unwittingly leads them to create entirely new sets of problems: These include issues of racial reification, but also "transracialism" in generative adversarial network models, in which facial images are transferred from one race to another. In that, progressive attempts to mitigate bias by balancing ethnic distribution through data augmentation have unintended and often undiscussed consequences that reshape understandings of the ontology and variability of race within engineering and computer science.

Panel 1B: The Newtonian Legacy, Monday 20th (10:35-11:45)

The genius of modesty: anti-Cartesianism and the making of Newton in Enlightenment Scotland

Lewis Ashman

University of Edinburgh, UK

Abstract: Newtonianism has long been conceived of as in opposition to Cartesianism. In Scotland, the triumph of Newtonian science has been traced to a general shift in university teaching away from Cartesianism around the turn of the eighteenth century, resulting in the wholesale rejection of René Descartes' philosophy. Yet Descartes remained very much a part of the conversation in eighteenth-century Scotland, increasingly becoming a foil for, and even the antithesis of, Isaac Newton. This paper will argue that a particular vision of Newton emerged in Scotland with the establishment of Descartes as his principal antagonist.

It will trace how Scottish anti-Cartesianism developed from criticism of his scientific conclusions and philosophical principles, such as in Archibald Pitcairne's medical theories of the 1690s and David Gregory's 1702 Astronomiae elementa, to the presentation of Descartes as the modern manifestation of Aristotle, part of an ancient philosophical tradition that only Newton could reform, such as in Colin Maclaurin's 1748 Sir Isaac Newton's philosophical discoveries. Fundamental to Maclaurin's portrayal of Newton in the history of philosophy is that he is not Descartes: he does not speculate, build systems, or attract followers who might create a new philosophical sect. Rather, Newton 'saw too far into nature' to construct a Newtonian system, and his 'modest and cautious' philosophy was such because he knew where the limits of his, or any, intellect lay. This vision of Newton as a modest character and his genius as measured by its restraint might strike a modern audience as surprising, but helps us to understand Newton's reception in Scotland, and to appreciate David Hume's remark that Newton, this 'greatest and rarest genius,' was 'ignorant of his superiority above the rest of mankind,' and that 'he restored [nature's] ultimate secrets to that obscurity, in which they ever did and ever will remain.'

Panel 1B: The Newtonian Legacy, Monday 20th (10:35-11:45)

Assessing the alliances and conflicts that gave rise to Isaac Newton's Queries in Optice (1706)

Frederik Dhondt

Vrije Universiteit Brussel, Belgium

Abstract: One of the archetypal alliances within the history of science is constituted by Isaac Newton (1642-1727) and – what many consider – his entourage of followers and disciples. At the end of the 17th and in the beginning of the 18th century, these followers are said to have disseminated Newton's natural philosophical view across Britain and beyond. An exemplary historical episode highlighting the presence of this alliance is the Leibniz-Clarke correspondence where Samuel Clarke (1675-1729) was endowed with the task of representing Newton's views on such fundamental matters as space, time, motion and God. In this presentation, I take issue with the term "follower" in one specific case because it tends to obscure the accomplishments of those involved. The case I am particularly interested in, is Clarke's involvement in and intellectual contributions to the publication of the first Latin edition of Opticks, i.e. Optice (1706). In contrast to the era of the Leibniz-Clarke correspondence, this era has received far less scholarly attention. After the initial publication of Opticks (1704) in English, Newton planned to publish a Latin version that was to be translated by Clarke. Additionally, Newton added seven Queries to that version concerned with subjects such as theology, methodology, chemistry etc. It is, however, unclear to what extent Clarke aided Newton in creating those Queries and not merely translated them from English to Latin as the common view suggests. Relying on draft material for the 1706 edition of Optice, I uncover some intricate passages suggesting a more thorough involvement of Clarke in the publication of Optice.

In addition, this draft material also attests to Newton's urge to react to his adversaries in his drafts and – although in a more latent form – published work. In other words, Newton's adversaries – the rivals of the alliance – determined his work to some extent.

Panel 1B: The Newtonian Legacy, Monday 20th (10:35-11:45)

Isaac Newton and his "Army of Disciples"

Lucia Bucciarelli

University of Oxford, UK

Abstract: The publication of *De Revolutionibus Orbium Coelestium* by Nicholas Copernicus in 1543 exerted major intellectual and disciplinary effects on the field of astronomy. By promoting a heliocentric view of the world, Copernicus also affirmed the need for scholars to have mathematical expertise in that part of astronomy that dealt with the physical reality of the heavens. Together with these elements, the publication of De Revolutionibus delivered another significant message: the importance of the institution of discipleship for the development and dissemination of the new worldview. It was only after engaging in an intellectually close relationship with Rheticus, in fact, that Copernicus accepted his disciple's insistence on printing the work and trusted him with sorting out its publication and circulation. In the following century, Copernicus represented an intellectual milestone for mathematicians like Kepler, Galileo, and Newton. But how did they acknowledge the role of discipleship in the establishment and spreading of the new view of the world?

Focusing on Isaac Newton's case, my purpose is to highlight the essential role that, in the wake of Copernicus, the institution of discipleship continued to play during the early modern period in developing and disseminating scientific knowledge. When he decided to publish his Principia, Newton clearly wanted to be recognised as a great natural philosopher and mathematician. Notwithstanding his reluctance toward publication, to some degree he accepted that he was living in a world where scientific and mathematical claims had to be published in order to acquire credibility. Nonetheless he conceived an abstruse and apparently incomprehensible book in a mathematical language that only few were able to read. How could such a work acquire a competent audience, and ultimately credibility? The answer resides in his strategy to disseminate knowledge via the medium of precious allies: disciples. The technical difficulties of his work required trained people able to mediate the actual meaning of the book and broadcast it. Discipleship became the privileged agency by which Newton could maintain authorial distance, obtain credibility, and communicate elite knowledge through trusted intermediaries to a wider audience.

Panel 1C: Sciences & Geopolitics, Monday 20th (10:35-11:45)

Geography as diplomatic tool: an example from the Balkan

Zénó Kisling

Eötvös Loránd University, Hungary

Abstract: In the 19th century, geography as a science made its own rules and profession. This new form of geography become an important factor in the international relations, mostly between the two world war (just think about the treaties of the first world war). However, there are some important questions about it: When, how and under what conditions geography reached its position in diplomacy? In my research, I would like to try show some aspect of these questions, through an early example.

My presentation focuses on the formation of geography in the Austro-Hungarian Monarchy which correlate with the Monarchy's interests of Balkan. There is one more important question in this progress: how was the relation between the scientists and the state? The scientists took advantage of the state financial support, or the state took advantage of the scientists' knowledge? Therefore, the main points are the Konsular Akademie (The Diplomatic Academy of Vienna), and some persons' activities, for example: Thallóczy Lajos, Theodor Ippen, Alfred Rappaport or Nopcsa Ferenc. Who all played an important role in the Monarchy's interests to the Balkan. In the middle of this interest was Albania. Thus, the Monarchy's one of the most important goal was to establish the independent Albania. They reached their goal at the Conference of Ambassador in London 1913, where Theodor Ippen and his geographical knowledge was important in this success.

My research based on primary source, such as the diplomatic papers, which found at Haus-, Hof- und Staatsarchiv, Thallóczy Lajos's diary, some other paper from Hungarian archives and the English, German and Hungarian speaking literatures.

Panel 1C: Sciences & Geopolitics, Monday 20th (10:35-11:45)

World War I's end and Its Hungarian myths of military history

Balázs JUHÁSZ

Eötvös Loránd University, Hungary

Abstract: The historiography of a military defeat is always full of mythological interpretations, but the one signing the end of an Empire and of the fall of the historical Hungarian Kingdom is something special. To make things worse, Politics, Ideology, personal grievances were and are constantly influencing the job of researchers and even now we see distorting factors at work. As long as for the Hungarians the Great War ended only 1,5 years after the armistice, and during this transitional period every sort of disaster happened, the list of myths to be interpreted became quite long so this presentation concentrates only on two topics:

– the collapse of the Army in November 1918;

– how the Hungarian soldier's journey to Hungary affected their will or at least capacity to stand against the fall of the historical Hungarian Kingdom.

Many Hungarian soldiers at the end of WWI were on the Italian front and until 4th November 1918 many of them fell in Entente's hand as prisoners of war. How could all these supposedly perfectly supplied and trained persons disappear in the prison camps and so not to be able to defend their Home in 1918–1919? The responsibility for what happened was too high and when the consequences were seen, the myths were born. In the interwar period a kind of view of the facts was widespread, than came WWII, the Soviet occupation and the regime change. WWI became an imperialistic conflict, and the interpretations changed thanks to a new ideology. The Hungarian historians were able to distancing themselves from such indoctrinated point of view and to examine the end of WWI from a new perspective before the fall of the iron curtain, but their research and interpretation now is viewed as "the" communist historiography, and the why is to be searched in politics.

Panel 1C: Sciences & Geopolitics, Monday 20th (10:35-11:45)

Neighbors, enemies and regional interests. The geopolitical significance of the Eastern Mediterranean and its network of alliances along the regional policies of Turkey, Cyprus, Greece and France

Dávid Biro

Eötvös Loránd University, Hungary

Abstract: Fernand Braudel, a historian of the Mediterranean world, described the region as struggling but complementary entities of three cultural communities, civilizations (Western /Latin Christian/, Islamic, and the Orthodox world). The EU and NATO have sought to reduce security challenges and broaden their influence by building a wider network of contacts. Several so-called traditional conflicts in the region go back decades. One element of this is the Greco-Turkish hostility in the Eastern Mediterranean, one of whose conflict zones is centered around Cyprus.

Cyprus has gained geopolitical appreciation in recent years in the eastern Mediterranean. Since the mid-2000s, investigations by various international companies in the Cyprus Exclusive Economic Zone (EEZ) have revealed an increasing number of natural gas fields. The hitherto not very peaceful situation was further aggravated by these discoveries, giving another source of conflict to the states interested in the island. In the spring of 2019, Turkey - despite protests from the EU and the US - appeared with drilling boats in the Cypriot EEZ, which generated a kind of international crisis in the region. It can now be interpreted not only as a historical-ethnic security policy issue, but also as a focal point for an international crisis, or as a scene of the international power of the states in the region.

Moving along the geopolitics of the conflict involved in my presentation, I look for the answer what is the reason of the hostilities of recent decades have focused on Turkey, Cyprus, Greece and France, which are perhaps most affected by the above conflict in the current situation.

Panel 2A: Science Diplomacy During the Cold War, Monday 20th (12:45-13:40)

Symposium overview:

During the Cold War, the relationship between science and diplomacy became so tight-knit, that they ended up affecting each other's development. In this symposium we will attempt an examination of this process of the mutual development of cold-war science and diplomacy and the ways in which the agendas of the scientists and the diplomats were intertwined across four distinct case studies: the CERN-Serpukhov experiment, the search for extraterrestrial intelligence, the introduction of radiation protection rules in postwar Greece and the Soviet scientists' participation in the early Cold War science diplomacy.

How CERN Tore a Hole Through the "Iron Curtain": The Case of CERN-Serpukhov Experiment

Grigoris Panoutsopoulos

National and Kapodistrian University of Athens

Abstract: A few years after the end of the Second World War, intensive processes were at work in the fractured European space, with the goal being the creation of political, financial and social alliances that would lead towards its wider unification. A major factor in this particular process of unification was the intereuropean scientific networks and infrastructures that were undergoing development at the time, with the most prominent being the CERN scientific organization. Therefore, the very foundation of CERN, in 1954 with the cooperation of 12 nation-members that would later account for the majority of the basis of the European Union, was characterized by an intense political background were the "Cold War", the "Marshall Plan", the American Hegemony in postwar Europe but also the vision for a greater European Integration, all played a major role. This presentation will focus on a pivotal moment in CERN's diplomatic evolution. It revolves around the Cold War period and the establishment of a relationship between France, CERN and the USSR, in late 60s, in the context of CERN-Serpukhov experiment. Under the mantle of scientific neutrality, it was constructed an axis with scientific, technological, political, financial and industrial dimensions, which remained open for several years despite the political tensions between the Eastern and the Western Bloc during that period.

Panel 2A: Science Diplomacy During the Cold War, Monday 20th (12:45-13:40)

What do Extraterrestrial Intelligence and Science Diplomacy during the Cold War have to say to one another?

Gabriela Rădulescu

Technische Universität Berlin/Max Planck Institute for the History of Science

Abstract: My presentation will attempt to investigate science diplomacy activities related to extraterrestrial intelligence during the Cold War with a focus on Soviet actors. The time frame considered is 1959 - until 1976. This period partially coincides with what historians describe as the Golden Age of Radio Astronomy - 1960-1975. In 1959 physicists Phillip Morrison and Giuseppe Cocconi grounded science's search for extraterrestrial intelligence through the means of radio astronomy. With the means of radio astronomy, scientists started to work on identifying extraterrestrial intelligent signals, on theorizing the probability of extraterrestrial intelligence's existence in the universe as well as on the means to send signals to extraterrestrial intelligence.

During the Space Age, science's quest for extraterrestrial intelligence brought together scientists from both sides of the Iron Curtain. Soviet bloc and Western actors met within the framework of international organisations, such as the International Academy of Astronautics (IAA) and the International Astronautical Federation (IAF) as the topic of 'Communication with Extraterrestrial Intelligence' (CETI) made its way on their agenda. Scientists communicated also beyond these forums, as publications on CETI from one side of the Iron Curtain made their way to the other one, while Soviet scientists corresponded with their Western counterparts. A momentous episode for extraterrestrial intelligence science diplomacy during this period constituted the Soviet-American Conference on Communication with Extraterrestrial Intelligence, held at the Byurakan Observatory in Armenia and organized by the two countries' Academies of Science, in which more than forty scientists from six nations took part

Panel 2A: Science Diplomacy During the Cold War, Monday 20th (12:45-13:40)

The Introduction of Radiation Protection Rules in Postwar Greece through IAEA Fellowships

Loukas Freris

Friedrich-Alexander-University Erlangen-Nürnberg

Abstract: "Neither Americans were advanced in health physics back then. An employee working with the reactor showed us that by placing his hand inside a hole of the reactor would cause a reflection of protons and neutrons. Imagine; By placing his hand!" With these words, Laodamas Sklavenitis, the Greek scientist who set up the field of Health Physics in the Greek Atomic Energy Commission, described his experience from his visit to the largest American laboratories in the late 50's. Although the scientific relations between Greece and the USA were based on the provision of fellowships and Technical Assistance, little importance was given to the field of radiation protection in the early post-war years. At the same time, the expansion of the use of radioisotopes created the need for a series of regulations for their safe use by citizens, hospitals, and laboratories. The International Atomic Energy Agency (IAEA) took advantage of this situation to consolidate its position as the main regulatory institution in the field of radiation protection. One of the main instruments used to accomplish its goal was to design a fellowship program allowing young scientists from Member States to get trained in major nuclear laboratories in other countries. This paper argues that the IAEA fellowship program worked as the diplomatic tool through which young physicists – fellows would transfer the material and nonmaterial culture learnt. Last but not least, participants aligned with the Agency in drawing up the Greek legal framework in the field of radiation protection, which until then it was completely absent.

Panel 2A: Science Diplomacy During the Cold War, Monday 20th (12:45-13:40)

The Nature of the Soviet Scientists' Participation in the Early Cold War Science Diplomacy

Irina Fedorova

Friedrich-Alexander-University Erlangen-Nürnberg

Abstract: The nature of Soviet scientists' participation in international activities had been changing in the early Cold War. If in the post-war period Soviet science remained hidden in many aspects of scientific research, during the International Geophysical Year 1957-8 Soviet scientists became a significant part of the scientific community by collaborating with their colleagues and participating in knowledge exchange. Moreover, after the Second World War, scientists engaged in the fight to prevent military conflicts, and the Pugwash Conferences contributed by bringing together participants from both sides of the Iron Curtain, which allowed to open a new channel of communication on nuclear issues between scientists and politicians. The Soviet leadership sought to "catch up" with and overtake Western countries, and integration into the international scientific community was supposed to contribute to scientific and technological progress and the promotion of socialist achievements, especially in the area of space research and the peaceful use of atomic energy.

Although the Soviet scientists' trips abroad were strictly controlled, their responsibility to represent the USSR position allowed them to establish valuable contacts and to use this unofficial channel for drawing attention to global issues. Soviet nuclear physicists, oceanographers, geophysicists, and other scientists became visible actors on the Cold War science diplomacy scene by contributing to major scientific projects and participating in the transnational peaceful movement. Following the transnational approach to the Cold War history, researchers currently write about less visible non-state actors involved in the process and focus on how they helped to overcome the complications of the Cold War. Using this methodology, the paper unfolds the early history of Soviet scientists' participation in science diplomacy and the establishment of their new role as science diplomats.

Panel 2B: Text-based History of Science, Monday 20th (12:45-13:40)

From medical manuscripts to the first Greek Pharmacopoeia (1837): pharmacy between empiricism and scientific knowledge

Athanasios Barlagiannis and Penelope Seriatou

National and Kapodistrian University of Athens, Greece

Abstract: In 1837, the Greek State published its first Pharmacopoeia, when pharmacy was practiced by a plethora of actors, who were drawing on tradition, magic, personal experience and on the medical manuscripts/Iatrosophia. Our paper presents the results of a research concerning the innovations that an official drug catalogue introduced to pharmacy in the regions of southeastern Europe during a period of political transition from the Ottoman Empire to the Greek State. The most common source of information about pharmaceutical products during the Ottoman period were the medical manuscripts that contain details on medicines and illnesses, medical practice and magical curing. What kind of changes did the Greek Pharmacopoeia impose to previous medicinal practices as represented into these manuscripts? What kind of competitions among actors, between methods of validating drug efficiency and between different healing ideas emerged in the process of the Pharmacopoeia's compilation? On which scientific grounds did its authors decide which drug to include and which drug to exclude and with what consequences on the development of Greek pharmacy? By focusing on medical manuscripts and on the Pharmacopoeia of 1837, our presentation will discuss the dynamic processes of its compilation and the conflicting authorities around drug use and drug validation. The effort to create a "Greek", that is a uniform, universal and scientifically certified, pharmacopoeia will finally be paralleled to the regulation of the profession of the Greek pharmacists and the promotion of the pharmaceutical education by the state authorities.

Panel 2B: Text-based History of Science, Monday 20th (12:45-13:40)

So many counsels of able physicians: competition and friendship in William Cavendish's book of receipts

Sheryl Wombell

University of Cambridge, UK

Abstract: Recipe scholarship – and particularly that concerning medical receipts – has long regarded these packages of information as a form of valuable social currency in the early modern period. But beyond this attachment of a broad value system to recipes, precisely how did social and professional relationships play out in exchanges of medical knowledge? This paper introduces the case study of William Cavendish, Marquess of Newcastle, and his manuscript book of 'Rare Minerall Receipts' collected during his period of continental exile in the 1640s and 1650s, which has not to date been the subject of extended historical scrutiny. In this notebook, Cavendish compiled – with scribal assistance – a collection of recipes and copies of letters received from a variety of physicians, apothecaries, friends, and acquaintances, drawing on a network of fellow exiles in Europe as well as contacts back in England. I will explore moments of conflict, cooperation, and sociability in the notebook, by examining two key aspects of the medical encounters it records. First, I consider the role of social contacts in mediating medical consultations and knowledge transactions, particularly via the medium of correspondence. This analysis demonstrates the frequent involvement of individuals outside the immediate family in sourcing medical advice, supporting and developing recent scholarship on the dialogic and participatory nature of early modern medical consultation. Second, I interrogate the evidence of relationships between the many medical practitioners consulted, arguing that cooperation and competition, rather than being diametrically opposed, could be utilised for a variety of purposes even within a single professional relationship. Finally, I argue that the notions of friendship and competition were strategically mobilised by Cavendish in his encounters, and conclude that such roles had particular potency in the context of social and political instability in exile.

Panel 2B: Text-based History of Science, Monday 20th (12:45-13:40)

The Kyrgyz Epic of Manas and the Manasology

Julien Bruley

University of Lille, France

Abstract: The Kyrgyz epic Manas is valued in Kyrgyzstan as the longest epic in the world. Relating the deeds of the eponymous hero Manas and its people, the epic is the beloved guardian of the Kyrgyz values and morality and even reached the status of state symbol, protected by law, and it's still recited today by professional bards.

The paper I would like to present will focus on the development of a specific science called manasology (term derived from the Russian equivalent) which emerged in the 1930's and which has known a renewal from the 2010's. Nested at the intersection of philology, ethnography, folklore on the first hand, political ideology and New Age spiritualties on the other hand, it gathers, shapes and frames most of the contemporary interpretations of the Kyrgyz epic. As every science, nonetheless, the manasology has its opponents and supporters, its orthodoxy and its heresies, and it is subject to distortions and misconceptions in methodology, principles and goals, turning it sometimes into a pseudo-science.

I will briefly develop the following aspects: how a science modified the interpretation of the object it studies? How political ideologies and the rise of a 'local knowledge' influenced this science? What are the values and the interests leading to a reevaluation of an immemorial oral tradition? Last but not least, the epistemological review of the manasology can help us to understand the entanglements between global tendencies in culture and their local adaptations.

Panel 2C: (Post-) Colonialism, Monday 20th (12:45-13:40)

Surveying the battlefield, benefiting science: an analysis on botanical specimens collected in Mozambique during World War I

Sofia Viegas

University of Lisbon

Abstract: Germany's declaration of war on Portugal in 1916 and the sending of military contingents to Africa forced the Portuguese Ministry of War to enact general mobilization, redirecting all available resources in favour of the war effort. In this war scenario, even higher education institutions were not spared, with teachers, researchers and students being referred to various technical services and military schools, causing major constraints on the normal functioning of these institutions.

It was during this period that Américo Pires de Lima, physician and assistant professor at the University of Porto, joined the Portuguese Expeditionary Corps sent to Mozambique, between 1916 and 1917. Despite being in a war scenario and harsh conditions, Pires de Lima was able to reconcile military clinical functions with scientific studies, materialized in botanical and zoological collections. Despite having fulfilled his duties, logistical and climatic conditions decisively limited the volume and diversity of material that reached the Museum.

This paper intends to analyze how this scientific undertaking was conditioned by the combination of scientific, institutional, political and personal agendas. This is achieved by crossing the different layers of information underlying the botanical collections and related documentation. It is also intended to emphasize the link between the difficulties brought to universities by the massive mobilization of its staff of professors, researchers and even students for the war effort and the contributions and advances achieved in the various areas of knowledge, namely the stimulus given to 'colonial science'. Furthermore to highlight how these war scenarios benefited science collections, in particular, the Herbarium of the University of Porto. In this particular case, how a unique opportunity emerged in the life of Pires de Lima to do fieldwork in Africa, resulting in a scientific contribution to the botanical knowledge of Mozambique.

Panel 2C: (Post-) Colonialism, Monday 20th (12:45-13:40)

The Perils of Hookworm in the Orient: A Study of the Rockefeller Foundation's Anti-Hookworm Campaign in Colonial India and Imperial China from 1913-1920s

Tiasangla Longkumer

Jawaharlal Nehru University, Delhi

Abstract: The Rockefeller experts dispatched to Asia revealed hookworm as an international problem with prevalence rate alarming both in India and China. The extraordinary sanitary conditions of the Tamil coolies settled in plantation sites in India and labors in mining areas in China created ideal ecologies for the reproduction of the parasite and increased the levels of soil pollution. To combat the problem of hookworm disease in India and China, the Rockefeller Foundation (RF) officials were highly committed to seeking answers in scientific approach to medicine. In the Indian context because of colonial sanitary policies, hookworm was already a known disease, posing threat to economic productivity, but in China, there was very little knowledge about the disease. Just as the hookworm disease posed threat to workers in the colonial plantations in India, it became a menace for the workers in the mines and labors in central and south China. The scientific framework proposed by the International Health Board (IHB) of the RF replicated from the US south faced challenges in the Indian and Chinese context. In India, addressing soil pollution was linked to access to water and proper sewage, which was mostly concentrated in European enclaves or houses of elite Indians. In China, nightsoil was the prime fertilizer, which was an essential part of Chinese agriculture, and any attempt to bring reform would have huge economic consequences. This study traces the history of RF's anti-hookworm campaign in colonial India and Imperial China from 1913 to the 1920s. Based on archival sources and scientific publications in the late 19th and early 20th centuries, the study attempts to explore the various sanitary measures adopted, the relationship between hookworm science and migrant labors, the extent and depth of the anti-hookworm program and the overall implications of the program on disease control in China and India.

Panel 2C: (Post-) Colonialism, Monday 20th (12:45-13:40)

Mother, wife, or pioneer? Conflicts and tensions in the scientific and technical education of women in colonial and post-colonial India

Sandip Kana

King's College London

Abstract: This paper explores the debate about what was the most suitable type of education for women in India. It will argue that the education for women, in both the colonial and post-colonial periods in India, was shaped, determined, and influenced by notions of gender. At the core of this debate was an emerging tension and point of conflict between those social reformers who wanted to provide women with an education that would allow them to become self-sufficient and economically useful to the nation. On the other side of the debate was those that wanted to limit and restrict the education of women to the domestic sphere. This conflict of views strikes at the very heart of the debate about the most appropriate type and content of education for women. This paper will map out how actors attempted to develop forms of scientific and technical education for women in cottage industries. This was to enable women, mostly widows and refugees, to eke out a living and not become dependent on charity, relief, or the state. These initiatives were highly localised and often their effectiveness was limited. Nonetheless, actors, not only had to fight against community backlash, but also against a reluctant, and often resistive state that offered little help or support to further the education of women. By exploring the conflicts and tensions at the heart of education for women, this paper, will provide a distinct narrative on the extraordinary moments of collective non-confrontational resistance and protests that underpinned women's agency in colonial and post-colonial India.

Panel 2C: (Post-) Colonialism, Monday 20th (12:45-13:40)

Chemist's Enemies: Trade Disputes on the Emergence of Portuguese Food Safety – The Salicylation Quarrel of Port Wines in Brazil (1885-1905)

Jose Ferraz-Caetano

Universidade de Évora, Portugal

Abstract: The popularization of Food Safety gained notoriety in Europe in the second half of the 19th century. In Portugal, until the beginning of the 20th century, it was the municipalities that were in charge of carrying out this supervision. With the first consolidated legislation on public health and inspection only in 1901, years before the municipality of Porto founded scientific institutions, like the Municipal Chemical Laboratory of Porto (1884), to be in charge of analyzing the salubriousness of water/food and solving trade falsifications of foodstuffs. The emergence of analytical chemistry, intersected with disruptive teaching method at the Porto Polytechnic Academy (1837-1911), would come to influence new legislative trends in Food Safety. It was the scientists from the Porto Academy, working on these laboratories, that built the "golden period of Portuguese chemistry", a "tremendous evolution" recognized by their European peers.

In this communication, we discuss how Portuguese chemistry played a pivotal role in the densification and popularization of Food Safety. Its influence on the outcome of a trade dispute between Portugal and Brazil, known as the salicylation quarrel of adulteration of Port wines (1885-1905), became a paradigmatic case in which scientific knowledge unraveled a critical commercial dispute. Not only boosted the prestige of Portuguese chemistry to an international level, but recentered the role of science on the inception of public policy, incorporating chemists into the legislative effort. We also bring new perspectives on the historic scientific discussion of the volatile legal definition of food standards, which fed discrepancies in the rulings of what is certified, mirrored by the urging contemporary debate on food safety.

Panel 3A: Frictions and practices in academic contexts, Monday 20th (15:00-16:25)

Curbing Academic Freedoms: New Strategies

Banu Kayır

University of British Columbia, Canada

Abstract: Turkey's governments, regardless of the differences in their political stance, exhibit similar attitudes in developing policies against academic autonomy. This persistent opposition of governments to the independence of universities, and by extension academic freedoms, originates from a unique amalgam that brings together the social prestige, professional knowledge, and ability to use the press that makes it possible for academics to evaluate governments' actions and publicly criticize them. Starting from the 1930s, Turkey's governments engaged with the subject of academic autonomy thanks to the debates on university reform. Until the 1980s, universities prepared proposal after proposal in hopes of solving their persistent problems such as increasing number of students, lack of academic staff and, rigid hierarchical order. Governments perceived these reformist demands as a chink in universities' armor that they could use as a pretext for invasion and suppression of academic autonomy. The 1980s military government that came to power with a coup d'etat found enough power to crystallize the earlier governments' experiments and acknowledged the value of the problem in itself.

At this point, the government started to create problems to penetrate universities, rather than running with existing problems as its successors had done. Universities in the periphery that were founded during the 1980s seem to have opened as a result of this policy. The government established six universities in 1982 (four of which were in the periphery). That was a period of distress for universities as they lacked academic staff due to the academic purges carried out in 1982-1983. Consequently, they could not meet the demands of these new institutions. Government propaganda followed this development. The 1980s government blamed the greed and decadency of professors for the glaring vacancies at the new universities while it secretly rejected and intimidated academics who volunteered to teach at the periphery. Thus, the government justified the creation of an apparatus that would impose morality from above, which resulted in the foundation of the Council of Higher Education.

In short, this paper will study Turkey's governments' transition from using problems as a means of employing interventionist policies to arriving at creating problems. I believe the latter might give us a tool to understand policies developed well after the 1980s and how these 'problems' affected universities, academics, and the output of both in general.

Panel 3A: Frictions and practices in academic contexts, Monday 20th (15:00-16:25)

From seminars to snack bars: tensions of work and leisure at scientific conferences

Georgiana Kotsou

Maastricht University

Abstract: The complex relationship between leisure and work, shifting back and forth from their perception as conflicting to their complementarity and to the tensions occurring when they blend into each other, has been manifested in many ways in the history of science. Scientific conferences are a unique social occasion traditionally combining elements of both. Banquets, excursions, receptions and drinks are all activities that through their repetition, year after year, have become part of the conference social programs. However, the value of leisure in conferences has been doubted on many occasions throughout the 20th century. Both participants and organizers have been concerned that the increase in the vacation atmosphere is a great danger to the future of the conferences. These criticisms become relevant again now when many conferences are held exclusively online. In this paper, I will investigate the tense co-existence between leisure and scientific practice manifested during international conferences. More specifically, I will identify the material and embodied elements of leisure practices and examine their role as consolidated parts of the conference format. Special attention will be paid to the negative attitudes towards the vacation elements of conferences and their relation to shifting ideas about how conferences are connected to scientific practice and about who belongs or doesn't belong in this practice. As part of the larger European collaborative project 'The Scientific Conference: A Social, Cultural, and Political History', funded by the Humanities in the European Research Area (HERA) network, my research focuses on international chemistry conferences of the 20th century organized by the International Union of Pure and Applied Chemistry (IUPAC) and the Gordon Research Conferences.

Panel 3A: Frictions and practices in academic contexts, Monday 20th (15:00-16:25)

Novel response or shelter in place? : Challenges to peer review power structures in medical journals during COVID-19, the case of the British Journal of *Anaesthesia*

Eleanor Shaw

University of Manchester, UK

Abstract: The widespread implementation of academic peer review in the second half of the twentieth century was intended to bring a measure of standardisation to the process of reviewing papers, while keeping the control of research knowledge within the hands of the relevant profession. Positions as reviewers are filled often through personal relationships rather than competitive processes, and performance as a reviewer can be key to securing an editorial position. As a result, peer review functions as a gatekeeping device, forming and controlling disciplinary barriers, legitimising knowledge, and controlling the spread of information. Thus, peer review produces and maintains power within small circles and reproduces the status quo. Critiques of the peer review process have been numerous, but so far an alternative system has yet to be deemed acceptable. COVID-19 has significantly disrupted academic publishing as a whole, and has highlighted the current challenges to the subscription model of academic publishing. These disruptions include high profile article retractions and challenges responding to the rapidly changing context. It has also been a moment of opportunity, however, producing novel responses to information transfer including open access, use of editorial, opinion and correspondence formats, and crucially, the potential for the reconsideration of the peer review process from within journals themselves. Looking at the 100-year old specialist publication the British Journal of Anaesthesia, this paper puts current peer review practices in historical context in order to understand the challenges and opportunities presented by COVID-19. The urgency of the pandemic has pushed medical journals to be reflexive and responsive in a way that is unusual, but the high reputational stakes of retractions and amendments, and the perception of the threat posed by open access schemes mean that peer review is unlikely to change substantially without a complete revolution in the academic journal publishing industry.

Panel 3A: Frictions and practices in academic contexts, Monday 20th (15:00-16:25)

The state scholarship programs in the configuration of the Greek Academic Community

Giorgios Mattes

National and Kapodistrian University of Athens, Greece

Abstract: The State Scholarships Foundation is the oldest and most important institution that awards vocational and higher education, and scientific research in Greece. Its foundation in 1951 followed the footsteps of the corresponding US institution (National Science Foundation, 1950) and was characterized by George Papandreou as the materialization of his vision for an institution that will mine the youth who excelled "so that we can really renew the ruling class" (Papandreou keynote speech during the 1st Board of Trustees on 9/6/51). However, staffing the private and public sectors with technical experts or scientists and promoting Research and Development in line with OECD standards and human capital theory is only one side of the issue.

The scope of this research project is to focus on the configuration of the Greek academic community and assess the impact of the institution on i) the productive system (public and private sector), ii) the wider academic and research subsystem (education system and scientific knowledge production) and iii) representation mechanisms (political system and public sphere). This paper aims to show the relationship between political history and the history of science and technology in modern Greece through the study of State Scholarships Foundation: yearbooks, Board of trustees and executive committee records, budgets etc. I will present comparative tables that visualize the scholarships fluctuation from year to year according to academic discipline and scientific field, educational level, faculty, financial means, destination country for studies abroad, gender etc.

Panel 3B: Epistemology and Scientific Practices, Monday 20th (15:00-16:25)

Historical Epistemology: a Convenient Enemy

Urko Gorriñobeaskoa

University of the Basque Country

Abstract: Historical epistemology is a rather unusual way of thinking about the sciences. While being some sort of mixture between the history and the philosophy of science, this branch is not very popular among practitioners of either disciplines. The analytic-oriented epistemology tends to despise it as a rather relativistic and undesirable form of epistemology, and for many historians of science it is an overly philosophical account of the past which many times fails to meet historiographical rigour.

In this presentation I will focus on analysing why historical epistemology has never acquired much popularity among historians and philosophers of science. I will suggest that this is due to multiple reasons. First, it has something to do with the awkward relation between history and philosophy of science, which has been extensively discussed in the recent years. On the other hand, the fact that historical epistemology is not a well-defined and stable field might explain why not many authors take it seriously. Additionally, historical epistemology has been regarded as a distorted and undesirable kind of history written by philosophers. Finally, some authors think that historical epistemology is too close to presentism, a quite polemical stance in the history of science. In contrast to these objections, I will suggest that historical epistemology might offer a valuable contribution for science studies if we understand it as an alternative narrative rather than as the ultimate source of historical or epistemological truth.

Panel 3B: Epistemology and Scientific Practices, Monday 20th (15:00-16:25)

Paul Feyerabend: the best ally that science could imagine

Deivide Garcia da S. Oliveira

Federal University of Reconcavo of Brasil

Abstract: It is broadly spread that Paul Feyerabend is an enemy of science, and despite many efforts to change this view, and even a book just dedicated to answer this question (Preston, Munévar, & Lamb, 2000), there is still work to be done about this matter. So our paper aims to not only echoes the reasons made by some scholars to refute that view, but most importantly, expand them and present new reasons to consider him actually a great ally of science. To do that we are going to explore the distinction between kinds of scientific pluralism (Oliveira, 2021a), and how it opposes to a monist view of science (Kellert, Longino, & Waters, 2006; Ruphy, 2016). This brings consequences to the debate of science and its enemies as a whole. In this sense, these two different accounts of science, a pluralist and a monist, actually result in two different perceptions of science, a pluralist, which, for instance, argues that science does not have 'the method', and the monist one which understands that science has, at least a general method, or some some restrictions on alternatives to the *status quo*, treating them as initial stages of the process of the development of knowledge. A monist would built a demarcation of science which, if crossed, makes easy to call its defiers enemies of science, as happened with Feyerabend (1993). Sometimes science can be its own enemy. Thus we will explore a more adequate version of Feyerabend's pluralism (Oliveira, 2021b), but also how it is fused with a kind of criticism emerged from proficiency that gives us an accurate, stimulating and friendly access to and about science. We will conclude saying that Feyerabend's account is concerned with making no or less enemies, because it is focused on making critical, educated and better friends.

Panel 3B: Epistemology and Scientific Practices, Monday 20th (15:00-16:25)

Opposing Science as Opposing the Narrative: Re-invoking the Epistemic Crises

Vladimir Lukic

University of Pardubice, Czech Republic

Abstract: The conception of the narrative which is derived from the theories of philosophers such as Alasdair MacIntyre and Paul Ricoeur shall be taken as the basis for this project. If we consider the idea of a narrative, we are considering a cultural and traditional paradigm which is shaping our world view. According to MacIntyre, we can view this notion as a historical conversation; an ever-changing story which shifts in accordance with the epistemic crises that arise. These epistemic crises follow from one culture/tradition being unable to explain certain phenomena and to incorporate them within their narrative (or, in this instance, system of belief). Every traditional shift brings the old tradition within it, however, with a change within the paradigm. New tradition is an improved version of the old tradition which was not adequate to give the overall justification for the events that were taking place. The traditions bear the following categories - a conception of the self-hood, metaphysical cosmology, list of virtues, justification of political power etc. Putting aside various categories which constitute a traditional narrative, the focus would be put on the notion of the metaphysical cosmology, or - the dominant scientific view of the world. Here lies this projects contribution to the philosophy of science. This project addresses the scientific historical shift and explains the error of scientific skepticism from the perspective of the narrative theory. This narrative theory shall also be considered as an extension of Thomas Kuhn's theory of the historically induced paradigms. The goal of this project is twofold – limit the arguments of those who invoke past scientific methods, as well as to propose a challenge to those who oppose the role of contemporary science.

Panel 3B: Epistemology and Scientific Practices, Monday 20th (15:00-16:25)

Two Approaches to the Access Problem

Inger Bakken Pedersen

University of Vienna, Austria

Abstract: Employing Audrey Yap's (2009) distinction between an internal and an external type of answer to the access problem in the philosophy of mathematics, I argue that these types characterize two distinct approaches to tackle the problem. Depending on the kind of answer one favours, the two approaches deal with the access problem in a very different manner. This methodological difference leads to certain constraints for what counts as an acceptable epistemological story of mathematical knowledge.

An external answer to the access problem is characterized by accepting the challenge as posed. This means that the gulf between physical and mathematical reality must be bridged, and that some means – capable of both breaching the causal limits of physical reality and probe into mathematical reality – must be endorsed. The approach favoring an external kind of answer I call the head on approach. It involves the postulation of a special faculty capable of such bridging, and it thus has a transcending quality.

This approach should be discarded in favour of the second approach, that of tweaking of the question, which rejects an external kind of answer, on the grounds that it entails a standard for what counts as an adequate epistemological account that is impossible to meet. Instead, one should answer the problem in an internal fashion. That means to lower the adequacy standard and reduce our ontological commitment.

I argue that the style of argument used to defend the head on approach does not warrant the postulation of a metaphysically speculative faculty. While inference to the best explanation is the favoured argument style for the other approach as well, I argue that ontological parsimony and the value placed on conforming to ordinary scientific standards have a better fit with this type of argument.

Panel 4A: The liberal Arts in Late-Antiquity and Middle Ages, Monday 20th (16:30-17:40)

The Prince Whisperer: figures of the astrologer in Nicole Oresme's writings against divination (c.1366-1370)

Serra Sophie

Université Paris-Sorbonne

Abstract: Nicole Oresme (1320-1382) was a brilliant natural philosopher, a renowned mathematician, a passionate advocate for the translation of scholarly texts in vernacular languages, but he is also well known as a polemist against divinatory practices of astrology, especially in the context of princely courts. He addressed the subject many times in various texts, but devoted specifically three writings to the topic: *Tractatus contra judiciarios astronomos* (1360), *Livre de divinacions* (1366) and *Questio contra divinatores horoscopios* (~1370). How could he, as well, use his late strength to compose for King Charles the Vth his Livre du ciel et du monde (1377), an abundantly glosed French translation of Aristotle's *On the Heaven*, that presents a vibrant hommage to the science of the stars? Oresme's criticism towards astrology lies on solid mathematical arguments (in a few words, the impossibility for an astral configuration to take place twice), and presents a moral side as well.

Most of the time, we study separetly the scientific and the moral arguments of Oresme, but it seems to me that operating a conjoined analyses reflects a more powerful approach. A mix of religious conservatism, scientific innovation, and deep knowledge of the astrological practices of his time. The portrait that Oresme gives of the “bad astrologer” – the one that haunts the castle's corridors, whispers at the bedside of anxious princes, and thinks only of fame and riches – is quite commonly rooted in Augustine's critics of superstition and vain curiosity. But Oresme's approach is much more complex and does not entirely focus on the idea of a battle between learned “science” and vulgar “superstition”. It's not because divination is part of a lay culture that it is despicable. It's not because it doesn't work. It is because divination is simply bad science that Oresme criticizes it, thus offering us an opportunity to understand his criteria for scientificity, and his propositions to remedy its flaws.

Panel 4A: The liberal Arts in Late-Antiquity and Middle Ages, Monday 20th (16:30-17:40)

Questioning Inquiry: Ghazāli, Science, and the Islamic Tradition

Mujeeb Khan

The University of Utah, USA

Abstract: The debate between religion and science has fascinated cultural historians for over a century. However, situating the Islamic tradition within this debate poses numerous problems. The first is that there is no 'Islam' as in a singular tradition but rather multiple branch traditions, just as chemistry cannot be called biology even though both are natural sciences. These fields support one another but utilize different methodological approaches to the world. The branch disciplines of Islam function similarly in their disparate approaches to particular aspects of Islam, the most famous being those of substantive law (fiqh) and speculative theology (kalam). The second is that the narrative of al-Ghazālī's (d. 1111) rejection of the rational sciences putting an end to intellectual inquiry persists despite specialist research demonstrating robust knowledge production following al-Ghazālī.

The guiding question for the paper is: Was al-Ghazālī an enemy of science? To answer this question, the paper will investigate al-Ghazālī's Deliverance from Error (Ar. Munqidh min al-Ḍalāl), Incoherence of the Philosophers (Ar. Tahāfut al-Falāsafa), and other works to identify with what al-Ghazālī specifically had contentions. The first aspect of the paper will explore the tension between the rational mind, free (scientific) inquiry, and Islam within al-Ghazālī's works. The second will incorporate his subsequent interlocutors like the Andulusian Ibn Rushd (Averroes, d. 1198), who wrote a rebuttal to the Incoherence, to understand how this debate related to science. Third, the paper will briefly consider the contemporary impact, both scholarly and in the public sphere, of this so-called tension between the Islamic and the scientific. The paper will conclude with an analysis of the relationship between dogma and scientific inquiry within the Ghazalian framework to understand how to situate science within the historicized Islamic tradition.

Panel 4A: The liberal Arts in Late-Antiquity and Middle Ages, Monday 20th (16:30-17:40)

Myth vs. Science? Martianus Capella and Early Modern Scientific Thought

Katie Reid

The Warburg Institute, London, UK

Abstract: Myth vs. science is by now a deeply ingrained dichotomy in contemporary thought. Myth, in effect, is seen as the enemy and opposite of science. Yet this was not always the case, and there is a long history of scientific writing that uses mythological material to promote, enliven, explain and allegorise scientific material. A famous example of this is *The Marriage of Philology and Mercury* (*De nuptiis Philologiae et Mercurii*) by Martianus Capella, a North African Roman author of the fifth century. The work is an encyclopaedia of the seven liberal arts, including the *quadrivium* or scientific arts. The encyclopaedic material is presented within the context of a mythological story of the marriage of a god and a mortal and the festivities of the pagan gods at their wedding. This paper will argue that Capella is a previously scarcely acknowledged source for scientific writing of various kinds in the Early Modern period. Notably, Capella is referenced by Copernicus for his astronomical model in which Mercury and Venus orbit the Sun. However, his influence extends beyond this. His Pythagorean musical and mathematical thinking and his cosmos and mythical imagery had an impact on the writing and visual productions of figures like Robert Fludd and Athanasius Kircher. It is my contention that their approach has a strong precedent in the imagination and scientific thinking of Late Antiquity, exemplified by the mythical-scientific work of Martianus Capella. Was mythology itself a field of knowledge at this point, and if so, how does it relate to – and contrast with – scientific thought in the early seventeenth century? Why did it come naturally to such writers to incorporate allegorical and mythological thinking into their scientific writing? My paper suggests that answers lie in the latter days of the Classical Age, and the fringes of the Roman world.

Panel 4B: Medicine, Monday 20th (16:30-17:40)

An alternative, 'personalised' medicine: Five-Element Acupuncture in the late 1960s-80s Britain

Yi Yang

University College London, UK

Abstract: In the height of 'modernity' in the twentieth century, the notion of orthodox medicine developed around what constituted the mainstream, powerful scientific biomedicine and what was not. In this dichotomy, Chinese traditional and/or indigenous medical knowledge was regarded as an 'alternative', which not only implied a sense of challenge but also posed a threat to the science-based orthodox medicine—and thus, it became an 'enemy of science'. This enemy of science, however, attracted many young Britons from the late 1960s to the 80s —whom we might call members of the Counterculture and New Age movement—who questioned and challenged what they saw as fundamentally Eurocentric industrialised science and rationalism. Traditional Chinese medicine together with its acupuncture techniques and its ancient philosophies seemed to offer members of this group what they could not find in the orthodox biomedical industry which treated human bodies as if they were a machine on the principle of scientific reductionism. By contract, acupuncture appeared as a humanistic and personalised alternative option of healthcare.

This paper examines the history Five-Element Acupuncture —a British reinterpretation of Chinese medicine that became prevailing in the Anglophone world— as a form of alternative medicine deployed by those seeking alternative lifestyles. It also sheds light on how this alternative medicine negotiated the boundaries between science and culture on the one hand, and modernity and tradition on the other. Using oral history interviews with the members of the Counterculture and the New Age—some of whom embarked on a career of Five-Element acupuncturists—this paper shows the (re)invention and (re)construction of a Chinese medical tradition in the British society in the late twentieth century, a process in which alternative values of anti-establishment and 'personalised' healthcare were embedded.

Panel 4B: Medicine, Monday 20th (16:30-17:40)

The cancer film: a remedy with (side) effects for the Portuguese Institute of Oncology's fight against cancer

Beatriz Medori

University of Lisbon, Portugal

Abstract: The historian David Cantor describes the American Society for the Control of Cancer's (ASCC) rapid relationship with film as one of 'uncertain enthusiasm'. Not only dependent of pricy production and equipment, the moving picture could convey the message of cancer's prevention and treatment to broader audiences, but it could potentially overwhelm them. In consequence, during the 1920s and 1930s, the ASCC's films were mostly screened in smaller venues, in the presence of specialists to answer directly to audiences. The Portuguese Institute of Oncology (IPO) was very much aligned with the ASCC's programme: appropriating its campaigns since 1928, incorporating film since 1931 in the Portuguese fight against cancer. However, traces of this relation have been mostly erased from the history of the IPO. Mentions to the Institute's use of film were scarce and tardy in the IPO's Bulletin, whereas other media were often detailed in this monthly publication aimed at educating the 'wider public'. As these films have not been found to date, it could be argued that, further to the challenges of conservation and accessibility imposed by the very nature of this medium, film's 'uncertain enthusiasm' might have played a role there too. Within the main framework of the alliances and conflicts in the history of science, the cancer film is explored as an ally, but not without tensions and suspicions for cancer campaigners at the time. Equally, these 'side effects' of the cancer film still pose serious challenges to historians of science today, especially if these records stay unnoticed. With regard to the IPO, its speedy incorporation of film places Portugal in a prominent non-'peripheral' location and sheds light on the surprising influence of North American culture in the country already at the beginning of the 20th century and during the Portuguese dictatorship of the *Estado Novo* (1933-1974).

Panel 4B: Medicine, Monday 20th (16:30-17:40)

Alliances and the Competition in the Struggle against Intractable Cancer: a Canadian Experience in the Management of Brain Tumors, 1952-2002

Fedir Razumenko

University of Calgary, Canada

Abstract: Tracing the development of new treatment approaches to cerebral tumors in Canada, I investigate how local and international uncertainties found their solutions in the clinic and beyond. Since brain malignancies defied therapy throughout this period, cancer clinical trials became sites of experimental research, producing ethical dilemmas for both physicians and researchers. I examine the role of new institutions (Advisory Committees on Radio- and Chemo-therapy), funding bodies (National Cancer Institute of Canada), technological innovations (Cobalt-60 machines, Iridium-192 applicators), and debates over professional authority among physicians, scientists, and policymakers. All of these contributed to the evolution of standardizing cancer care for patients.

Investigators studied biological effects of radiation and in this process radiotherapy was considerably overused. Years later, the sequelae came home to haunt the patients along with clinicians. Late iatrogenics continued to be a major factor in clinical decision-making, though in the 1990s it was so because of improved cure rates and considerably increased number of longterm survivors. Consequently, medical and radiation oncologists began considering the quality of life evolving from cancer care and cancer itself in addition to the quantity of life. Exploring developments in neurooncological clinical trials over the second half of the twentieth century, I have the objective to demonstrate how and why a cultural shift to clinical investigation that became more patient-oriented was made. As of 1993, all Phase 3 cooperative oncological trials in Canada have to include some assessment of quality-of-life parameters by patients themselves. I build on the work of Carsten Timmermann and Ilana Löwy to show that historical case studies can help us better understand current clinical investigation practices. Drawing on the clinical trial committees' records, I evaluate how conceptual disagreements stemming from competing evidential paradigms in experimental clinical oncology can normalize novel modes of medical research by re-balancing weights of constituents providing evidence.

Panel 4C: Wartime Science, Monday 20th (16:30-17:40)

The development of Statistics and the unification of Greece during a wartime period: the case of the 1920 census and its technology

Christos Karampatsos, University of West Attica, Greece

and Polyxeni Malisova, National and Kapodistrian University of Athens, Greece

Abstract: The foundation of the Greek Statistics Agency in 1925 took place after a long period of consecutive wars in the 1910's, during which the Greek state had almost doubled its territory. Ioannis Michalopoulos, a statistician expert and the first Director of the Statistics Agency, put great emphasis on the crucial role of the wartime period. At the Conference of the International Institute of Statistics (Warsaw, 1930), he argued that "the Balkan Wars, the Great War and the Asia Minor expedition deeply influenced the development of statistics in Greece".

In this presentation we shall argue that the "development of statistics in Greece" was in fact "deeply influenced" by the urgent need for the homogenization of the newly acquired territory. We shall focus specifically in the organizational and technical aspects of the first official census of the enlarged Greece, in December of 1920, amidst the Treaty of Sevres which marked the beginning of the partitioning of the Ottoman Empire.

The 1920 census was a large-scale unification experiment between the "old Greece" and the "New Countries" and therefore it faced grave administrative and social rivalries. The local authorities were unwilling to collaborate with the (central) Statistics Department. The local residents, especially from the "New Countries", were unwilling to provide personal information and many of them did not even speak the Greek language. In order to overcome those rivalries, the Statistics Department combined the latest scientific and organizational developments on the field of demography (an extremely detailed individual counting card, an hierarchical administrative system for collecting the data, the introduction of street naming and house numbering) with a state-of-the-art data processing technology: imported punched card machinery. This combination proved to be totally compatible with the need for the homogenization of the country and vital for a normative representation of the multinational population of the "new Greece".

Panel 4C: Wartime Science, Monday 20th (16:30-17:40)

Halted Momentum: History of International Cooperation in Seed Testing During the Second World War

Anaïs Got

University of Angers, France

Abstract: In 1869, Friedrich Nobbe (1830-1922) began to practice and theorise a new agronomic speciality called 'Seed Testing'. He then founded the first Seed Testing Station i.e. a laboratory dedicated to this new activity, in Tharandt, Saxony. Seed Testing spread rapidly to neighbouring states: by the beginning of the 20th century, there were more than a hundred seed testing stations in several dozen countries.

Working on the history of Seed Testing helps to understand it as a normative analytical practice whose purpose is to comprehend and organise seeds in a rational way. Whether it seed testing as an experimental methodology or as a science discipline, in both cases it is a system that was built by scientists, called also agrobotanists, who recognised seed as a fundamental element that states should invest in to improve their national agricultures. Thus, they began to develop procedures and techniques for testing seeds, based mainly on the physical examination of their characteristics and faculties, particularly regarding germination.

At the beginning of the 20th century, agrobotanists from Seed Testing Stations decided to meet during international congresses and then to come together in the International Seed Testing Association (ISTA) whose main aims were clearly stated: to work for wider cooperation, for the unification of testing methods and for the development of scientific seed research.

My presentation will show that this association was fully a creation of the Interwar period, based on common values including geopolitical neutrality. When the Second World War broke out, ISTA's cherished model of international cooperation in Seed Testing came to a halt. At the same time, national interests had been brought back to the forefront to respond to the urgency of the different crisis contexts faced by countries. It was not until the end of the war that the links between ISTA members were reborn and cooperation work resumed.

Panel 4C: Wartime Science, Monday 20th (16:30-17:40)

The Development of Archaelogical Science During the Crimean War

Kate Mower

University of California Riverside, USA

Abstract: As the Crimean War raged between 1854 and 1856, empires collided in the Black Sea. The Russians and Ottoman Turks had been locked in Russo-Turkish battles for over a century and a half, and this war enticed the British and the French into the conflict with prospect of imperial economic gains and political equilibrium in the Black Sea. The British, who had spent the 19th century in a haze of philhellenism, sold the war at home with the promise of protecting Greekness. The British sent an army medical officer to the war, Duncan McPherson. He had recently returned to London from India and China, where he had hoped to bridge his physician occupation with diplomatic endeavors. But McPherson, like many Victorian Britons, was swept up in the wave of philhellenism, and he was anxious to get to Crimea to help the imperial and commerce efforts, comparing those efforts to that of the Greeks who had colonized the Black Sea beginning in the 8th century BCE. Once arriving in Crimea, McPherson fulfilled his duties as a military medical officer while also venturing off to known ancient Greek colonies to conduct amateur excavations. The Russian Empire had invested in a "Greek Project," inspired by Peter I and realized by Catherine the Great, in which Crimea acted as a Greek heritage project that celebrated Greekness and Orthodoxy. The Crimean War was a military struggle but also a cultural one as well. McPherson employed the British Army's Engineers to excavate Crimean sites, and the artifacts he found were sent to the British Museum, where they remain. I argue that the cultural conflict over access to archaeological sites fueled arguments about how archaeological science should be conducted. Those arguments encouraged and promoted archaeological practices by Western powers and diminished archaeological practices conducted by the Russians.

Panel 1A: Early Modern Controversies about the Life Sciences, Tuesday 21st (10:35-11:45)

Pierre Gassendi on Respiration and the Heartbeat

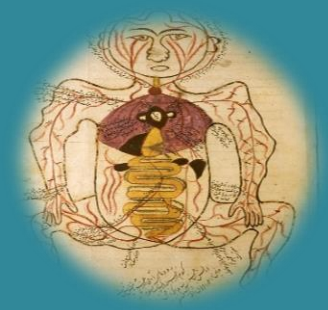
Guillermo Willis

Warburg Institute, School of Advanced Study, UK

Abstract: In his own lifetime the French philosopher Pierre Gassendi (1592-1655) was deemed by his contemporaries a figure of similar stature to René Descartes and Thomas Hobbes in the development of a mechanical natural philosophy. Nevertheless, the impact that his revival of Epicurus's philosophy had upon anatomy did not receive in the following centuries as much scholarly attention, which favoured the logical and physical—and not the physiological—dimensions of Gassendi's theories.

In 1649, Gassendi published his views on respiration and the motion of the heart as a brief appendix to the Animadversiones in decimum librum Diogenis Laertii; these were again included—with a few changes introduced—in his major work published posthumously in 1658, the *Syntagma Philosophicum*. The causes of respiration and the heartbeat presented intriguing challenges to 17th-century natural philosophers, perhaps the main one being whether these motions were taking place voluntarily or involuntarily. This research aims to define Gassendi's substantial contribution on the subject to the advancement of a mechanical anatomy, as well as to explain how this was specifically conceived and developed within his Epicurean atomistic framework.

Furthermore, I also aim to provide a reading of Gassendi's words as inserted and dialoguing—or debating, if preferred—with the contemporary intellectual context, and I will do so by comparing his explanations of respiration and the heartbeat to those provided by Descartes in the *Traité de l'homme* (written in the mid-1640s but not published in Latin until 1662) and in La description du corps humain (1647), and by Hobbes in the *Leviathan* (1651). Doing so will allow me to introduce some remarks on the singular roles that observation, experience, and experimentation played for Gassendi in the making of a new mechanical anatomy.



Panel 1A: Early Modern Controversies about the Life Sciences, Tuesday 21st (10:35-11:45)

Paracelsianism: Controversies between physicians, alchemical and natural philosophers about the nature of scientificity of alchemy in the 16th and 17th centuries

Elli Papanikolaou

West Bohemia University, Czech Republic

Abstract: The traditional historical view supports that the Chemical Revolution was delayed by a century, but according to the research of great historians of science, like A. Clericuzio and J. Rampling, this perspective is wrong, as it has been proven that many alchemists contributed and "participated" in the Scientific Revolution. However, this traditional view was not created later by the historians, but existed as early as the sixteenth century, as many scholars, even alchemical philosophers, began to reject the basic principles of alchemy by emphasizing it as pseudoscience. To fully understand how and why alchemy began to be classified as a pseudoscience in the sixteenth century, we must investigate many factors, which contributed in this opinion, such as the academic communities, religion and politics. Therefore, through the research on the development and spread of Paracelsianism in Europe, it will be shown how the Paracelsians and anti-Paracelsians laid the foundations of what is scientific in the field of alchemy, as many supporters and opponents of Paracelsus labeled each other pseudo-Christians, pseudo-philosophers and pseudo-chemists. Based on the analysis of primary and secondary sources as well as the exploration of specific scholars, such as Walter Charleton (1619-1707) and Andreas Libavius (1555-1616), it will be explained how the scientific communities, such as the Royal Society, contributed to the demarcation of the concept of science and how religion and politics were associated with Paracelsianism influencing it positive or negative. Consequently, through this research, we will understand better how the conflicts between Paracelsians and anti-Paracelsians, politics, religion, scientific and academic communities influenced and shaped the scientific domain of chemistry, which will help us appreciate how we structure the meaning of science even today.

Panel 1A: Early Modern Controversies about the Life Sciences, Tuesday 21st (10:35-11:45)

Philosophers against physicians: the roots of a long-lasting rivalry over the medicalization of human life

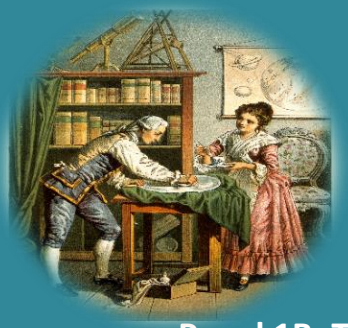
Eduardo Pierini

Université de Genève, Switzerland

Abstract: Michel Eyquem de Montaigne (1533-1592) in his celebrated Essays revealed a highly skeptical attitude toward medicine, which reflected both his personal experience as a suffering patient, but also a philosophical tradition of anti-medical attitude. In Early Modern Europe, this merciless critique of doctors and medicine followed a very old tradition started by some ancient philosophers whose works were recently rediscovered. Already Plato (424-348 BC) in the Republic, made his fictional Socrates claiming how "such excessive care of the body", or the life regimen recommended by physicians, was not only "inimical to the practice of virtue" but even put the man "in constant anxiety about the state of his body". This statement reflected the fear that the increasing medicalization of the body would have put the physician in a very powerful condition because healthy men became an "imaginary invalid" totally dependent on the physician's will.

Also, the emerging grudge of philosophers toward physicians increased when, as a consequence of the emergence of the "corporealist" doctrine of the soul, physicians could prescribe drugs and exercises to maintain the balance of the soul. Philosophy was also considered "the medicine of mind", provoking an intellectual and economic competition with physicians on the control of wealthy followers and patients. If important intellectual authorities as Chrysippus (281 - 208 B.C.) and Galen (129-201) overcame that problem claiming their unique status of both physicians and philosopher, other philosophers such as Pliny (24-79) and Plutarch (46-119) heavily criticized the physicians and their practices.

In this paper, I analyze this rivalry in considering medical and philosophical sources from the ancient period and their impact on Early Modern European philosophers such as Pico della Mirandola, Michel de Montaigne, and Francis Bacon. Even if there was no longer economic competition, the long-lasting skepticism of philosophers toward medicine generated new critiques, such as the lack of scientific attitude, but still maintained some of the old aspects we could find in the work of ancient philosophers.



Panel 1B: The Emergence of New Scientific Actors, Tuesday 21st (10:35-11:45)

Officials or Scientist? The Silver Age (1874-1936) that neglected professional engineering

Javier Sierra de la Torre

University of the Basque Country- Euskal Herriko Unibertsitatea

Abstract: The aim of my PhD research project is to explore the self-perception and public presentation of Spanish civil engineers as scientists between 1874 and 1936. Civil engineers were technical officials enrolled within the administration of the modern state and technical specialists devoted to industrial development that generally received an extensive scientific education. My main hypothesis is that, due to this education and guided by the need of technically solving industrial requirements, rationally organizing the modern state and building public infrastructures, engineers were up to date with global technological innovations as much as with new scientific products. This would mean that the sciences and techno-scientific innovations were a fundamental core of their professional interests, thus thinking of themselves and presenting themselves as scientists as much as State officials.

The above-mentioned periodization is what Spanish historians of science have considered to be the renaissance of science in Spain. The so-called "Edad de Plata de la ciencia española" (the Silver Age of Spanish science) is an uncritically and commonly used historiographical category that presents its own problem for my research. Namely, this category implies a shift in how Spanish scientists worked between 1874 and 1936. But when it comes to civil engineers, Spanish historians of science have scarcely taken into account their continuous role in the development of the sciences in Spain.

Therefore, historians of science have been using a restricted concept of science (specifically speaking, pure and experimental sciences) and have left professional engineering's specificities out of the category. In this paper I shall address this question by paying attention at some popular journals and periodicals produced by or addressed to engineers. I am critically reading the engineers' techno-scientific communication and popularization journals so as to explore the extent to which engineers considered themselves and aimed to be considered as scientists. I will also try to show that this identity presents specific and yet unanswered challenges to the Silver Age category

Panel 1B: The Emergence of New Scientific Actors, Tuesday 21st (10:35-11:45)

There was no shortage of skeptics: Computational quantum chemistry and its acceptance in the broader chemical community

Stylianos Kampouridis

National and Kapodistrian University of Athens

Abstract: Computational quantum chemistry was developed in the 1960s and 1970s concurrently with the spread of electronic computers, especially in the United States. It was a long process that created many tensions inside the small community of practitioners that tried to quantitatively predict atoms and molecules' properties. The predictive power and reliability of quantum chemical models were the product of a historical process of negotiations, controversies, and understanding of the manifold uses of predictions. Many different procedures to model molecules were proposed. As it turned out, there was not a single solution for everything. Every model carved out a niche within which it reigned supreme and assessed the value of the others. By this process, a normative framework of models was created that could cover broad areas of chemistry.

A few organic chemists that incorporated these methods into their research enhanced the acceptance of computational quantum chemistry. Despite this and the fact that quantum chemists reached a consensus about what could count as a reliable prediction, the broader chemical had many reservations about the reliability and the usefulness of predictions. There was no shortage of skeptics. Of course, it was extremely unlikely that chemistry would change overnight from an experimental to theoretical and computational science.

This talk will present the various reservations raised against computational quantum chemistry by experimental chemists in the 1970s and 1980s. These reservations were epistemic and methodological and they were raising fundamental questions about the future of chemistry. These discussions were reflected in the slow process of accepting quantum chemical methods as a legitimate practice in chemistry.

Panel 1B: The Emergence of New Scientific Actors, Tuesday 21st (10:35-11:45)

James Reddie, scientific heretic? Contesting the boundaries of science in Victorian Britain

Stuart Mathieson

Dublin City University

Abstract: In February 1859 an application was received by London's Commissioners for Patents for a new type of flat paddle, one that would 'act as a propeller after the manner of the tail of a fish'. The (ultimately unsuccessful) applicant was James Reddie, a civil servant at the Admiralty who had hovered on the periphery of Britain's scientific circles yet never quite been accepted. Reddie's fishtail propeller is just one example of his idiosyncratic and often esoteric views, which included a complete rejection of Newtown physics, serious doubts about contemporary astronomy, anti-evolutionism, and a fiercely defended, rather strict interpretation of the Bible. These views help to explain why Reddie was not part of the scientific mainstream, but another reason was that mid-Victorian science was undergoing processes of professionalisation and specialisation. A new, rising class of professional scientists were keen to carve out a disciplinary space for their fields and wrest cultural authority from the gentleman amateurs who had previously dominated scientific research. To do so, they formed pressure groups such as the X Club, and attempted to demarcate the natural sciences in a process of boundary work, excluding anything that fell outside their purview as pseudoscience. While this process has been studied, the other side of the boundary has received rather less attention. Yet Reddie established his own organisation to delimit what he saw as authentic, biblically sound, science from 'science, falsely so-called', also engaging in boundary work. This paper therefore uses Reddie's efforts to examine how the boundaries of science were constructed, and contested, in Victorian Britain, how alliances were forged on the basis of philosophical commitments, and how these interacted with a perceived conflict between science and religion.

Panel 1B: The Emergence of New Scientific Actors, Tuesday 21st (10:35-11:45)

Remapping the network of the revolutionary metric system (1795–1799)

Emma Prevignano

University of Cambridge, UK

Abstract: The metric system of weights and measures is traditionally considered the epitome of the alliance between scientific expertise and political power during the French Revolution. Indeed, some of the best studies on the metrological reform are part of broader works analysing the interaction between science and politics in the 1790s and the early nineteenth century. The focus is on Paris' leading science practitioners: how they devised a unified decimal metric system based on a new survey of the terrestrial meridian; how they managed to secure funding and support from revolutionary governments; how they journeyed through the perils and uncertainty of turbulent times. Such a perspective has caused to overlook practices of translation, mediation, adaptation, and manufacture that went into turning an abstract project into a system of received knowledge. The present paper engages with these neglected activities by examining the correspondence, daily logs, registers, and books of account of the *Temporary Agency of Weights and Measures* (1795–1796) and the Office at the Ministry of Internal Affairs, which replaced it from February 1796. It was from here that different tasks pertaining to the introduction of the new measures were coordinated. Shifting the research focus to the 'administrative' operations, offers a fresh angle from which to consider metrological standardisation, one that collocates the small group of Parisian astronomers, chemists, and mathematicians into a wider, diverse, and dynamic network, in constant transformation during the revolutionary and Napoleonic period. Science practitioners occupied a prominent position within this web, but they were not, I argue, the undiscussed and static centre. Nor was their idea of standardisation the only route to metrological unification. Other actors — with different priorities and concerns — were at least as indispensable to the success of the reform, and attempts at introducing the new units consisted of continuous negotiations and adjustments.

Panel 3C: Taming Nature, Tuesday 21st (10:35-11:45)

From Enemy to Ally: The History of Gravity Anomalies in Physical Geodesy

Miguel Ohnesorge

University of Cambridge, UK

Abstract: One of the central aims of scientific research is the quantitative prediction of phenomena. Conversely, historians and philosophers of science have paid particular attention to anomalies that resist such predictability. Inspired by Thomas Kuhn's conception of normal science, anomalies have often been characterised as epistemic nuisances to researchers. They are merely tolerated or supressed, and, at best, lead to revolutionary turmoil.

The anomalies in the history of surface gravity measurements resist this received interpretation. Beginning with the work of the French physicist Pierre Bouguer in the 1730s, geodesists have developed sophisticated but ultimately unsuccessful methods to reduce irregular outcomes from pendulum and plumb-line measurement to theoretically predicted values. Until long into the 20th-century, anomalies in the strength and direction of surface gravity continued to challenge the earth models developed by figures like Alexis Clairaut, Pierre-Simon Laplace, Carl Friedrich Gauss, or George Biddell-Airy. Far from stalling the discipline or provoking a revolutionary crisis, however, such recalcitrant phenomena formed a primary research target for physical geodesy. Geodesists developed sophisticated methods to record, compare, and draw inferences from residual anomalies – notwithstanding a lack of predictive control.

My talk sketches the understudied history of surface gravity anomalies from roughly 1730 to 1910, showing how they moved from being an enemy to an ally in the study of the earth as a physical system. I argue that this history challenges the prevalent but too narrow Kuhnian conception of anomalies, inviting us to reconsider accounts with a long tradition in natural philosophy going back to the work of John Herschel and John Stuart Mill.

Panel 3C: Taming Nature, Tuesday 21st (10:35-11:45)

Battling rivers: mustering water expertise in early 18th-century Holland

Van Besouw Jip

Vrije Universiteit Brussel

Abstract: Around 1700, river flooding immediately threatened some of Holland's major cities. Peat cutting and canal digging had made traditional craft solutions to flooding increasingly insufficient and the ensuing 'water crisis' forced governments to look for new solutions. Considerable capital, both intellectual and financial, was spent in trying to deflate floodings and improve channelling, and this brought together various types of expert knowledge. In this talk, I will show how this battle against the water led to a, for the time, unlikely but successful collaboration between the crafts and theoretical mechanics.

On the most theoretical level, the Leiden professor Willem Jacob 's Gravesande (1688-1742) included a chapter "On rivers" in his bestselling *Physices elementa mathematica* (1720), in which he used state-of-the-art mechanics and hydrostatics, including results from Book II of Newton's Principia, to conceptualise the relevant 'forces', 'pressures', and 'resistances' of river flows. 's Gravesande and his colleague Petrus van Musschenbroek (1692-1761) also developed a more experimental line of attack and constructed several instruments to simulate, visualize, and quantify the various phenomena and concepts involved.

While pragmatic solutions to river problems were traditionally the exclusive terrain of expert craftsmen, increasing perils led local governments to bring together academics and craftsmen, leading to cross-fertilization. Specifically, the collaboration between 's Gravesande and the cartographer Nicolaas Cruquius (1678-1754) led to a stunning depth contour map of one of the main rivers of Holland. This map was made to accompany a report on the state of the river aimed directly at decision makers. As I will show in this talk, however, the map could be used to visualise the distribution of volumes over different arms of the river, because of theoretical conceptualizations involved. The map thus was truly an object between theory and practice.

Panel 3C: Taming Nature, Tuesday 21st (10:35-11:45)

Earthquake Prediction in Greece: A Public Scientific Controversy.

Iraklis Katsaloulis

University of Athens, Greece

Abstract: In 1981 a group of Greek scientists proposed a method which they claimed to be capable of short- term earthquake prediction, named the VAN method, after its proponents' surnames (Varotsos, Alexopoulos, Nomicos). Soon after the method's publication a fierce scientific controversy, which lasted more than three decades, broke out. On the one side were the members of the VAN group, who were solid state physicists, and on the other side the biggest part of the seismological community. The VAN controversy unfolded not only in the interior of the scientific community but in the public sphere as well. From the beginning of this dispute most of the scientists that engaged in it made numerous public interventions. They wrote newspaper articles, participated in TV broadcasts, gave lectures for the wider public etc. The public watched with great interest and often took sides in this debate.

A recurring and very important question for the evolution of this controversy was the following: Was this debate really a matter of scientific disagreement or was it just a struggle for dominance between enemies who belonged to different scientific communities with conflicting interests? How did scientists answer to this question? In the proposed presentation I will follow scientists in the public sphere and I will present the rhetoric they used in order to answer to this question in a way that was more suitable for promoting their own research agenda. I will also show that their target audiences (i.e. the public and the mass media) were no passive at all, and had a role in shaping the discussion that took place in the public sphere.

Panel 2A: Science Obstructed: Scholarly Vices and Routes to Knowledge, 1700-2000, Tuesday 21st (12:15-13:40)

Symposium overview: Finding their origins in the early modern period, scholarly vices are a set of concepts still used in later periods to denote behaviour and attitudes considered detrimental to sound scholarship. Prejudice, arrogance, and dogmatism – to name just a few of these vices – were perceived not only as having negative epistemic consequences, but also as producing negative effects in the social realm. By means of case-studies from various textual genres, locations, and academic contexts, this panel studies how scholarly vices were perceived or portrayed as obstructions to knowledge-making. In doing so, it aims to explore the enduring significance of language of vice in scholarly debates and to demonstrate its rhetorical versatility. It presents initial results of the research project 'Scholarly Vices: A Longue Durée History, 1700–2000', which is currently carried out at Leiden University.

Panel 2A: Science Obstructed: Scholarly Vices and Routes to Knowledge, 1700-2000, Tuesday 21st (12:15-13:40)

Setting out the road rules: Scholarly vices in 20th-century codes of conduct

Kim M. Hajek,

Leiden University

Abstract: This paper examines what happens to discourses of scholarly vice when scientists write out explicit guides for avoiding such obstructions to knowledge-making. Through the 20th-century, such 'road rules' for the path to knowledge have most often taken the form of codes of conduct, formulated by groupings of scholars on levels including the disciplinary, the institutional, and the national. But the ubiquity of such codes in late-20th-century scholarship does not necessarily mean that there is consensus on how obstructions to knowledge should be framed, nor even whether the language of 'vice', 'obstruction', or 'misconduct' remains relevant when discussing scholarly endeavours. Different disciplinary bodies write distinct versions of their own 'codes of conduct', implement them at different moments in their history, and often revise them along the course of the century. Where the American Medical Association's efforts to codify 'principles of medical ethics' for its members date back to 1847, the American Physical Society saw no need for any formal statement until 1987, due to physicists' perceived 'reputation for maintenance of high ethical standards' (APS, 1987). As the initial stage of a larger investigation into the language and textual conventions of codes of conduct, I focus here on the formal statements of American discipline-based associations in the 20th century. Taking examples from medicine, physics, and sociology, this paper contrasts the framing and content of scholarly bodies' guides for their members' conduct: whether codes are labelled as 'principles', or 'guidelines', or simply contain examples of 'misconduct'; what kinds of conduct they promote or prohibit; whether scholarly vices from earlier periods like 'dogmatism' or 'unconsidered study' persist. And since disciplinary bodies are above all socially constituted, I further ask how the social nature of science is inscribed into codes of conduct. What tensions arise between the persona of the individually 'virtuous' scholar as portrayed in these documents, and constraints on scholars' activities as a member of a profession? My analysis moves both between disciplines and through time, and ultimately promotes the importance of textual analysis for enriching our understanding of research ethics in the 20th century.

Panel 2A: Science Obstructed: Scholarly Vices and Routes to Knowledge, 1700-2000, Tuesday 21st (12:15-13:40)

Planning trajectories through unknown academic lands: On the vice of unconsidered studying and its prevention

Anne Por

Leiden University

Abstract: During the eighteenth and nineteenth centuries, an academic genre called Hodegetik ('showing the way') provided students from the German lands with guidance on how to study and live well. Besides giving general advice, aimed at all students, hodegetical courses also regularly provided advice regarding specific fields of knowledge. Some of these were meant for students in a specific discipline exclusively, others were aimed at students in general but included overviews of the different disciplines to be distinguished. Such overviews were occasionally framed as histories of scholarship but were usually presented as arrangements of characterizations of different fields of knowledge. Hodegetical authors provided students with these overviews for good reason: They wished to prevent the vice of uninformed, unprepared study. With no set curricula and lack of insight into the academic landscape, how would a student know which courses to take, and in which order, to achieve his goals? As one hodegetical author implies, course directories would be better understood with proper knowledge about the main disciplines and their subdivisions.

For present-day historians, these overviews give insight into the character, differentiation and ordering of fields of knowledge, as understood by the hodegetical author and more importantly, as presented to the aspiring student and future scholar. They provide answers to questions like: Which subjects were seen as necessary in order to fulfil the duties belonging to a certain career? Which were regarded as crucial for successfully following other, subsequent courses? Which personal inclinations would be grounds for choosing a certain specialty? In this paper I focus on how hodegetics informed students about becoming a medical professional/scholar. Using both eighteenth- and nineteenth-century sources, I will discuss the different understandings of medicine and its subdisciplines as well as how these differences are reflected in both curricular choices and notions of suitability.

Panel 2A: Science Obstructed: Scholarly Vices and Routes to Knowledge, 1700-2000, Tuesday 21st (12:15-13:40)

Dogmatism as a religious, scholarly and societal vice: The case of Cesare Lombroso

Caroline Schep

Leiden University

Abstract: Nowadays, one can call someone dogmatic for being stubborn, old-fashioned or opposed to progress. This meaning, however, has not always been the same. 'Dogmatic' changed from a term simply referring to education in medicine to the definition it has today. 'Dogmatism' as a way of thinking, opposed to critical thinking, only emerged with Emmanuel Kant in 1781. Yet in the centuries following Kant, dogmatism was actually most commonly used in theology. This raises a number of questions. Dogmatic thinking apparently was not always considered bad, so how did it evolve into such a vice? Could it be positive, too? Was dogmatism used merely pejoratively, or was it also connected to more general ideas about progression in science? The case study of Cesare Lombroso (1835–1909) and the debates around his works on criminal science offer an insightful illustration of these questions by historicizing the term and drawing attention to its history and layered connotations.

Lombroso, the well-known father of the positivist school of criminology, instead of looking for causes of crime in society, focused on the criminal. He was convinced that the 'born criminal' existed. To support his arguments, he measured the skulls of criminals and drew on (pre-) Darwinist theories of evolution. Lombroso decidedly broke with many conventional ideas. In contemporaneous academic debates about him, accusations of dogmatism frequently accompanied criticism. Supporters of Lombroso praised how he broke with old doctrines of criminal science, and Lombroso himself also claimed to move progressively beyond the old-fashioned ideas that controlled academia. Similarly, Lombroso's critics employed dogmatism to portray him as someone who was obstinate and blind to counter-arguments.

These debates around Lombroso, which can be placed mostly in the 1880s and 1890s, show that being a dogmatic scholar stood equivalent to obstructing progress in science, but also demonstrate other layers of meaning. Religious connotations, social criticism, and different views of scientific progress appear. My analysis of these debates will historicize academic dogmatism and study its portrayal as obstructing the road to progress. Mostly, it will reveal the conflicting uses of dogmatism that collide in the case of Lombroso.

Panel 2A: Science Obstructed: Scholarly Vices and Routes to Knowledge, 1700-2000, Tuesday 21st (12:15-13:40)

Historia Literaria and the Vices of Medieval Learning

Hidde Slotboom

Leiden University

Abstract: Scholarly vices were frequently invoked in debates with fellow scholars, but also employed to criticize scholarship from the past. They, in fact, were used as markers of forms of learning from the past that were seen as inferior and incompatible with later conceptions of scholarship. Perceived as an especially bleak period in the history of learning, the Middle Ages and its scholarship often were at the receiving end of diatribes by later generations, as widespread notions like 'the dark Ages' demonstrate. *Historia literaria*, histories of learning written in the German lands in the seventeenth and eighteenth century, prove no exception. They too presented medieval learning as arid and inferior. Focusing on a selection of these *historia literaria*, I will discuss which scholarly vices were invoked in their depiction of medieval science and analyze their rhetorical functions. More specifically, I will highlight interactions between the genre's organization of knowledge and its rejections of medieval scholarship. In the historiography of *historia literaria*, the order of knowledge has been an important theme. The role of 'scholarly vices' in these structures of knowledge has, however, not yet been studied. In studying their interactions, I will show how new forms of knowledge production made use of scholarly vices to distance themselves from the past, thereby legitimizing their own endeavors, how they constructed a vision of the past that allowed them to present themselves as walking promising paths towards knowledge, and how this is connected to the space they devote to 'failed forms' of learning.

Panel 2B: History of Physics, Tuesday 21st (12:15-13:40)

An Essay in Counterpoint: Wheeler, Schwinger, and 'Conflicts in Physics

Stefano Furlan

Max Planck Institute for the History of Science, Germany

Abstract: J.A. Wheeler (1911-2008) and J.S. Schwinger (1918-1994) are two towering figures in 20th-century physics. Despite partially common interests, they also embodied two separate worlds: one characterized by conviviality, the other by isolation; one believing that science is born out of conversation, the other working alone; one heavily relying on pictures, the other on calculatory prowess; one putting physics at the service of atomic and hydrogen bombs, the other outspokenly proud of not having taken part to the Manhattan Project. If, however, we look, thanks also to his private notes, at a less explored facet of Wheeler, that of the "seeker" who held the "herd instinct" of physicists in contempt, we may appreciate some resonance in attitude with Schwinger, while they both were trying to carve their own paths "far from the particle crowds". These were, as expected, two quite different paths, but both physicists resorted to a common strategy worth some attention (especially with reference to their field): an "oblique" use of history, or the use of historical masks to give voice – a different voice – to themselves. In this paper, I will address how they both, under historical "disguise", took their stance against the mainstream of particle physics (choosing different moments: Wheeler in 1953, while Schwinger in 1965 and, with the meaningful title of "Conflicts in Physics", in 1977). Moreover, this will also show how such quasi-historical evocations ended up reflecting, in Schwinger's case, his ever-increasing and scornful isolation, but at the same time an empathic opening towards distant figures in space or time; in Wheeler's case, what manifests itself is the way he was able to navigate a number of epistemic, geopolitical or military tensions and conflicts, even turning them into a resource.

Panel 2B: History of Physics, Tuesday 21st (12:15-13:40)

Playing physics against itself: Kenneth Wilson's path to effective theories in the 1960s

Sébastien Rivat

Max Planck Institute for the History of Science, Germany

Abstract: The dream of a final theory has been driving research at the frontiers of physics for a very long time. In the 1960-70s, however, physicists came up with a new paradigm, the paradigm of effective field theories (EFTs), which somewhat undermines this dream. Many physicists today believe that empirically successful theories are ultimately best treated as effective theories. And yet these new types of theories are, by virtue of their very mathematical design, not meant to be final. The goal of this talk to retrace some aspects of the early development of EFTs by focusing on Kenneth Wilson's works in the 1960s. Most strikingly, Wilson was interested in understanding the structure of "complete" field theories that could putatively work across all scales. But he was led through this search to develop a new type of theory, namely his first prototype of EFT, which, as a matter of principle, could not provide any such information. I will argue that this irony looks merely ironical and not paradoxical once we focus on Wilson's broader methodological commitments. The research traditions he evolved in and the specific local puzzles he worked on certainly played an important role. But before anything else, Wilson was interested in solving mathematically interesting physical problems and he thought that progress could be made by treating these problems as if they could be in principle analyzed by a sufficiently powerful computer. The first point explains why he had no qualms about twisting the structure of field theories; the second why he divided a putatively complete theory into a series of limited ones by following a standard divide-and-conquer algorithmic strategy instead of working with a fully discretized and finite theory. I will conclude with some remarks about EFTs and physicists' struggle to formulate a complete theory in particle physics.

Panel 2B: History of Physics, Tuesday 21st (12:15-13:40)

Precision measurements in the determination of Ohm

Vasiliki Christopoulou

University of Athens, Greece

Abstract: Cultures of precision measurements formed gradually during the 19th-century physics. Although constant errors and random ones were indispensable in experimental practice, there was not a 'universal' way of taking them into account, estimating them and expressing the experimental results. According to probability calculus applied to random errors, the mean value could be accompanied by its 'probable error'. However, during the nineteenth century scientists treated errors along with their local cultures and they often reported only the mean values.

In the second half of the nineteenth century there was a longlasting debate for the determination and construction of electrical standards, particularly that of resistance. The British and the Germans had different approaches from the start, not only with respect to the absolute system, but also in the way they treated measurement and/or the materials involved in it.

As regards Great Britain, Lord Rayleigh and his research team played a prominent role in the standarization of the Ohm unit. Their experimental work for the determination of the Ohm, which took place in the Cavendish Laboratory during that period, is the primary focus of this paper. Rayleigh's name became synonymous with accuracy and care in late nineteenth century Britain, a fame which had a lot to do with his experimental work for that project. However, what he meant with 'precision measurement' and 'accuracy' is not straightforward. I will analyze the meanings of those concepts in Rayleigh's work, and contrast them with the measurement practices of German and French scientists that took part in that project.

Panel 2B: History of Physics, Tuesday 21st (12:15-13:40)

Criticism of the Authority in Early Modern Physics: the Quarrel of Vacuum in Pascal-Noël Correspondence

Thomas Bellon

Centre Gilles Gaston Granger-CNRSAix-Marseille University, France

Abstract: During the autumn 1646, the introduction of Torricelli's barometric experiment in France strongly increased the existing theoretical adversities in the field of natural philosophy. The first experimental research on atmospheric pressure phenomena advent in the context of ancient debate between "fullist" and "vacuist" around the horror vacui thesis.1 This opposition between dogmatic natural philosophy and newborn experimental physics is crystallized in Pascal's physical work.2 For instance, Pascal's firsts vacuum observations in Rouen reported in the pamphleteer text *Expériences nouvelles touchant le vide* (1646), arouses a series of virulent critics starting with Etienne Noel in October-November 1647.3 I argue that the series of Aristotelian-inspired objections related to the "subtle-matter" Cartesian thesis addressed by Noel, permits Pascal to justify his experimental results by exposing elements of an epistemology that disqualifies the need for a metaphysical foundation of rational knowledge. Therefore, the correspondence between Pascal and Noel provides a revealing image of the resistance that modern science must face to affirm itself. In this regard, I intend to expose the critical character of Pascal's reflections on principles, objects, and purposes of natural phenomena knowledge in the correspondence. Firstly, as a critic of institutional scholastic science, and secondly as a critic of Cartesian metaphysical foundation of physics. To this end, I pay close attention to the *Préface pour un traité du vide* (1652) to rank Noel's objections into two main forms of resistance to experimental physics gathered by Pascal under the expression "the misfortune of the age."4 For this purpose, I intend to point out the double mistake of natural philosophy according to Pascal: 1/ the consideration of Ancient's work as authority concerning the explanation of natural phenomena; 2/ the apprehension of objects that exceed the limit of the possibility of experiments and especially when those belong to the field of theology and the authority of the holy Scripture.

Panel 2C: Conflicts and Alliances in Sciences, Tuesday 21st (12:15-13:40)

Local science, languages of scientific communication, and the barriers between scientific disciplines/ the case of Édouard Chatton and Bohumil Němec

Ivan Loginov

Charles University, Czechia

Abstract: It is not unusual in the world of science for discoveries to be made by different people at the same time. In some cases, one finding is older but was not known to the researchers who rediscovered the phenomena later. This paper aims to investigate how Czech plant physiologist Bohumil Němec classified organisms into two main domains - with and without a nucleus (karyon), i. e. akaryonta, and karyonta - in 1929, thus influencing Czech(-oslovakian) biological taxonomy for decades to come, despite the fact that similar classification was already coined by French protistologist Édouard Chatton in 1925 in the figure in his paper on the phylogeny of protozoa. Chatton's nomenclature was mostly ignored by the scientific community, although frequently referenced by his student André Lwoff. Chatton's contribution was recognized much later in the 60s. Interestingly enough, many studies in the history of biological nomenclature mention akaryonta/karyonta distinction as an alternative proposed by various Czechoslovakian biologists, who are in fact themselves quoting B. Němec. The outlined situation is a curious example of how the use of different languages in scientific communication (French and Czech in this case) and the specialization of scientific disciplines can create barriers in the transfer of knowledge between researchers in times before digital research tools.

Panel 2C: Conflicts and Alliances in Sciences, Tuesday 21st (12:15-13:40)

"I was the first!" Scientific rivalries between members of the Austrian Academy of Sciences

Sandra Klos

Austrian Academy of Sciences, Austria

Abstract: Usually, scientific autobiographies are full of praise for other scientists: They pay respect to teachers, role models, colleagues, and positive influences. Commenting on competitors in your own autobiography can come across as petty. Yet, sometimes, rivalries run so deep, that they can become the main story arch of a scientist's life story.

Members of the Austrian Academy of Sciences have all written about their lives and careers up until the moment of their election into this elite circle. For my dissertation project, I have surveyed these life stories for stories about alliances and rivalries across various scientific disciplines. Some authors still look back with bitterness and pettiness when it comes to missed opportunities or alleged unfair treatment. As they are invited to join the ranks of the prestig-ious Academy, however, they felt a certain satisfaction with regard to their former competitors or teachers who did not believe in them.

Thus, the personal files of the Academy offer a rich vault of sources to explore competition and conflict in the history of science. In my presentation, I would like to present some exam-ples from my sources, compare common themes, and analyse narratives within these. In doing so, I would like to present a micro-historic perspective on science organisation and the concept of "healthy competition" in science. Do rivalries push scientists to their best performance or are they a toxic trait of highly stressful work environments and a culture that rewards lone genies more than good team players?

Panel 2C: Conflicts and Alliances in Sciences, Tuesday 21st (12:15-13:40)

A bandit, hiding behind the wallpaper. The dispute between Hollmann and Kästner in Göttingen as an obscure example of the process of self-imagining and self-positioning in 18th century

Friederike Frenzel

Technical University Dresden, Germany

Abstract: In 1775, Samuel Christian Hollmann and Abraham Gotthelf Kästner, both professors at the University of Göttingen, became involved in an episode of "scholars' bickering" (Joost 1986). The program of the Georgia Augusta in Göttingen, founded in the 1730s as an "enlightened university", embraced freedom of teaching and thought, as well as eclectic and popular philosophy as its fundaments. Against this backdrop, the younger professor of Natural History and Geometry, Kästner, attacked the older professor of Logic and Metaphysics, Hollmann, targeting his understanding of science and nature in general and his experimental physics – picking the experimental work with air pumps of their time as an occasion – in particular. Hollmann's answer was unapologetically polemic: he published an "Exhortation to his former, and perhaps future, listeners". Hollmann promoted a theory of nature "of mere experience" that prided itself in not needing mathematics, with only "reason and experience" as its foundations. For Kästner, this could not stand in "true physics".

Kästner never published his reply to Hollmann's "Exhortation", which points to another, underlying level of a supposedly public and transparent scholarly debate about truth criteria and epistemic principles in modern science: By a silent, tacit agreement, Göttingen scholars as well as scholars of other regions were unanimous in their support of Kästner's position, marking Hollmann's viewpoint as an outdated one in the context of a progressive development of self-understanding and elaboration of science. Meanwhile and curiously, from today's point of view, Hollmann was right about the specific air pump problem – although for all the wrong reasons.

The paper will discuss and contextualize this petty, intramural conflict as an example of institutionally framed scholarly culture and a research community that makes itself an object of reflection, formulating, differentiating and codifying a scientific tradition of modernity.

Panel 2C: Conflicts and Alliances in Sciences, Tuesday 21st (12:15-13:40)

Galileo and Oppenheimer: history of two scientists fought but not won

Vincenzo Cioci

University of Lille, France

Abstract: This paper presents a comparison between Galileo and Oppenheimer, focusing on the trials that both scientists had to support. A common aspect at the origin of the two judicial proceedings is the relationship between science and authority: political and religious. The affairs of the two scientists, with the initial condemnations and their late rehabilitations, help to clarify what should be the relationship between science and faith and between science and ethics. After Hiroshima, in fact, Oppenheimer had become the symbol of the ethical crisis that had affected the physical sciences. He had abandoned war research and had devoted himself with all his energy, as an advisor to the Government and the United Nations, to the international control of atomic weapons, opposing the strategic use of the hydrogen bomb. The story of Galileo instead helped to understand the distinction between the disciplines of human knowledge, strictly delimiting the respective fields of application, better defining their different methods and the true extent of their conclusions.

Panel 3A: Socialist States and Sciences, Tuesday 21st (15:00-16:25)

Tito's Science Between Partisanship and Autonomy (1945-1963)

Maja Korolija

University of Belgrade, Serbia

Abstract: Analysis of the relationship between science and political ideology during the Cold War period rises many important questions regarding the history and philosophy of science: How different ideologies understand the role of science in the society? Is every political ideology a potential enemy of scientific principles? Is autonomous science possible? In which ideological system science can achieve its full potentials?

Aim of this presentation is to try to shed additional light on the dynamics of this relationship, focusing on two opposite visions of science: partisanship in science and autonomy of science, and its interaction with socio-economic system of Federal People's Republic Yugoslavia.

The changes that occurred in the FPR Yugoslavia after its break with the Soviet Union in 1948 had also impacted the field of science. Until then, in accordance with Marxist-Leninist ideological positions, partisanship in science was dominant epistemological paradigm in Yugoslav scientific community. That meant that the science was also perceived as a field of ideological struggle, and that scientists were expected to clearly position themselves on the side of "the people" in their activities.

After the break with the USSR, the ideology of Marxism-Leninism in Yugoslavia gave way to the Self-managed socialism. Such tendencies represent the Yugoslav ideological departure from the ideas of Marxism-Leninism and, on a practical level, orientation towards the scientific cooperation with the countries of the Western Bloc. In this way, the scientific discourse in Yugoslavia, though it remained permeated with Marxist elements, which cohabited with "new" essentially anti-Leninist theses (such as the idea of the independence of scientific work), gave way to a specific philosophical perspective that implied the autonomy of science.

Panel 3A: Socialist States and Sciences, Tuesday 21st (15:00-16:25)

Revisiting the history of Soviet cybernetics

Dimitris Kilakos

University of Athens, Greece

Abstract: The fascinating history of Soviet cybernetics remains relatively unknown, despite some significant contributions in its study (e.g. Shilov 2014; Peters 2012; Rindzeviciute 2010; Gerovitch, 2002 etc.). While the several episodes of this history are well documented and discussed in the relevant literature, the lack of critical reflections on the commonly held tenets regarding the impact of ideological interference in the practice of Soviet scientists is striking. A typical manifestation of this line of reasoning is Gerovitch's claim that all Soviet science, including cybernetics, was trapped in an Orwellian "Newspeak". However, historical data arguably offer reasons to cast reasonable doubts on this interpretation of the development of Soviet science (Kilakos, 2018). This paper is an attempt to discuss the history of Soviet cybernetics in the larger context of Soviet history, taking into consideration the ongoing class war in its several phases. Specifically, I focus on how the various stages and episodes in the history of Soviet cybernetics are intertwined with political dynamics and the engagement of various social and political agents in the various stages of the socio-economic reforms in Soviet Union.

Panel 3A: Socialist States and Sciences, Tuesday 21st (15:00-16:25)

Polish-Soviet Ukrainian academic collaboration in the 1950s-1970s in history: from the booming Thaw to the stagnation of the late Soviet

Nataliya Borys

University of Geneva, Switzerland

Abstract: I would like to explore an unknown aspect of Soviet Ukrainian-Polish academic relations: the collaboration between historians during the Thaw (1950s-1960s) and the late Soviet period (the 1970s). Academic contacts played an important role for Ukrainian historians who, being limited in all spheres of academic life and locked in the Soviet Union, got the "easiest" window to the Western science through socialist Poland. Still, academic mobility was heavily impacted by political events and tight Soviet control over trips abroad: Polish-Soviet relations have been destabilized heavily twice; after the Budapest uprising of 1956 and during Solidarity's heyday in 1980-81.

Who were these enemies of the science for both Ukrainian and Polish historians? If Stalin carefully sealed the borders, Khrushchev's period was one of the most favorable periods for academic mobility and exchange. During Khrushchev's Thaw, Polish scholars could get many concessions from Khrushchev: they were allowed to go to the Soviet Union again after the absence of more than 40 years, former Polish archives were partly returned back, as well as the scholarly agreements were signed. The year of 1957 was the record year for foreign scholars coming to the Soviet Union, and mainly for Polish scholars, who used this opportunity window to come to the Soviet Ukraine, previously hermetically locked for foreigners. However, this successful story got gripped in the 1960s and the scholarly collaboration stagnated in the 1970s. Brezhnev's rule was undoubtedly less favorable compared to Khrushchev's era for many reasons.

In my presentation I will explore the reasons of the stagnation of academic contacts for Polish and Soviet Ukrainian scholars in Brezhnev's period (the 1960s-1970s) compared to the booming Thaw's era. Why Brezhnev and his entourage were less favorable to the academic mobility, and particularly with the socialist bloc? Who (or what) were these enemies of the science's development for both Ukrainians and Poles?

Panel 3A: Socialist States and Sciences, Tuesday 21st (15:00-16:25)

Doctors into Agents: The Technologies of Medical Knowledge and Social Control in State Socialist Hungary

Viola Lászlófi

Eötvös Loránd University, Hungary

Abstract: Since the publication of Michel Foucault's *The Birth of the Clinic* in 1963, the processes of medical examination, observation and diagnosis became frequently discussed topics in the history of medicine. During this process, by using the "medical gaze", the physician examines and interrogates the person suffering from disease about their symptoms and medical history, and by the correct medical (re)interpretation of these, the individual becomes a patient who can be understood, cured and controlled by medical knowledge and power. Although previous scholarship has shown, either implicitly or explicitly, that this transformation has enabled effective medical and social supervision, researchers have not given ample attention to what extent this knowledge and the physician's position as an observer could be used beyond the context of healthcare, in other systems of social control or in the construction of enemies.

In my paper, I aim to analyze different situations, in which the doctor-patient relationship, the knowledge/information produced within this framework, and the practices of medical questioning came to the fore in the work of the secret police. This institution was not just the typical place of social observation, but in fact, by writing reports, its officers had to construct discursively the (political and social) enemies of the state socialist Hungary. By examining work and recruitment dossiers opened from 1956 to the 1980s that document either the physicians' uses of information about their patients in state security observation, which they gained during their professional (medical) activities or in which the physician-patient relationship appears as a context of the physician's recruitment, I will discuss how physicians construct the "patient" when the gaze of the state security is 'absorbed' into their medical gaze. It should be pointed out that medical knowledge and, more generally, the pieces of information revealed in the professional (medical) context and used in the framework of the construction of enemy, taken out of their strict medical context, create a grey area of power: on the one hand they could be useful for effective social and political control beyond the borders of healthcare, and on the other hand, it could help physicians in developing a certain degree of social resistance.

Panel 3B: History of Mathematics, Tuesday 21st (15:00-16:25)

Jewish intellectual and mathematical emigration: Gino Fano in Lausanne

Scalambro Elena

University of Turin, Italy

Abstract: The racial laws of 1938, which determined for Italian Jews the loss of civil and political rights and the immediate departure from academic positions, had a strong impact on Italian mathematicians. They were discriminated and forced to live in hiding or to leave Italy. Fortunately, for most of these mathematicians, exile represents what Ash calls 'a moment of reorganization of resources ensembles'.

This is the case of Gino Fano (1871-1952), who left Turin and took refuge in Switzerland. Despite being almost seventy, he did not interrupt his research activity nor abandoned his commitment to teaching: he held some courses for Italian refugees in the Camp Universitaire Italien and gave four lectures at the Cercle Mathématique in Lausanne (1942-44), upon the invitation of G. De Rahm. The unpublished texts of these four conferences (Fano Archive, SML "G. Peano", University of Turin) constitute a historical and mathematical document of considerable interest. While the lectures about surfaces of 3rd and 4th order and birational transformations of the plane indicate that Fano resumed the thread of his mathematical investigations after being impacted by racial legislation, the conference Quelques aperçus sur le développement de la géométrie algébrique en Italie pedant le derniere siècle constitutes a retrospective reading of the history of the Italian School of Algebraic Geometry, in the light of fifty years of activity in such field.

Fano's experience in Lausanne provides a significant example of overcoming the 'conflicts' in the historical period considered and deserves to be examined in detail.

Panel 3B: History of Mathematics, Tuesday 21st (15:00-16:25)

The Philosophical Origins of Mathematical Rigor in General Equilibrium Theory

Giulio Sciacca (University of Genoa, Italy) and Tommaso Ostillio (University of Warsaw, Poland)

Abstract: Recently, the theory of General Equilibrium (GET) has again become a trendy research topic in economics. Its current revamp, though, has little to do with its mathematical development. Indeed, GET has lately been at the center of a fascinating debate about its methodological foundations. In this regard, some authors have proposed that the axiomatization of GET led economists to formulate incomplete explanations of complex economic phenomena (Bartholo et al. 2009; Rosser 2012; Doria 2017; Al-Suwailem 2019; Landini et al. 2020). Others instead have argued that excessive reliance on mathematics in GET involves ineffective uncertainty management within models. That is why experimental testing often undermines the validity of the founding axioms of GET (Mirowski 2012; Al-Suwailem 2017; Hardt 2017; Gallegati 2018). Though insightful, these contentions revolve around methodological issues with a longstanding presence in the philosophical literature about GET (see Hogdson's anthology published in 2012). Moreover, Ingrao and Israel (1987) and Weintraub (1979; 1985; 2002) have extensively explained how GET became a branch of applied mathematics and still failed to become a precise theory (see also Düppe and Weintraub 2014; Boylan and O'Gorman 2018). In line with this research stream, our paper shows that the recent attacks against the methodological foundations of GET generally fail to capture that mathematical rigor in GET has defined historical and philosophical origins. Specifically, we identify strong links between the results of metamathematics in the 1930s, 1940s, and 1950s and the development of GET into a rigorous theory during the same period. On these grounds, we argue that the methodological foundations of GET have defined Bourbakist and Formalist nuances. That is why GET has become as rigorous as detached from reality. Notably, we find evidence supporting this claim in some passages from von Neumann's (1937), Wald's (1951), Koopmans's (1957), and Debreu's (1959) seminal work.

Panel 3B: History of Mathematics, Tuesday 21st (15:00-16:25)

Felix Klein's "Hypergalois Program" as a Mathematical Research Program

Henning Heller

University of Vienna, Austria

Abstract: This presentation is about Felix Klein's(1849-1925) little-known "Hypergalois Program" (HP) as a Mathematical Research Program—akin to a Scientific Research Program (Corfield 2012): A collaboration of a group of mathematicians who shared some common interests, and convictions, and who competed against other programs or "schools" for the prerogative of interpretation in algebra and neighboring mathematical disciplines.

The time period covered—roughly between 1884 and 1897—falls into a process of consolidation of Klein's role as a young, but increasingly settled professor of mathematics, and should be read in light of this transition between his mathematically productive early years and his later position as the "gray eminence" of the mathematical institute in Göttingen (Weigand et al. 2019): On the one hand, Klein established already in young years a system of mathematical cooperation as well as of delegation of research work (Tobies 2020). On other hand, Klein (unlike in his later years) wished to retain tight control of the *leitfaden* of the program.

The other participants of the HP were mainly students of Klein, who mostly followed different mathematical paths when their academic positions were settled. We can guess that they used the collaboration with a high-esteemed figure and were probably less directed by personal interest. It is also interesting to analyze the location of this mathematically (relatively) unsuccessful HP in the broader mathematical community. It is too early to engage with definite answers at this point, but we do witness a relative insularity of the program within German and international mathematics, despite Klein's efforts of internationalization. Hence, I believe that the HP sheds light not only on an often overlooked period of Klein's own biography, but also on questions of research communities and power structures in late 19th century in German academia.

Panel 3B: History of Mathematics, Tuesday 21st (15:00-16:25)

Two Approaches to Purity of Method' in geometrical reasoning revisited

Eduardo Giovannini

University of Vienna, Austria

Abstract: The problem of the "purity of method" in mathematics has received recently a great deal of attention in the field of the philosophy of mathematical practice (see, e.g., Arana & Mancosu (2012)). Roughly, 'purity' is connected here with the search of specific arguments or proofs for mathematical propositions and theorems, where the means of proofs are considered as appropriate (or inappropriate) in relation to the conditions explicitly stated in such statements. The requirement of purity of method constitutes then an ideal of proof. Accordingly, most of the recent philosophical work on 'purity' has been mainly devoted to the problem of providing analytical and logical reconstructions of the notion of "pure proof", in order to determine their adequacy for the ascription of purity in mathematical practice.

This talk aims to contribute to current discussions of the problem of purity of method in mathematics by analyzing a novel historical case, namely the lively controversy on the use of Euclid's Elements as a textbook for teaching geometry in secondary schools, which took place in the Italian mathematical community during the 1880s and the 1890s. The arena for this debate was the Periodico di Mathematica and the Bollettino dell'Associazione "Mathesis", two highly influential journals with a strong interest in mathematical education. This mathematical controversy then focused particularly on two central issues: first, the convenience and legitimacy of using spatial methods to prove and teach theorems in plane geometry; second, the feasibility of using a modernized version of Euclid's theory of equivalence of figures to ground several fundamental concepts in elementary geometry, thereby avoiding any reference to numerical and analytic methods. By examining this "pedagogical" and even "institutional" dimension of the problem of purity of method in late nineteenth-century geometry, I expect to contribute to a more nuanced assessment of the significance of this methodological demand as an important value in mathematical practice.

Panel 3C: The Aristotelian Legacy, Tuesday 21st (15:00-16:25)

Explaining what is "beyond us": Aristotle and the enemies of science

Daniel Kranzelbinder

Princeton University, USA

Abstract: This paper examines how Aristotle, the scientist, deals with those who violate one of the fundamental commitments of science as he sees it. Aristotle occasionally appears to lose his patience with other scientists: some of what they say is simply 'beyond us' (ὑπὲρ ἡμᾶς) and seemingly gets dismissed out of hand. Such outright dismissals come as surprise from Aristotle. In general, he believes that most earlier philosophers and scientists are on the right track (at least to some degree) and is committed to thoughtful engagement with them. This presents us with the following puzzle: Aristotle in general is committed to the careful discussion of earlier views; dismissing a view as 'beyond us' appears to violate that commitment. I argue that we can solve this puzzle. The key is to recognize that when Aristotle says something is 'beyond us,' this is a carefully theorized charge; it is not—as scholarship on the whole has tacitly assumed— a throwaway remark or merely rhetorical flourish. When Aristotle says that one of his predecessors asserted a proposition or theory P that is 'beyond us,' he is saying that asserting P is incompatible with a commitment to really-existing explanatory structure. That commitment, however, is a core of Aristotle's own scientific practice. Criticizing earlier scientists for asserting something that is 'beyond us,' then, is importantly different from criticizing them for getting something wrong: a scientist that gets things wrong thinks that there is an explainer *out there* that can be discovered but gets wrong *what* that explainer is. These scientists didn't just get it wrong, they violated a fundamental scientific commitment, viz. that explainers are *out there* to be discovered. Once we understand this, we can resolve the puzzle: against initial appearances, Aristotle doesn't brush aside earlier scientists with an empty dismissal. Instead he levels a serious and precise charge against them.

Panel 3C: The Aristotelian Legacy, Tuesday 21st (15:00-16:25)

Aristotle, Philoponus, Galileo and the rejection/defence of void: a rethinking of the original Aristotelian view

Elisa Citano

Humboldt Universität zu Berlin, Germany

Abstract: If we read Galileo's early work *De Motu* and some later books like *Discorsi e Dimostrazioni Matematiche intorno a due nuove scienze*, it seems that Aristotle was unable to demonstrate the superfluous and the paradoxical existence of void. However, Galileo does not recognize that Aristotle's physical system is analogous to a modern hydrostatical one. Indeed, Aristotle supports a physics where the medium is not only an auxiliary element but covers an essential role in the definition of motion. Void, deprived of qualitative features, cannot act as a medium and, therefore, cannot explain motion (and velocity). This point is erroneously reconstructed by Philoponus (VI century A.D.), who conceives motion in a 'void-space' and not in a medium; it is exactly through Philoponus' interpretation that Galileo examines Aristotle's discussion on void.

In my talk I would like to compare several Aristotelian arguments contained in *Physics IV 6–9* with Galileo's responses to them. To achieve this purpose, I show how much the interpretation of the Aristotelian commentators, in particular Philoponus, has influenced Galileo's interpretation of the Aristotelian rejection of void. My aim is also to investigate why Philoponus misunderstood Aristotle and proposed a distinct view of void, something impossible to find in nature (the well-known notion, very popular in the Middle Ages, of horror vacui) but, theoretically, distinguishable from bodies and endowed with its own existence. Indeed, as I will point out, Aristotle's demonstrations against void are not valid in the context such as Philoponus' and Galileo's physics (where the universe is created and admits space and empty space) but they are perfectly legitimate in a full and uncreated world as the one described in the Physics.

Panel 3C: The Aristotelian Legacy, Tuesday 21st (15:00-16:25)

Aristotle and Galileo on Elemental Motion. An historical and philosophical analysis

Giulia Clabassi

Humboldt Universität zu Berlin, Germany

Abstract: *De Motu Antiquiora* is the title of several writings written by the young Galileo, gathered in volume n. 71 of the "Manoscritti Galileiani" and preserved in Florence National Library. In these texts, dating back to the period 1589-92 when Galileo was in Pisa, he addresses the problem of motion of simple bodies (traditionally: water, air, earth and fire) and their tendency to move toward their natural places, an Aristotelian theory that has been the subject of a large debate in history of science and natural philosophy. Galileo quotes a specific passage from Aristotle's *Physics* (VIII, 4. 255b15-17) in which the Stagirite tries to demonstrate that light and heavy bodies are 'moved by something', like all the other things that move (this it is in fact the general thesis that is supported in chapter 4). These bodies for Aristotle are moved either by their very essence (nature), which causes them to go up or down, or by "what removes the hindrance" (255b15-256a). Galileo points out how every day we observe with our senses that the places towards which heavy things tend are those that approach the center of the world, while light things are the farthest from the center. Galileo does not doubt that nature has determined these places but wonders why nature 'chose' this arrangement and not another, stating that the philosophers did not speak of the reason why this happens, even if Aristotle identifies two causes. For many interpreters, the Aristotelian question of the motion of simple bodies has also become crucial in determining the order of the writings of the De Motu. Given the interpretative difficulties related to Galileo's texts, the aim of this work is not to reconcile the different views: it is not possible, in fact, either to trace Galileo back to Aristotle's physics (as the continuists would support), or to stress excessively the discontinuities between the two thinkers. The purpose of this study is instead to understand, without adopting pre-established interpretative schemes, how both these views can coexist in the young Galileo and to establish to what extent Aristotle's Physics (in particular, the section on motion of the simple bodies contained in book VIII) was important at the beginning of his philosophical and scientific training.

Panel 3C: The Aristotelian Legacy, Tuesday 21st (15:00-16:25)

Vain philosophy, false science. Hobbes's polemic against Aristotle, and Indians

Costas Galanopoulos

Panteion University, Greece

Abstract: On ongoing debate still exists within Natural Law studies, regarding the historicity of the natural state. It is obvious that, following the Contact with people that habited the Americas, Natural Law theorists were obliged to take into account the actuality of the so-called natural societies. Or, at least, to acknowledge that, in those parts of the world, there were people that had been living in a condition very similar to the one described in the natural state. This meant that Natural State theories could now be subjected to experimental testing, i.e. to (new) scientific testing. Hobbes seemed to be aware of the difficulties posed to his theory by what appeared to be the living example - or not - of his description of the natural state, the American Indian societies. Hobbes's concern with the epistemological consequences caused by the Explorations and the Contact was an episode within the intense debate on the validity of conventional philosophy and cosmology and the vigorous epistemological claims asserted by *historia* -i.e., the humanist genre that demanded an empirical and factual foundation for any scientific or philosophical speculation about the natural world and man. But that was not all. Hobbes's ambivalence about the historicity or fictionality of his description of the natural state was only partially epistemological. His reluctance to acknowledge American Indians as a living reaffirmation of his natural state theory was part of his main polemic against *vain philosophy* and false science, namely Aristotle. There were extremely substantial reasons to do so, scientific, philosophical and political. In the paper that we propose we will examine those reasons by telling a story about Hobbes being on the epistemological war path against both Indians and Aristotle.

Panel 1A: Gender Approaches to the History of Science, Wednesday 22nd (10:35-11:45)

Is hitherto feminist epistemology marginalized?

Efstathia Assimakopoulou

National and Kapodistrian University of Athens, Greece

Abstract: Although, feminist epistemology is not a unified analysis and a certain critique of its methodological models could be accepted -as is the case in all other methodologies or different perspectives in History and Philosophy of Science- it is necessary to highlight some very useful quotations of it. It appears that these approaches have not been on large scale recognized neither by the relevant research nor by the processes inherent in the different levels of education. The debate regarding the masculinity of knowledge should remain open on a much broader scale of reference and not be restricted to only one small part of the academic community. For decades, feminist historians and philosophers of science claim to have raised significant objections to the grand narrative. Their arguments contribute greatly in forming a much clearer picture. Otherwise, we are forced to face the lack of safe and justified conclusions, as well as the fact that our knowledge is biased. For example, the combination of the historical fact that witches as a category is gendered female and of the relationship between witchcraft beliefs and other fields of early European thought, has indeed emerged from various sources and not just feminist ones.

An interesting case of disagreement about gendered aspects of early modern science is the one between Katharine Park and Brian Vickers on Francis Bacon's linguistic metaphors. Park's essay "Women, Gender, and Utopia: The Death of Nature and the Historiography of Early Modern Science" (2006), defending Carolyn Merchant's method from 1980 about the how early modern scientific programmes were consequently used to justify domination of both nature and women, investigates the metaphors in the works of Bacon. Criticizing Park's statements, Vickers published the essay "Francis Bacon, Feminist Historiography, and the Dominion of Nature" (2007) in order to strengthen Bacon's defense. Following this, Park wrote the "Response to Brian Vickers, "Francis Bacon, Feminist Historiography, and the Dominion of Nature"." (2008). To this extent, the current essay will focus not only on this confrontation, but also the enlightening dialogue between Park and Vickers.

Panel 1A: Gender Approaches to the History of Science, Wednesday 22nd (10:35-11:45)

Towards the New Normal: Repudiating Medico-Scientific Models of Homosexuality in Postwar Britain

Ross Brooks

Oxford Brookes University

Abstract: It is well known that the 1957 Report of the Home Office's Departmental Committee on Homosexual Offences and Prostitution—the Wolfenden Report—commended the partial decriminalisation of consensual sex between men. Less well known is that the Report explicitly rejected the notion that homosexuality was, in and of itself, pathological, an extraordinary situation given that the Committee had been conceived amid repeated calls by diverse authorities to provide homosexuals with medical treatment and the vehemence with which certain physicians attempted to convince the Committee that homosexuality was a pathological condition. Seeking to explain this situation, this paper examines some of the ways in which long-standing medico-scientific models of homosexuality, and identification with such models, were challenged through the immediate post-Second World War period in Britain. It will consider the impact of the momentous tomes Sexual Behavior in the Human Male (1948) and Sexual Behavior in the Human Female (1953) by the American zoologist Alfred Kinsey and his collaborators. The paper will also recover the voices of certain gay men who were able to utilise the intense media furore surrounding the issue of homosexuality in postwar Britain and the convening of the Wolfenden Committee to repudiate identification with the assertions and projections of pathology which had long been made by the medical professions. Finally, the paper will discuss the (bad) reactions which certain British physicians had to the Wolfenden Report and how, within weeks of its publication on 5 September 1957, efforts to pathologise homosexuality were intensified.

Panel 1A: Gender Approaches to the History of Science, Wednesday 22nd (10:35-11:45)

Searching the enemies of science: Gender, Silence and Knowledge Circulation

Evangelia Chordaki

Hellenic Open University, Greece

Abstract: An aspect of the relationship between science and society is often examined through the role of social movements that are questioning the scientific authority, phenomena that are primary considered as acts that aim to discredit science in general. Thus, contemporary examples, such as the anti – vaccination movements or the flat – Earthers are presented as the dominant cases, which can easily define *who* is the enemy of science.

The current paper reconsiders the role of social movements through science communication, searching the enemies of science in the circulation or the blockage of circulation of knowledge. Focusing on the period of Democratic transition in Greece, I will examine the terms of the construction of the public debate about birth control. By utilizing the methodological tool of "*the politics of silence*" (M. B. Vieira), my aim is to examine the *silentization* of the medical knowledge about birth control as a political act, performed by specific social groups that had a dual aim: on the one hand to exclude women from knowledge circulation and on the other to establish a specific boundary between science and society and control the spread of knowledge. Based on the analysis and presentation of primary archival material, the paper argues that science's relation to the public in a historical perspective, shows that the importance of revealing the enemies of science is depending on the meaning that we give to the concept of the enemy.

Panel 1B: The Role of Art in Sciences, Wednesday 22nd (10:35-11:45)

Dissonances in Time: Plato, New Music and the Musical Controversy between Claudio Monteverdi and Giovanni Maria Artusi

Sinem Kılıç

Freie Universität Berlin , Germany

Abstract: The dialectic between old and new has always been a catalyst in the history of science. Being no exception, the history of music is full of quarrels about theoretical and practical matters, oscillating between the importance of tradition on the one hand and the significance of experimentation on the other hand. One of the earliest musical controversies in the history of Western music was caused by the emergence of the so-called 'New Music' in fifth-century Athens, which struck its philosopher Plato with a deep sense of alarm. The fact that musicians of his time took more and more advantage of the pipes' natural versatility and volubility incurred Plato's disapproval. The non-logocentric features of New Music seemed to contradict Plato's primacy of λόγος over ἁρμονία and ῥυθμός (cf. Republic 398d), and the focus on pleasure rather than good taste and education (cf. Laws 700a–701a) made him discard the New Music as a decadent art.

Centuries later, at the turn of the 17th century, there was a pivotal musical controversy which can be traced back to Plato: the quarrel between the Bolognese music theorist Giovanni Maria Artusi (ca. 1540–1613) and the Cremonese composer Claudio Monteverdi (1567–1643). In his work L'Artusi, overo Delle imperfettioni della moderna musica of 1600, followed by a sequel in 1603, Artusi criticized Monteverdi (albeit anonymously) for his alleged mishandling of dissonance, voice-leading, and mode. Monteverdi entered the debate in 1605 with a brief statement opening his Fifth Book of madrigals for five voices. This statement was in turn expanded by his brother Giulio Cesare Monteverdi in the 1607 Dichiaratione to the Scherzi musicali, which promulgated the now famous credo of the so-called seconda pratica, according to which "l'oratione sia padrona dell' armonia e non serva" ("make the words the mistress of the harmony and not the servant"), referring to nothing less than the aforementioned passage of Plato's Republic about the primacy of λόγος.

In my paper, I aim to throw light on these two very different and yet similar revolutions in music history. I will use a comparative approach in order to work out the similarities and differences between old and new music in Ancient Greece on the one hand and between prima pratica and seconda pratica at the end of the Italian Renaissance on the other hand. By carving out the importance of Plato's understanding of music in this aesthetical conflict between Artusi and Monteverdi, I want to show how Plato's philosophy helped establish an important shift in early modern music history.

Panel 1B: The Role of Art in Sciences, Wednesday 22nd (10:35-11:45)

Against Automatism: Surrealists examine the politics of diagnostics and rehabilitation

Jasmina Karabeg

University of British Columbia, Canada

Abstract: In this presentation I argue that surrealists' notion of automatism arises not as a direct outcome of discoveries in medical psychology and psychoanalysis, as is customarily understood, but in opposition to medical theory and practice. Rather than thinking in terms of linear causality, which takes scientific discovery as a source of the subsequent artistic practice, I juxtapose medical and surrealist automatism as two parallel, antagonistic, currents, each with distinct social dimensions.

"I have seen the inventor of the cutaneous plantar reflex at work," writes André Breton in the *First Manifesto of Surrealism*. The inventor observed by Breton was none other than Joseph Babinski, whose diagnostic method promised to solve major conundrum of military medicine during the Great War: how to distinguish among many new kinds of injuries suffered by soldiers. War medicine revealed the nexus between diagnostic skill and political demand that is always present but also always concealed. Serving as an intern in the wartime hospital Breton did not only learn diagnostics, but also its legal, political and social ramifications. Long after he abandoned medical studies, Breton still read, followed and criticized literature on medical psychology, his critiques presenting informed evaluations of medical theory and practice.

Considering parallelly medical and surrealist automatism complicates simple and inaccurate binaries, and presents multiplicity of relations among science, art, law and politics. Keeping in mind this multiplicity is particularly crucial at the present moment when the threats of pandemic and global warming push us toward divisions into those who do and those who do not trust science, a simplified view which only delays necessary and urgent collective actions to prevent utter environmental degradation. If this long gone history cannot give us pointers for present day problems, and cannot offer solutions, it can at least help us formulate better questions.

Panel 1B: The Role of Art in Sciences, Wednesday 22nd (10:35-11:45)

Steps to chaos: Reflections of scientific change in art (late 19th to late 20th century)

Sotiris Lycourghiotis and Dr. K. Kalimeris

University of Peloponnese, Hellenic Open University, Greece

Abstract: Based on the well-established assertion that social and historical changes are linked with challenging of the deterministic character of the Physical Law (in naturalsciences), we have argued, in previous work, that these changes have led to the total questioning of the foundations of the Physical Law. Our argumentation was supported by the investigation of bifurcation diagrams in chaotic models, since the mid-20th century. As T.W. Adorno has argued, such transformations in science can be traced to stylistic changes in art. The artist can intuitively capture or preannounce such steps. In the present work we attempt to follow the scientific steps leading from classical determinism to chaos theory, along with stylistic changes in music and painting. From Gustav Mahler to Karlheinz Stockhausen and from Édouard Manet to Jackson Pollock, we trace a parallel history of challenging the scientific paradigm: from Cartesianism and Newtonian Physics to quantum mechanics and eventually chaos theory. Can the rupture with the tonality in musicand with the representation in painting be considered reflections of the scientific challenge of the physical law, steps towards chaos?

Panel 1C: Sciences of the Mind, Wednesday 22nd (10:35-11:45)

Rationalizing Madness? Psychological Knowledge, Popular Enlightenment, and the Fight against Superstitions in Eighteenth-Century Hungary

Janka Kovács

Eötvös Loránd University, Hungary

Abstract: The eighteenth century was characterized by the diversity, eclecticism, and inconsistency of medical theories explaining the location and function of the soul, whereas the problem of mental maladies gradually shifted into the focus of medical discourses. Due to the transfer of knowledge between the most important Western centres of knowledge (for example, Halle, Jena, or Göttingen), these theories surfaced in Hungarian medical treatises as well and were discussed not only in scientific texts, but – in a more rudimentary and simplified manner – in publications aimed at illuminating the common folk. The main goal of these publications was to convey 'proper' medical knowledge and to dismantle popular beliefs and superstitions about the origin of natural phenomena, among them mental illnesses, which were still often linked to the notions of demonic possession or witchcraft in the eighteenth century. The presentation explores the different types of popular medical literature written in the vernacular (early modern 'self-help books,' medical books written by/for local priests, and dispensatories) and concentrates on the representations of mental illnesses and the methods by which psychological knowledge was distributed. Upon examining the above genres, I will highlight the different strategies used to transform scientific knowledge into common knowledge by analysing the paratextual register and 'inscribed meanings' adjusted to the horizon of expectations of the aimed readership.

Panel 1C: Sciences of the Mind, Wednesday 22nd (10:35-11:45)

Between Integration and Reform: American Homeopaths and Psychiatry at the End of the 19th Century

Paola Panciroli

University of Rome Tor Vergata, Italy

Abstract: Between the end of the 18th and the beginning of the 19th century, Samuel Hahnemann (1755-1843), known today as the founder of homeopathy, developed a new medical system which gained great success among the public. The interests of the German physician concerned not only organic diseases, but also mental illness, both explained in terms of the vitalistic theory. His enlightened position and his limited experience in the treatment of the insane, although still little known among scholars, were reworked by American homeopaths in the second half of the 19th century and gave rise to a national movement of homeopathic mental hospitals. In 1872 Dr. Samuel Worcester claimed the necessity for the homeopathic school to play an active part in questions concerning insanity. In my paper I will analyze homeopathic publications on mental illness and the Annual Reports of the first homeopathic asylums of Midlletown (NY) and Westborough (MA). On the basis of these findings I will try to discuss that the application of homeopathy to psychiatry has swung between two extremes: the integration of medical developments in experimental physiology and pathology and the reformation of psychiatric institutions through mild therapeutics and patient-centred care. On the one hand, during the last decades of the 19th century, American homeopaths were facing new challenges to their own discipline, connected with developments of laboratory-oriented medicine. In this situation the American Institute of Homeopathy passed changes regarding the main principles of homeopathic doctrine (vitalism, law of high potencies, law of similars), gradually adopting the language and ideology of the new scientific medicine. On the other hand, the application of homeopathy to mental illness, aimed to reform psychiatric institutions, which were going through a severe crisis due to overcrowding and therapeutic inefficacy. It also aimed to prove the goodness of homeopathic therapeutics in the treatment of insanity, ensuring American homeopaths the possibility to affirm their own identity in a field where orthodox medicine was failing.

Panel 1C: Sciences of the Mind, Wednesday 22nd (10:35-11:45)

The idea of psychopathology in High and Late Middle Ages: Conflicts between Medicine and Natural Philosophy

Lada Muraveva

Ecole Pratique des Hautes Etudes and Labex Hastec, Paris

Abstract : Contrary to the popular belief that the scientific thought in the Middle Ages, including the medical field, was largely dictated by superstition and lacked originality, the understanding of the human body functions and its possible pathologies was, in fact, profound, and attracted the interest of both physicians and scholastic philosophers. However, the very diversity of ideas resulted in an obstacle for a visible breakthrough in the art of healing. This could be best illustrated through an example of various medieval theories on brain functioning and mental disorder (what nowadays would fall into the frames of psychology, psychiatry and neurology). While natural philosophy offered numerous contradictory classifications of the mind and soul powers, often disregarding the anatomical precision, medieval physicians and surgeons, yet being aware of the philosophical knowledge, based their practice on a simple tripartite division of perceptive, cogitative and memorative faculties, and concentrated mainly on the spot of their bodily localization – namely brain ventricles, meninges or nerves. Sometimes we witness both approaches coexisting within one text, yet they do not appear mutually beneficial and rather provoke confusion and theoretical conflict.

In my presentation I would like to explore the points of contradiction between medicine and natural philosophy during the High and Late Middle Ages by demonstrating how medical texts of different genres (Commentaries, Practicae, anatomical and surgical treatises) and authors involved in medicine at various levels (philosophers, physicians, surgeons) treated similar questions on the functioning of mind with different objectives, which often had little in common. Thus, the root of the problem can be essentially defined as a gap between theory and practice, which, regarding the history of psychiatry in particular, remains topical nowadays.

Panel 2A: Sciences Defied: Conspiracies and pseudosciences, Wednesday 22nd (12:15-13:40)

Three historical criteria to unmask natural pseudosciences: bringing String Theory, Evolutionary Psychology, and Selfish Gene Biology into debate

Joseba Pascual Alba

University of the Basque Country, Spain

Abstract: The word "science" has changed not only its meaning, but also its references through the ages. Currently, even if its meaning and reference are still in discussion among philosophers, they all would agree that Quantum Physics, Cell Biology, Organic Chemistry, Paleontology, etc. are indeed sciences. Historians of science have shown that what are at times called "proto-sciences" evolved into both legitimate sciences and pseudo-sciences. For instance, astrological practices were fundamental in the emerging of modern astronomy and medicine, while some of their remnants live on in the fringes of current sciences. In my view, the historian of science may determine whether an activity is (or is not) a science, by taking into account three elements: *experimental delimitation*, *institutionalisation*, and *legitimising*. Observations and experiments shape the objects of a particular scientific enquiry (L. Fleck; I. Hacking, P. Galison); institutionalisation proves the increasing validity of a specific field (T. S. Kuhn); and the legitimising of a scientific activity enters the realms of sociology and psychology (B. Latour). With this historical and conceptual criteria, one can use them as "hunting traps" in the forest of supposed sciences and wait. What would happen if, not only with Astrology, Homeopathy or Reiki try to walk into this forest, but also String Theory ("Possible Worlds", "Multiverse"), Evolutionary Psychology (or Steven Pinker's "Pyscho-Politics"), or "Selfish Gene Biology"? Could it be the case that, reversing the original process by which from "proto-sciences" *true* sciences emerged, one could unmask the processes of the emergence of "pseudo-sciences" from stablished sciences? In this presentation I shall explore the ways in which these three historical criteria may help judge the extent to which some so-called sciences can be regarded as pseudo-sciences. I will use the three case-studies mentioned above as proves for my argument.

Panel 2A: Sciences Defied: Conspiracies and pseudosciences, Wednesday 22nd (12:15-13:40)

Conspiracy historiographies: a challenge to science or alternative rationality?

Guillaume Lancereau

École des hautes études en sciences sociales, Paris

Abstract: Conspiracy theories have become ubiquitous in present-day media and political discussions. Instead of discarding them a priori as irrational worldviews, social scientists now tend to endorse an axiomatically neutral point of view on this phenomenon in order to address it from a rigorous empirical and theoretical basis instead. From this perspective, the history of historiography appears somewhat reluctant to follow suit and continues to disparage conspiracy historical narratives as unscientific and delusional and consequently ignore them.

By contrast, this proposition aims at reassessing the political influence of conspiracist history-writing and casting fresh light on its complex epistemological background. To do so, it focuses on the historiography of the French Revolution in France, from the early nineteenth century to the Second World War. This historical event that generated the most noticeable literature on historical plots and conspiracies in Western Europe, prior to the 1917 Russian Revolution, represents a stimulating case study to investigate the general characters and common features of conspiracist attitudes and dispositions.

I hypothesize that conspiracy narratives focusing on the alleged Jewish, Protestant, or Masonic influence on the French Revolution resulted epistemologically from a distorted use of what Carlo Ginzburg termed "the evidential paradigm." Instead of resorting to methodological tools to connect symptoms and clues, this genre of history-writing built its explanations on abusive and imaginative causalities. Moreover, it adopted a sort of "paranoid style" in historical investigation, by systematically casting doubt on so-called "official" sources and historians – i. e. historical materials produced by the state and academic researchers.

Finally, I argue that this specific type of historiographical rationality served clear ideological purposes deeply embedded into a xenophobic and reactionary political project. This is one of the reasons why academic historians systematically challenged these interpretations, engaging in long and harsh controversies over the epistemological and empirical backgrounds of conspiracy theories.

Panel 2A: Sciences Defied: Conspiracies and pseudosciences, Wednesday 22nd (12:15-13:40)

The fight against superstition in the history of epilepsy: true conflict or medical rhetoric?

Léonard Dolivo

CHUV&UNIL in Lausanne, Switzerland

Abstract: History of epilepsy is an ancient and major field in the history of medicine and science. A great amount of writings was dedicated to this subject, both before and after the famous book by Owsei Temkin The Falling Sickness (originally published in 1971). Beyond their topic, most of those works have one thing in common: they mention a specific characteristic about the history of epilepsy, namely that it was concomitant with a long struggle between rational thinking and superstition. This confrontation would typically concern the alleged causes of epilepsy (for instance demonic possession versus natural explanation) or some others argued features of the illness (contagiousness, assimilation to a curse, to a punishment or a blessing, etc.) over time. More interestingly, the evocation of such a conflict between wrong, magical or credulous and lucid concepts of the disease can also be found in ancient medical texts. In fact, it constitutes a well traceable tradition in medical dissertations, starting from the 17th century and persisting all along the 18th century. For instance, the famous Hippocratic quote about the Sacred disease, precisely negating any sacred origin to epilepsy, is a stable element of those texts. Through a close analysis of several 18th-century medical writings and of the historiography, I will nuance the great narrative of the history of epilepsy as a fight between natural and supernatural conceptions. Such a scenario may not be totally free of the influence of a very ancient rhetoric elaborated by doctors of past ages to construct and strengthen the evidence of their own expertise.

Panel 2B: Philosophy & Science Wednesday 22nd (12:15-13:40)

A philosopher against the Bandwagon. Carnap and the Informalization of Thermal Physics

Javier Anta

Barcelona Institute of Analytic Philosophy

Abstract: In this paper I aim to vindicate the critical position of Rudolph Carnap (1891-1970), and secondarily that of close collaborators such as Yehoshua Bar-Hillel or Abner Shimony, concerning certain substantial conceptual inconsistencies and interpretative incoherencies underlying the fashionable development of an information-centred thermal physics during the 1950s. Carnap's main thesis in this direction was to defend, in broad terms, that the concept of information-theoretical or 'Shannon' entropy, whose content is arguably logical-epistemic, and that of physical entropy, whose content was physical-empirical, were conceptually different notions. By distinguishing between the former as a measure of epistemic uncertainty and the latter as a physically-significant measure of thermodynamic irreversibility, Carnap (1977) pioneered a critical stance against this intellectual trend in physical sciences, recent defended by philosophers of physics like Norton (2005, 2011), Timpson (2013) or Wüthrich (2017). In spite of both Carnap being one of the greatest philosophers of science of the twentieth century and this particular subject being of enormous interest to understand the historical-conceptual development of 'physical informationalism' (one of the most important currents of physical thought of the last decades), it has been unfairly forgotten by the academic literature, except for anecdotal cases such as Köhler (2001). As I will point out later, one of the main reasons why Carnap's critical analysis of the integration of information theory and thermal physics (crystallized in his book Two *Essays on Entropy* written between 1952 and 1954 and published in 1977) had a minimal impact and even had to be published posthumously was precisely the deep roots these informationalist ideas already had within the scientific community of the time.

Panel 2B: Philosophy & Science Wednesday 22nd (12:15-13:40)

The Adversarial History of Connectionism: In Search of Lost Revolution

Vanja Subotic

University of Belgradem Serbia

Abstract: By drawing on the seminal works in the sociology of scientific knowledge (e.g., Collins 1981, 1983; Leigh Star 1989), Olazaran (1996) described the famous Minsky versus Rosenblatt dispute in the history of AI based on controversy studies. Rosenblatt (1958) pioneered multi-layered neural networks, the so-called Perceptron machine, intended to learn patterns from data with little handwired gear suggesting that human cognition could do with little innate machinery since the bulk of cognitive processing would depend on learning from experience. In a co-authored book with Papert, Minsky (1969) refuted Rosenblatt's tentative conclusions based on the Perceptron machine's apparent success by formulating mathematical proof that such a machine is not capable of processing exclusive disjunction. The outcome of the Minsky versus Rosenblatt dispute was detrimental for the early connectionism according to Olazaran (1996): the first AI winter swept away the promise of the counter paradigm since most projects based on neural networks lost funding in favor of more popular rules-and-representation AI, which became the backbone of the newly emerging field of cognitive science in the 1970s. In this way, the view of human cognition as being modular and endowed with innate rules which operate on symbolic representations became the only game in town.

In my talk, I intend to broaden the historical scope of Olazaran's analysis and to sketch how the grounds for the connectionist revolution, which proved long due in the 1980s, were already in place at the time of Rosenblatt's inauguration of the Perceptron machine. I will examine the Pandemonium architecture from the late 1950s (Selfridge), as well as textbooks in cognitive psychology written from the perspective of early connectionism (e.g., Neisser 1967). In this way, I intend to shed light on the continuous development of the connectionist paradigm that calls into question the AI winter narrative, as well as to propose the adversarial history of connectionism which proves helpful in understanding the ideological disputes among AI researchers and cognitive scientists to this day.

Panel 2B: Philosophy & Science Wednesday 22nd (12:15-13:40)

Science and its idols, obstacles and enemies: Bacon, Bachelard and the present day

Hannes Van Engeland

Royal Academies for Science and the Arts of Belgium

Abstract: Recent times have shown that science is far from an uncontroversial enterprise. As such, it may come as no surprise that science has been faced with many different 'enemies' in its history. In this presentation I intend to offer a short archaeology of how different thinkers have attempted to think this relation between science and its 'enemies'. This will be done by comparing an early modern thinker, Bacon, with the twentieth century Bachelard, after which both are evaluated with regards to contemporary topics of interest regarding science and its enemies.

In his most famous work, the *Novum Organon*, Francis Bacon identifies four 'idols' (to wit: Idols of the Tribe, Idols of the Den, Idols of the Market, and Idols of the Theatre) "that trouble us in the instauration of the sciences" (Bacon 1620/1901: Aph. LXIII).

In the beginning of the twentieth century, Gaston Bachelard identified comparable difficulties for science, which he termed 'epistemological obstacles'. In a first part I will compare Bacon's idols and Bachelard's epistemological obstacles, showing the interconnections or 'Baconian influences' on Bachelard. This will show that Bacon's categorisation remained relevant up to the time of Bachelard.

In a second part I will then re-actualise both authors by reflecting on themes in the current literature on science and its 'enemies', such as for example: the merchants of doubt (Oreskes) but also constructivism (science wars), the publishing industry, etc.

Panel 2C: Reading Stars: History of Astronomy and Astrology, Wednesday 22nd (12:15-13:40)

Turning Competition into a New Way Forward: the Case of Conrad Heingarter

Eleonora Andriani

Observatoire de Paris – PSL CNRS, France

Abstract: During the second half of the 15th century, the astrologers looking after the health of the King of France do not seem to have recieved substantial remuneration. Hence, some would top up their income by placing themselves in the service of several patrons. Naturally enough, this environment gave rise to stiff competition between astrologers. Hints of this situation can be inferred from the life and writings of Conrad Heingarter, one of the most prominent exponents of astrology and medicine in the 15th century. Primarly associated with the court of Duke John II of Bourbon as his physician and astrologer, Heingarter is also connected with Louis X of France. In his works, Heingarter is very keen to stress the relationship between medicine and astrology. His medical advice to both the Duke of Bourbon and the Duchess include a chapter aptly entitled On the usefulness of the science of the stars and why it is advantageous and necessary to physicians. In this chapter, Heingarter engages in a passionate defense of astrology and astrological medicine, quoting, for about five pages, authorities in favour of astrology. In these pages, Heingarter even goes so far as to include an invective against all those physicians who maintain that it is inconsiderate and superstitious for a doctor to consult the stars, claiming that medicine cannot be separated from natural philosophy or astronomy. The aim of this paper is to explore the cultural experience of Heingarter, as it appears in his own works and those which were part of his library. In this paper I will claim that the profile of the learned astrologer, which he insists on delineating to stand out from the competition, is exemplified in Heingarter's highprofile cultural activity.

Panel 2C: Reading Stars: History of Astronomy and Astrology, Wednesday 22nd (12:15-13:40)

Knowledges of geography and geographies of knowledge: Martino Martini's Novus Atlas Sinensis and the emergence of mathematical cosmography

Gianamar Giovannetti-Singh

University of Cambridge, UK

Abstract: In 1655, as Martino Martini was defending the Jesuits' proselytising strategies to the Congregation for the Propagation of the Faith in Rome, his atlas of East Asia, the *Novus Atlas Sinensis*, was published in Amsterdam by the renowned Dutch printer and official cartographer of the VOC, Joan Blaeu. This atlas, which constituted the eleventh volume of the Blaeu family's exceptionally influential *Atlas Maior*, appeared strikingly different from many contemporary maps of the non-European world—particularly those of the Americas. Martini's maps show a standardised iconography of topographical and administrative features such as mountains, rivers, deserts, coastlines, lakes, and cities; they exhibit geometrical details including scale-bars calibrating "Chinese stades" against "German miles," and contain cartouches that for the most part depict the peoples of different Chinese provinces as not enormously dissimilar from Europeans. While historians have rightly emphasised that the *Novus Atlas Sinensis* played an important role in displacing and transforming Europeans' conceptions of East Asia, this paper suggests that, in part through Blaeu's efforts to encourage his burgher readership to compare different parts of the world, it effected more profound changes on European conceptions of the credibility of different forms of witnessing and projecting the "Other." I reconstruct Martini's itineraries and reinventions across two major geo-historical conflicts of the seventeenth century: the transition from Portuguese to Dutch dominance in the Indian Ocean and the conquest of the Ming dynasty by Manchu insurgents, arguing that these crises helped shape the missionary's cartographic representations. The paper traces a genealogy of mathematical cosmography to Martini's atlas, suggesting significant continuities between the missionary's maps and those that came to be associated with the Enlightenment's "modern" cartographic representations of Other territories.

Panel 2C: Reading Stars: History of Astronomy and Astrology, Wednesday 22nd (12:15-13:40)

Theoretical guidance of scientific observation: heuristic tool or fallacious belief. The case of the theory of gravitation and the observation of the solar system in the 19th century

Simon Beyne

Aix Marseille University, France

Abstract: Astronomy progress in the dark and the history of this science shows that it has sometimes been guided, but other times misled by theoretical beliefs. This was the case with the observation of the solar system in the 18th century.

At this time, we notice that the trajectory of Uranus is abnormal, in the sense that it does not follow exactly what is predicted by Newton's law of gravitation. In 1846, Urbain Le Verrier predicted the position of an unknown planet whose mass would disturb the trajectory of Uranus, and we thus discovered Neptune. The theory of gravity describing the interaction between masses becomes a real "ally" for scientific discovery. Le Verrier then reformed the Observatoire de Paris and dissolved its research programs, in order to set up a research for other planets on the same theoretical model that had succeeded for Neptune. With this model, he attempts to explain the anomalous trajectory of Mercury and predicts the existence of a new planet, "Vulcan". Several astronomers then claim to have observed Vulcan, a planet that does not exist. Vulcan can be found on maps of the solar system at university. The Newtonian theory of gravity, an ancient ally of scientific discovery, is found at the foundations of a fallacious scientific production. The same type of theoretical guidance that had allowed the first observation of Neptune, then make believe in the observation of a non-existent planet. This new research program, which is based on an ultimately limited theory, is actually sterile and prevents astronomy from moving forward.

One century later, astrophysics again faces a gravitational anomaly and also introduces a disturbing mass: dark matter. It could actually find itself facing its old enemies: the limit of validity of our gravitational theory, a theoretical guidance making believe in the observation of a non-existent entity, a sterile research program based on theory which is no longer suitable.

Panel 2C: Reading Stars: History of Astronomy and Astrology, Wednesday 22nd (12:15-13:40)

The Grand Strategy of an Observatory: conflict and cooperation in the division of labour among observatories during the middle of the nineteenth century

Daniel Belteki

Royal Museums Greenwich, UK

Abstract: The downfall of the Parramatta Observatory during the 1840s led the British Government to reconsider the funding it provided to observatories. George Airy - the Astronomer Royal at the Royal Observatory, Greenwich - recommended the establishment of a central Colonial Board of Visitors (based in London) to oversee the management of observatories within the British Empire. The recommendation ultimately never materialised, but it showcased the support of the astronomical community as well as the British Government to centralise the management of the vast network of observatories. During the next few decades such a centralised vision continued to shape the establishment of new observatories and the organisation of their work. The proposed paper examines this vision through George Airy's articles and letters about the organisation of international astronomical labour among observatories. It demonstrates how he envisioned establishing 'the grand strategy of an observatory' according to the 'general policy of observatories' in relation to the division of astronomical labour among them. The proposed paper argues despite the apparent emphasis on collaboration between observatories, Airy and the British Government pursued the centralised management in order to set the research agenda of astronomical observatories. The paper demonstrates this through the recurring mention of the 'public utility' of observatories that emphasise the benefits of observatory sciences to the British Navy and maritime commerce. By doing so, the apparent support for alliances formed via the organisation of international division of astronomical labour also ensured that Britain maintained its naval and imperial power against its rivals in geopolitics.

Panel 3A: Education in Sciences, Wednesday 22nd (15:00-16:10)

What is hostility good for? A possible interpretation of a physics history priority debate in high school physics class

Szabó Róbert

Eötvös Loránd Tudományegyetem, Hungary

Abstract: As a PhD student in history and as a secondary school teacher majoring in physics and history, I strive to use the potential of interdisciplinarity as a modern pedagogical tool in my school lessons.

In physics classes, on the one hand, I want to place great emphasis on the integration of what has been learned from history: I focus on the theoretical issues of the operation of the most famous weapons of the historical past (long-range cannon, atomic bomb, etc.), which often based on science. On the other hand, I feel no less the need to apply the history of physics in a school setting. Several of my publications, including a separate volume, have been published on the novel possibilities of these two teaching-methodological aspects that I have dreamed of.

In my presentation, I want to present an episode of the history of physics that plays a significant role in the teaching of physics in high school, while at the same time testifying to the very famous opposition of the history of physics, which almost degenerates into a suicide attempt. According to the internationally famous Hungarian physicist Károly Simonyi, it is essential to approach the human side of physics in the teaching of physics, and in the case of a controversial discovery, to decide in which direction the naturalist leans towards the so-called "priority debate". In this spirit, in my lecture, I would like to give an account of the physical-historical significance of the discovery of the “heat-work equivalent,” and then I will elaborate on the pedagogical and didactic possibilities of displaying the contradictions between Robert Mayer and Prescott James Joule. Thus, among other things, I report in detail about the high school lesson plans I have written on the topic, physical computational tasks and dramaturgical games, which report on this topic as a well-known contradiction of the history of science, which can be interpreted both theoretically and empirically.

Panel 3A: Education in Sciences, Wednesday 22nd (15:00-16:10)

Orthodox religious (theological) education in the Soviet period of the Russian history: from demolition to revival, 1918–1940s

Maksim Kail

Smolensk State University, Russia

Abstract: The Soviet policy of atheism in society that was accompanied by a rapid deconstruction of church structures and marginalization of the clergy is a well-known and thoroughly studied historiographical case. A determined implementation of the Decree on the Separation of School from Church in 1918-1919 resulted in the demolition of the existed system of religious education that was powerful, distributed, and sponsored by the state because it contributed to the population's loyalty to the imperial administration. The Bolsheviks firmly cut ties with the clergy and limited the opportunities for the reproduction of human resources for the clergy in seminaries and theological academies the entire network of which was closed by the beginning of the 1920s.

Religious education in the late Russian Empire operated at two levels: the common one that provided training to clergymen for provinces and the majority of parishes. Its centers accounted for religious schools (in county-level cities) and seminaries (in province centers) and the elitist one. The latter level of religious education and theological science was well-developed and the imperial religious academies possessed unique collections of sources and libraries. World-renowned professors worked at the chairs of religious schools and many of them belonged to respected clergy families and constituted the elite of the Orthodox Church. Academies accounted for scientific centers with book publishing capacity and opportunities for transferring scientific heritage to new generations. Key specialists in such spheres as patristic studies, patrology, Byzantine studies, and theology worked in Russia.

However, the implementation of the state atheism policy at the beginning of the 1920s resulted in the demolition of the system of education and scientific theological knowledge. The majority of professors (both clergymen and laymen) did not manage to integrate themselves into a new Soviet system, many of them were repressed, especially in the 1930s.

By the beginning of World War II, the Russian church lost the major part of its intellectual elite and had no opportunity to produce new theological knowledge. However, the situation changed in 1943 when Stalin revised the religious policy and the church was legalized and appointed to solve problems in the Soviet foreign policy. A gradual revival of the religious education system began. It was partially restored in 1946 and achieved significant progress by the 1970s.

A radical change in the Soviet policy on religious education that is important in and of itself is also meaningful in the frame of social history: the generational change in the clergy and the analysis of inclusion in church experience through education and knowledge constitute an important part of the history of theology in Russia.

Panel 3A: Education in Sciences, Wednesday 22nd (15:00-16:10)

Textbooks for teaching natural sciences at the end of the 19th century: the example of the Higher School for Women in Belgrade (1863-1913)

Milica Sekulovic

University of Belgrade, Serbia

Abstract: Higher School for Women is the first public secondary school for women in Serbia. It was founded in 1863 after a long turmoil in public discourse as a three-year school and its goal was:

1. to give secondary general education to girls 2. to prepare future teachers for primary school through general education, pedagogical and professional subjects. Special textbooks for the Women's High School were written by professors of the Great School, high school teachers and some teachers of that school, and its management was Katarina Milovuk. Within the general education subjects in the program of the school for girls, there was also chemistry, physics and technology. In this paper, we analyze the textbooks for teaching physics and chemistry that were used in the Women's High School and place the given analysis in the context of the conflict between modernity and patriarchy in Serbia at the end of the 19th century. These are the textbooks Physics for Women by Emilijan Josimović and Chemistry by Milan Jovanović. Natural science subjects, such as chemistry and domestic technology, were abolished a decade later, in 1873. We find the explanation for this event on the following research trajectory: natural science subjects were "potentially dangerous enemies of patriarchal discourse" in two respects: they took a woman from the private sphere to the sphere of work and science and women were involved in subjects that previously were intended only for men. At the same time, the students of the Higher Women's School did not continue their education at the Great School, the forerunner of the University of Belgrade. By analyzing the knowledge contained in the above-mentioned textbooks as well as the context of their production, we will try to understand the hostile attitude of the educational authorities towards the science program for girls.

Panel 3B: Biology and Evolution Theory, Wednesday 22nd (15:00-16:10)

Molecular Biology: Origins

Balorda Vito

University of Rijeka

Abstract: In this paper, I evaluate the history of molecular biology (henceforth MB), that is, the input of various disciplines that preceded and influenced its development and examine the scientific reductionism debate in MB. I argue for a multidisciplinary and an anti-reductive approach regarding the origin of MB based on the two following points: (1) the importance of "The Phage Group" for the birth of MB, and (2) the anti-reduction of Mendelian (classical) genetics to molecular genetics. Firstly, I evaluate the influential literature on the history of MB and present three views on the birth of MB, which are the following: (i) the birth of MB by the influence of both biochemistry and genetics, (ii) the birth of MB by the crucial influence of physics, and (iii) the birth of MB via a multidisciplinary approach, that is, by the influence of various disciplines. I argue for view (iii) by examining the above-mentioned point (1), namely, "The Phage Group", specifically its originating members, and their respective disciplines that influenced the Group, and consequently the birth of MB. Following the possible anti-reductionism anticipated by "The Phage Group", I investigate point (2), namely, the possible reduction of Mendelian (classical) genetics to molecular genetics, that is, a well-known example of a possible reduction of one discipline to the other. Lastly, I reevaluate the three presented views on the birth of MB and offer only two possible approaches towards the MB origins, and those are the following: (i) the reductive approach, i.e., the approach by which one fundamental discipline is the influential one, e.g., physics, and (ii) the anti-reductive (multidisciplinary) approach, by which several disciplines are influential for the birth of MB, e.g., genetics, biochemistry, and physics.

Panel 3B: Biology and Evolution Theory, Wednesday 22nd (15:00-16:10)

Conflict of Generations. The Perception of Spontaneous Generation in the Eighteenth-Century France and Britain

Viktoriia Dremova

Central European University

Abstract: The studies of the generation of life, procreation, and the shaping of a new organism, and, of course, questions of the origins of life have been always spawning heated debates. But could the problem of the asexual generation be a controversial topic dividing scholars into groups almost hostile to each other?

During the eighteenth century, the problem of understanding spontaneous generation divided naturalists based on the approach to natural knowledge, philosophy, and religious views. Moreover, the issue of spontaneous generation added a special perspective to the circle of problems of sexual generation, prenatal development, and the origins of life. Both the sources and historiography present the topic of spontaneous generation in various contexts and various interpretations as a subject of a serious argument.

My presentation will focus on the work of eighteenth-century British and French naturalists who engaged with the studies of the phenomenon of spontaneous or asexual generation. Strange, unconventional birth provoked specific reactions from scholars which varied from enthusiastic curiosity to complete denial. I will display some examples from the texts of René Antoine Ferchault de Réaumur, Abraham Trembley, Charles Bonnet, Pierre Louis Maupertuis to show how their position became clearer when they faced the cases of asexual generation. The analysis of this discussion on the generation that took place in the 40-the 50s of the eighteenth century will help us to get a more complete background for the later research on the questions of generation, regeneration, and reproduction in the times of Encyclopédie and Lazzaro Spallanzani's experiments of the mid-80s.

Panel 3B: Biology and Evolution Theory, Wednesday 22nd (15:00-16:10)

Re-interpreting role of neo-Lamarckism and orthogenesis in Eclipse of Darwinism

Michał Wagner

University of Cardinal Stefan Wyszynski, Poland

Abstract: The subject of my presentation is a period in the history of evolutionary biology known as an "eclipse of Darwinism". According to researchers, this "eclipse" manifested itself in a sudden drop in interest in Charles Darwin's theory of evolution in favour of other non-Darwinian evolutionary concepts, such as neo-Lamarckism and orthogenesis. Most historians and philosophers of science, who are trying to answer the question of why Darwinism was rejected in favour of other theories in the mentioned period, point to numerous non-scientific factors that were influencing the way in which contemporary scientists evaluated it. But, depending on what philosophical concepts these historians adopt, their interpretation of eclipse changes. In addition, the accepted philosophical assumptions influence the way historical data are interpreted and often lead to its distortion.

The main hypothesis is based on the assumption that the anti-Darwinist theories were built upon the philosophical assumptions adopted by the naturalists at that time. However, contrary to other interpretations of the "eclipse" period, the emergence of anti-Darwinian theories will be understood as the result of a rational discussion of what form an acceptable (in the light of empirical data available back then) evolutionary theory should take. According to proposed research hypothesis "eclipse" occurred as direct response to inconsistent ontology upon which Darwin created his theory of evolution. Darwin was using terms and concepts rooted in the philosophy of essentialism (such as "species"), which was problematic, because he tried to apply these essentialist concepts to his vision of the ever-changing nature. Therefore, anti-Darwinian theories of neo-Lamarckism and orthogenesis arose as a result of an attempt to reconcile essentialism with evolution, thus, to correct Darwin's philosophical "error".

Panel 3C: Imperialism and Knowledge on the Natural World, Wednesday 22nd (15:00-16:10)

Natural history in Early modern Hispanic World: Secrecy and alliances, the price of autonomy

Mariana Sánchez

University of Paris, France

Abstract: During the 16th and 17th centuries, Natural history as an autonomous discipline established itself in the Hispanic scholar landscape. In the process to get its independence from medicine, Natural history created a series of alliances with heterodox ideologic positions such as Paracelsianism, but in doing so it had to avoid open conflict with the classical scholar system.

In the Early modern Hispanic world, the exploration and exploitation of American territories, the discoveries, and the necessities of the Crown helped to avoid conflict, but religious censure and academic and industrial espionage forced secrecy in the findings, publication, and diffusion of natural knowledge. Examples of this are the works Bartolomé de Las Casas (1474-1566), Francisco Hernández de Toledo (1514? - 1587) and of Alvaro Alonso Barba (1569-1662).

Since 1580 and until 1640 a blockage in publications of natural history is visible in the Hispanic World. Works on branches of natural history such as mineralogy, botany, ethnology, are important to the Crown and their diffusion to other nations is considered dangerous. The Arte de los metales by Alonso Barba was published in 1640 but it was forbidden to allow access to this work to non-Spanish. The *Historia de las Indias* by Barlomé de Las Casas was published for the first time in Spanish in 1576 in Madrid, ten years after the death of the author, and Francisco Hernández's work was never published and the original was lost in a fire in 1617, and only an abbreviated version named Francisci Hernandi, medici atque historici Philippi II, Hispan et Indiar was published in 1790, two centuries after the death of the explorer.

Panel 3C: Imperialism and Knowledge on the Natural World, Wednesday 22nd (15:00-16:10)

Islands of atmospheric arbitration. Upper air soundings, European rivalries and collective imperialism in global meteorology, 1896-1914

Robert-Jan Wille

Utrecht University, Netherlands

Abstract: According to the Prussian general Carl von Clausewitz, war is the continuation of politics with other means. The Prussian wars between 1864 and 1871 embodied this thought and turned the nation-state of Germany into a suspect new member of the European state system. After the Berlin Congo Conference (1884-1885) and the formation of a German colonial empire, the potentiality of conflict in Europe diminished somewhat at the cost of an expanding sphere of colonial competition.

At the end of the nineteenth century, especially after the foundation of the International Court of Arbitration (1899), a new role for academic experts emerged: that of brokers of international cooperation and global free trade. Many natural scientists had already organized themselves internationally by then: in 1873 the International Meteorological Organization had been established. Weather maps increasingly unified the Northern hemisphere.

After 1900, the mapping of the *global* upper atmosphere (including trade winds, monsoons, new layers) became an important program bringing political rivals such as Germany and France together under the aegis of empire. Their collective effort of launching weather balloons and kites lead to the discovery of the stratosphere, which created a demand for 'aerological' campaigns in the tropics, in the Arctic and at the oceanic borders of Europe.

Upper air sounding stations on oceanic islands such as Arctic Svalbard, Spanish Tenerife, Dutch Java and German Samoa became key spots for European meteorologists. Here, scientific disputes on the exact nature of the layered atmosphere were fought and resolved, more often than not under German academic leadership.

Through studying international meteorological practices at these 'islands of atmospheric arbitration', one could ask the question: was science the German continuation of war with other means, or was it part of a partial *entente* between European colonial powers, to which the First World War would bring an end?

Panel 3C: Imperialism and Knowledge on the Natural World, Wednesday 22nd (15:00-16:10)

Invisible Enemies: Entomology and the Cockchafer Beetle on the Plantations of Nineteenth Century Ceylon

Matthew Holmes

University of Cambridge, UK

Abstract: The coffee plantations of late-nineteenth Ceylon (modern day Sri Lanka) were rocked by a series of crises, including the appearance of numerous insect pests. Scholars have demonstrated that plantations, considered vital components of the economies of European Empires, were ecologically vulnerable and reliant on exploited labour. This paper argues that, in the absence of formal scientific networks and institutions, entomology was harnessed by colonial settlers to defend their plantation economy against insects. As its case study, it examines the beetles of Ceylon through the eyes of Scottish plantation owner and amateur naturalist Robert Camperdown Haldane. His 1881 guide to Ceylon's insect pests, entitled All about Grub, erroneously identified the island's beetles as close relatives of the common European Cockchafer (Melolontha melolontha) and listed methods to destroy them. Its contents, when taken alongside contemporary newspapers, periodicals, and textbooks, demonstrate how Haldane sought to impose European categories and methods of control on Ceylon's beetles. Such ventures were, however, eventually thwarted by ecological and economic reality. European landowners continued to rely on indentured Indian labour to combat insect infestations, eventually substituting their coffee plantations for tea.

List of Participants

A

Andriani Eleonora: Eleonora.Andriani@obspm.fr

Anta Javier: antajav@gmail.com

Ashman Lewis: s1260394@sms.ed.ac.uk

Assimakopoulou Efstathia: effieassimak@phs.uoa.gr

B

Bakken Pedersen Inger: inger.pedersen@univie.ac.at

Barlagiannis Athanasios: athbag@yahoo.gr

Bellon Thomas: thomas.bellon@univ-amu.fr

Belteki Daniel: DBelteki@rmg.co.uk

Beyne Simon: simon.beyne@etu.univ-amu.fr

Biro Dávid: birodave@gmail.com

Bruley Julien: julien.bruley29@laposte.net

Borys Nataliya: Nataliya.Borys@etu.unige.ch

Bovolo Carlo: carlobovolo@hotmail.it

Brooks Ross: ross.brooks-2017@brookes.ac.uk

Bucciarelli Lucia: Lucia.bucciarelli@history.ox.ac.uk

C

Chordaki Evangelia: chordaki.evangelia@ac.eap.gr

Christopoulou Vasiliki: vasilikichr@phs.uoa.gr

Cioci Vincenzo: vincenzocioci@gmail.com

Citano Elisa: elisa.citano@gmail.com

Clabassi Giulia: giuliaclabassi@gmail.com

Craioveanu Flavia: flavia@muzeon.ro

D

Dhondt Frederik: frdhondt@vub.be

Dremova Viktoriia: anselm.vd@gmail.com

Dolivo Léonard: leonard.dolivo@gmail.com

F

Fedorova Irina: iririna23@gmail.com

Jose Ferraz-Caetano: caetanojose145@gmail.com

Friederike Frenzel: friederike.frenzel@tu-dresden.de

Freris Loukas: louk.free@gmail.com

Furlan Stefano: sfurlan@mpiwg-berlin.mpg.de

G

Garcia da S. Oliveira Deivide: deividegso@gmail.com

Galanopoulos Costas: mataragal@yahoo.gr

Giovannini Eduardo: eduardo.giovannini@univie.ac.at

Giovannetti-Singh Gianamar: gianamar@cantab.net

Gorriñobeaskoa Urko: urkogorri@hotmail.com

Got Anaïs: anais.got@univ-angers.fr

Guillermo Willis: guillermo.willis@postgrad.sas.ac.uk

H

Hajek Kim: K.m.hajek@hum.leidenuniv.nl

Heller Henning: henning.heller@univie.ac.at

Holmes Matthew: mrh70@cam.ac.uk

J

Juhász Balázs: juhasz.balazs@btk.elte.hu

Jip Van Besouw: Jip.Van.Besouw@vub.be

K

Dr. K. Kalimeris :

Kana Sandip: sandip.kana@kcl.ac.uk

Kampouridis Stylianos: : skampour@phs.uoa.gr

Karampatsos Christos: chriskaraba@phs.uoa.gr

Karabeg Jasmina: jasmina.karabeg@ubc.ca

Katsaloulis Iraklis: ikatsaloulis@phs.uoa.gr

Kayır Banu: kayir.banu@gmail.com

Khan Mujeeb: mujeeb.khan@utah.edu

Kilakos Dimitris: dimkilakos@hotmail.com

Kılıç Sinem: sinem.derya.kilic@gmail.com

Kisling Zénó: zenokep79@gmail.com

Klos Sandra: Sandra.Klos@oeaw.ac.at

Korolija Maja: majakorolija2@gmail.com

Kotsou Georgiana: g.kotsou@maastrichtuniversity.nl

Kovács Janka: csigaszem@gmail.com

Kranzelbinder Daniel: d.kranzelbinder@princeton.edu

L

Lászlófi Viola: vijjola@gmail.com

Lancereau Guillaume: guillaume.lancereau@gmail.com

Loginov Ivan: ivan.loginov@natur.cuni.cz

Longkumer Tiasangla: tiasanglkr@gmail.com

Lukic Vladimir: vl.lukic.96@gmail.com

Lycourghiotis Sotiris: sotirislyk@gmail.com

M

Maksim Kail: mvkail@mail.ru

Malisova Polyxeni: polyxenimal@phs.uoa.gr

Mathieson Stuart: stuart.mathieson@dcu.ie

Mattes Giorgios: gmattes@phs.uoa.gr

Medori Beatriz: beatrizmedori@gmail.com

Mower Kate: kmowe001@ucr.edu

Muraveva Lada: toterals@gmail.com

O

Ohnesorge Miguel: mo459@cam.ac.uk

P

Panciroli Paola: plpanciroli@gmail.com

Panoutsopoulos Grigoris: gpanouts@phs.uoa.gr

Papanikolaou Elli: ellie2.papanikolaou@gmail.com

Pascual Alba Joseba:

joseba.pascual.alba@gmail.com

Pierini Edoardo: Edoardo.Pierini@etu.unige.ch

Por Anne: a.s.por@hum.leidenuniv.nl

Prevignano Emma: ep532@cam.ac.uk

R

Razumenko Fedir:

fedir.razumenko@ucalgary.ca

Rădulescu Gabriela:

gabrielaradulescu24@gmail.com

Reid Katie: katiereid88@gmail.com

Rivat Sébastien: srivat@mpiwg-berlin.mpg.de

S

Sánchez Mariana: mesanchezd@yahoo.fr

Scalambro Elena: elena.scalambro@unito.it

Schep Caroline: j.e.schep@hum.leidenuniv.nl

Sciacca Giulio: giulio.sciacca@gmail.com

Sekulovic Milica: milica.sekulovic9@gmail.com

Seriatou Penelope: pseria@eie.gr

Serra Sophie: sophie.serra@outlook.com

Shaw Eleanor:

eleanor.shaw@manchester.ac.uk

Sierra de la Torre Javier:

sierradelatorre@gmail.com

Skarpelis Anna: anna.skarpelis@mail.unibas.ch

Slotboom Hidde:

h.slotboom@hum.leidenuniv.nl

Subotic Vanja: subotic_vanja@hotmail.com

Szabó Róbert: rszabo.elte@gmail.com

V

Van Engeland Hannes:

hannes.van.engeland@gmail.com

Viegas Sofia: siviegas@fc.ul.pt

Vito Balorda: vito.balorda@gmail.com

W

Wagner Michał: michaljakubwagner@gmail.com

Robert-Jan Wille: r.b.wille@uu.nl

Wombell Sheryl: saw67@cam.ac.uk

Y

Yi Yang: UCZL246@ucl.ac