

## Day 3 (Thursday 15 July)

### Session 9 09:00-11:00 BST

#### 9A - Philosophising nature in the early-modern period | Chair: Robert Iliffe

##### **When is the context sufficient?**

Steve Russ (University of Warwick)

The heliocentrism of Aristarchus has been shown\* to be part of a long tradition of non-geocentric views; in context it was not at all 'revolutionary', and Heath's subtitle to his work *Aristarchus of Samos: the Ancient Copernicus*, was distinctly misleading. Such claims of anticipation, or of one author being a 'precursor' to another, are perhaps more common in the history of mathematics than in that of science. What counts as relevant in the context of a historic scientific contribution may depend on many factors such as the extant sources and their tradition, and the period, location and culture in which it originates. But can we say when the context of a theory or a discovery has been considered 'sufficiently'? Does it depend, for example, on readership and purpose? For claims of anticipation we suggest one criterion for sufficient context will be the affordance of an accurate assessment of the meaning and significance of the contribution in its own historical context. By 'accurate' here we include the fairness - lack of discernible bias – when comparing the contribution in its own time and in the present time. In addition to the usual dimensions of context: social, institutional, intellectual, etc, which are public and shared, we propose a *personal context* to include imagination and emotional life which are individual, partially known if at all, yet often highly significant.

\*Christianidis et al, 'Having a Knack for the Non-intuitive: Aristarchus's Heliocentrism through Archimedes's Geocentrism', *History of Science* XL, (2002)

##### **From model Baconian to Romantic genius: The cult of Newton in Scotland, 1770–1840**

Bill Jenkins (University of St Andrews)

Isaac Newton played the role of a culture hero in the Enlightenment and post-Enlightenment periods well beyond the domain of natural philosophy. In the English-speaking world his name and achievements came to represent Enlightenment itself. However, the image of Newton constructed by later philosophers and historians was far from static. This shifting image of Newton can be particularly clearly observed in the works of the philosophers of the Scottish Enlightenment and their nineteenth-century heirs. In the later eighteenth century Newton appeared in the writings of figures such as Thomas Reid and John Robison as the perfect exemplar of the inductive scientific method associated with Francis Bacon, which advocated the accumulation of facts from which generalisations could be made through induction to yield nature's laws. By the 1830s, by contrast, he could plausibly be presented in David Brewster's influential *Life of Sir Isaac Newton* (1831) in the

garb of a Romantic genius, whose discoveries were the product of a scientific imagination more akin to 'poetic fancy' than to the rigid methodology of Baconianism. The transformation of Newton mirrored a concomitant decline in the reputation of Bacon, whose rejection of the role of hypotheses in science was increasingly questioned. In this paper I explore how the greatest example of a Baconian natural philosopher transmuted into a divinely inspired Romantic genius in late eighteenth- and early nineteenth-century Scotland.

### **Francis Bacon's chain of being and the programme of a new natural philosophy**

Alexandra Liciu

In the *Historia et inquisition de animato et inanimato*, Francis Bacon starts with the claim that the inquiry into the nature of the animate should begin with his tables of absence and presence (OFB XIII *Historia et inquisitio* 229). This will lead to a theory-driven account of the process of "vivification", i.e. the process by which matter becomes animate, built around an axiom that stands for this process (cf. the third part of the *Historia et inquisitio*). In this presentation, I claim that such considerations lead Bacon to a conception of – as it were – a chain of being, conception that permeates his whole project of a new experimental philosophy at different theoretical levels. According to this conception, the living beings are divided into three dynamic categories (plants, "insects" or spontaneously generated beings, and "full" organisms), which is to say that an organism can climb up this ladder, but also could degenerate, and also that we could form "rudiments" of species or hybrids. If in the *Historia et inquisitio* the example of the chain of being appears, at first, at the level of the compilation of tables, in other Baconian works this example plays a role at other theoretical levels. In the *De augmentis scientiarum* it pops up as an instance of the "chances of experiments", which represents the most theory informed part of Bacon's art of experimenting, the *experientia literata* (SEH DAS V 420), while in the *New Organon* it serves as an example of "Frontier Instances" (OFB NO II 299), i.e. a set of special cases, that serve as a shortcut to the formulation of the laws of nature. In this talk I will investigate several such contexts.

### **9B - Medical Professionalism | Chair: Claire Jones**

#### **Thérèse Ployant: a French midwife in Naples (18th century)**

Marine Goburdhun (Elte University of Budapest)

The paper would study the career of a midwife, Thérèse Ployant, trained at the faculty of medicine in Paris by Alphonse Leroy, who became *Ostetrica maggiore* and *Maestra* of the Hospital for the Incurables of Naples and author of the *Breve compendio dell'arte ostetricia* published in 1787 in Naples. Her journey later took her to Venice, where she addressed petitions to the *Magistrato alla sanità* of Venice, relating to the defense of the art of midwives against surgeons. The ambition is to question the figure of Thérèse Ployant in its context, from the turn of obstetrics to the 18th century, from Italy, France and Europe

where knowledge and methods of teaching obstetrical art are diffused and formalized. Although her career seems original, her methods, her teachings and her commitments also reflect the evolution of a profession and the new challenges to be met. The information contained in her manual and in the archives of the hospital also allow knowing more about the recruitment of her students in midwifery and the knowledge required to access the course as well as the careers they were able to pursue afterwards in Naples and in the Kingdom. Through the figure of Thérèse Ployant, other fates can also be studied.

### **A lost generation of female physicians**

Tereza Kopecka (Regional Hospital Liberec, Czech Republic)

This paper focuses on the topic of gender-specific phenomena of medical studies in Czech lands during the Nazi German occupation that started in March of 1939. After the student-protest marches in November 1939, all the Czech universities were closed by the German government, many students incarcerated, some were executed. Tertiary education was stopped for six years for the whole Czech population, and other plagues were to come: Totaleinsatz and holocaust. It was a time of unsure waiting for all the students who wanted to gain education and join a specialized profession. It is expected to see lower numbers of afterwar physicians grown-up of this generation of students because many were killed, remained ill, or impoverished. Surprisingly, the demographic loss is gender-specific. Although during the interwar period, women were as successful students as men (proven on big data), female students ceased to study more frequently – or rather did not return to the universities after the war and did not become physicians. These phenomena can be seen clearly in data taken from the 1962 Statistic almanac of the Czechoslovak Republic and the archival registries of Charles University. There are several possibilities for explaining the differences. Age, attitude to education, family ambitions, Totaleinsatz obligation, and other aspects offer an insight into the female student and medical world of the 1940's. They show how specific and unsure the future of young women was during the war and what decisions they used to make.

### **'So, what seems to be the problem' ... with women's premenstrual health?: a medical history of the menstrual malady**

Caroline Henaghan (University of Manchester)

In 2019 the World Health Organization introduced a new set of diagnostic criteria for a medical condition called premenstrual dysphoric disorder (PMDD) – a move that was preceded by the inclusion of PMDD in the *Diagnostic and Statistical Manual of Mental Disorders (DSM-5, 2013)*. But PMDD is not a new disorder. Evolving from medical ideas about 'disordered menstruation' in the 19th century to 'premenstrual tension' in the early part of 20th century, it became more widely known as 'premenstrual syndrome' in the 1950s, and then classified as late luteal phase dysphoric disorder (LLPDD) from the 1980s onwards. Now referred to as PMDD, the condition manifests as a constellation of mood, behavioural and physical symptoms that occur in a cyclical pattern prior to menstruation

and can significantly impact on quality of life for the 3-8% of individuals who suffer from this gender-specific condition. This paper charts the medical history of the premenstrual disorders, from ancient origins to inception as a psychiatric condition within modern medicine. The objectives in undertaking this historical survey are twofold: to highlight how the premenstrual sufferer has been characterised, medicalised, and stigmatised in the socio-medical discourse of the past, and to hypothesise that PMDD is not merely a modern socially constructed concept. Ultimately, this begs the question: with a wealth of medical history for scientists, practitioners, and policy makers to consult, why has it taken until now for women's PMDD symptoms to be medically recognised and for their stories of premenstrual suffering to be heard?

### **9C: Science and psyche | Chair: Charlotte Sleigh**

#### **Making Biological Psychiatry in postwar Britain around 1970**

Alfred Freeborn (Humboldt-University Berlin)

At the end of the twentieth-century, the medical historian Edward Shorter reflected on recent changes in psychiatry by noting that 'the biological approach to psychiatry - treating mental illness as a genetically influenced disorder of brain chemistry - has been a smashing success.' In the postwar period biological psychiatry grew into a vast international enterprise. But historians still do not have adequate accounts of how this process of institutionalization took place, a task increasingly pressing given the ongoing *failure* of biological research to demonstrate the biological basis of any major mental illness. How did a research field with such disappointing results achieve such intellectual dominance? This paper presents a case study examining the institutionalization of biological psychiatry in postwar Britain using recently released material from the archives of the UK Medical Research Council. In 1970 the MRC opened the Clinical Research Centre at Northwick Park Hospital in north-west London which later became an international centre for biological psychiatry. However, as shown by archival documents, the MRC had planned a new centre of biological psychiatry in Oxford which fell apart at the last minute. The contrasting fates of these two centres allows the historian to assess the nature of successful institutionalization and balance out narratives of success presented in oral history and much historiography. Overall, the paper argues that the emergence of biological psychiatry in Britain was aided by a broader shift in the MRC's outlook towards strictly "biomedical" research, while emphasising the organisational difficulties of actually directing neurobiological research into mental illnesses.

**Social Control and Behavioural Therapies : from Sociological Critique to Militant Psychiatric Practice (France, 1960-1970)**

Milana Aronov (University of Lausanne, University of Warwick)

In 1960s France, criticism of the psychiatric complex became centre-stage in sociological critique of the place of “social control” within the welfare state. During the 1970s, the term became popular in various professional circles, when it was used to expose public administrations' failure to consider their recipients' perspective. An emblematic target of this criticism was the practice of behavioural therapies in mental healthcare facilities. The sociologist Robert Castel and the child psychiatrist Stanislas Tomkiewicz were key mediators in this popularisation of the term “social control” and condemnation of these therapies. Their preferred audiences for this were social workers and parents' associations of children with mental disabilities. Whereas social workers were sensitive to this issue, parents' associations – which were major partners of public administrations – saw this attack on behavioural therapies as yet another attempt by psychiatrists to keep ascendancy over their children's conditions. A growing body of research makes compelling arguments for the need, first, to question the sociological paradigm of “social control” in the history of 20th century psychiatry, and second, to go beyond academic disputes in the contemporary history of social sciences. Through analysis of published literature, personal archives of scientists, and bulletins of parents' associations, this paper explores the history of this notion in France through the collaborations between Castel and Tomkiewicz , their common intellectual and militant circles and their shared criticism of behavioural therapies.

**Scientist-practitioners and the medicalisation of meditation between 1969 and 1982: shifting the boundaries between belief and science**

Stephen Morris (University of Kent)

The contemporary clinical acceptance of mindfulness meditation is the latest stage in a long-running project to medicalise belief-based human technologies. Between 1969 and 1982, scientists strove to validate several traditional Eastern meditation methods for clinical use. A characteristic of this wave of medicalisation was the role of scientist-practitioners, key actors invested in both spiritual practice and science creation. Scientist-practitioners such as Robert Wallace and Jon Kabat-Zinn attempted to integrate traditional meditation within scientific domains, thus challenging ontological boundaries. This paper considers the convergence of belief and scientific knowledge in meditation research and its legacy from a constructivist perspective. Preliminary findings indicate that while researchers can explore the spaces between belief and science, this approach is incongruent with positivist theoretical frameworks.

**The Eclectic Business of Mind: Shadow psychologies in mid-twentieth-century Australia**

Alexandra Roginski (Deakin University)

The discipline of modern psychology solidified its influence during the early-to-mid twentieth century, permeating industry and occupying a new niche in the academy. But like any new source of authority, it rose in prominence alongside a host of doppelgangers. These shadow psychologies integrated ideas as disparate as phrenology, New Thought and western esotericism into forms of applied psychology that responded to emerging social challenges – ranging from career guidance to personnel management. Through the case studies of prominent Australian entrepreneurs of mental science, this paper considers the eclectic forms of psychology that capitalised on new commercial opportunities during this period. The enterprising figures in this field included Haigwood Masters, who adapted phrenology and physiognomy into a form of character reading and executive leadership for corporate settings such as major banks and the clerical cadre of supermarket chain Woolworths. While Masters forged a multi-decade career through his biologically determinist system, Frederick Trainer of the Life Science School of Applied Psychology framed the Bible as the original self-help manual and combined character reading with New Thought aphorisms. These men plumped their profiles and businesses through media appearances, profusions of literature, and courses that cultivated loyal followers. While they played at the edges of the new field of industrial psychology – challenging historical narratives of a neat ascendancy for rationalist mind sciences – their stories also stand at the centre of another genealogy, that of the corporate consultants whose livelihoods depended on self-generated expertise, an instinct for new trends, and a knack for positioning themselves close to the centre of power.

**Session 10 11:30-13:00 BST**

**10A - Collection and creation in the making of knowledge | Chair: Rachel Boon**

**Context, Interdisciplinarity, Intermediality, Linked Data: Models for Researching Collections**

Tim Boom (VP)

Historical collections have often been amassed with research as a secondary, if not a primary, purpose. But in history of science – broadly construed – not much research based on other than book and archive collections has occurred. It is not hard to describe some of the reasons why this might be the case, and I will allude to some of those in this talk, but there are reasons now to promote collections-based histories both for the sake of pursuing our discipline in new ways, and also to help collections-based institutions to fulfil their potential role in relation to publics both academic and public. At the end of this short talk, I come to the potential of open linked data techniques for opening-up a territory that promises to make collections available in ways that have hitherto been impossible. I suggest that the historiographical possibilities opened-up thereby go beyond the already valuable areas of contextual, interdisciplinary and intermedial research and offer real opportunities for history of science.

**Collecting and Collating: What can we learn from Early Modern alchemical composite manuscripts?**

Zoe Screti (University of Birmingham)

Alchemical treatises had long been a feature of Medieval miscellanies in England, sitting alongside a variety of other topics such as medicine, theology, and astrology. It was not until the sixteenth century, however, that composite manuscripts which focussed solely on alchemy emerged as their own genre. In this paper, I seek to analyse these Early Modern alchemical composite manuscripts, questioning what such manuscripts can reveal about the spread of alchemical knowledge and how this knowledge was being consumed.

The paper will begin by questioning how and why alchemical composite manuscripts emerged and grew in popularity over the course of the sixteenth century. It will be argued that the dispersal of monastic manuscripts following the Dissolution of the Monasteries and the concurrent decline of the traditional master-adept mode of knowledge transmission played a vital role in this emergence as both placed a new importance on the written word. The paper will then consider what can be learnt from alchemical composite manuscripts, using their construction, annotations, and particular collations of sources to draw out the motivations of individual alchemists and reconstruct networks of knowledge sharing.

**Anyone who feels joy is creative – a first sketch of the epistemic virtue authentic creativity**

Annelie Drakman (Stockholm University)

Why is creativity such a ubiquitous virtue in the United States and Europe today? In this article, it is argued that exhortations to be creative, as well as to follow one's passion and have fun at work, all are signs of the new virtue "Authentic creativity". This is an overarching mode of thinking about ethical values and knowledge creation emerging after World War II. It draws on ideas and practices about individuality, an authentic life and creativity as an epistemic tool, and has become especially important within knowledge generating fields such as contemporary science. Thus, practicing scientists' descriptions of who makes a good scientist and why are analyzed. Using Lorraine Daston's and Peter Galison's term "epistemic virtue", the characteristics of authentic creativity are contrasted with three older epistemic virtues to clarify some of its unique features: that it is open to anyone, that knowledge creators need access to all available sources rather than the most correct ones, that successful knowledge generation depend on feeling passionate about the work, that knowledge generators should let their own positive emotions guide them, and that they are expected to use creativity to create something new and useful rather than something correct. The consequences of the increasing importance of authentic creativity are also briefly sketched, and avenues for future research suggested.

**10B - Measurement and Observation in the early 20th century | Chair: Alexander Stoger**

**The Psychophysics of Attention – Experimental Eye-Trackers and Gaze-Trappers around 1900**

Anna Simon-Stickley (Technische Universität Berlin)

The act and ability to attend – to minute detail, to complicated calculations, to intricate experimental procedures – is fundamental to science and to knowledge-making in general. Hailed as an epistemic virtue in the Enlightenment, attention, in the second half of the nineteenth century, increasingly became problematic as fatigue and mental exhaustion took hold of industrializing nations. Attention now became the focus of experimental research itself. To study this volatile and multi-sensory phenomenon, psychophysicists centered on ocular fixation and pursuit as a plausible physiological manifestation of attention – a fact that has gone all but unnoticed in the existing scholarship. To trace the paths of attending eyes across the visual field, the psychologist Edmund Burke Delabarre built the first eye-tracker, consisting of plaster cups inserted into the eye from which protruded a tiny metal arm that would inscribe the motions of the eyes on scorched paper. Such invasive instrumentation, however, was derided for not representing natural eye-movements, uninhibited by torturous machinery. Raymond Dodge replaced Delabarre's metal arm with a light beam that was reflected from the cornea and captured on photosensitive paper. In these instruments, the attending minds of the test subjects were drawn out through the

eyes, into the laboratory, and impressed upon receptive surfaces, revealing both where the attentive gaze had rested and its subsequent flight across the visual field. Attention thus entered the laboratory in a twofold manner: At once the phenomenon being observed and the resource for its very observation.

**‘Eugenic Reasons for granting Citizenship’: Karl Pearson’s and Margaret Moul’s paper on Alien Immigration**

Maria Kiladi (UCL)

Between 1925 and 1928 statistician and Eugenicist, Karl Pearson, published a series of papers on Alien Immigration with his Galton Laboratory associate, Margaret Moul. The papers appeared in Pearson’s journal, *Annals of Eugenics*, one of the many he organised and controlled heavily between 1901 and 1933. Based on a very detailed examination of children from the Jews’ Free School in East London, the study appeared in six very long parts. Pearson and Moul compared their Free School sample with gentile children to demonstrate Jewish inferiority in anything from literacy skills, cleanliness, susceptibility to diseases and intelligence. By demonstrating this group’s inferiority, Pearson and Moul justified restrictions to Alien Immigration in the UK not just from this particular group, but from all immigrants that appear to be ‘below the physique and mentality of the autochthonous race’. In this paper I will discuss Pearson’s and Moul’s paper in the context of immigration discussions in the UK during the 1920s, with particular references to Jewish immigration, and will demonstrate how the study is the product of unconscious bias, not only in the language used to describe gentile and Jewish children, but also in the presentation of data: From comparisons of samples unequal in sizes, to inconsistencies in data presentation, convenient omissions and miscalculations, Pearson and Moul manipulate their samples and present their findings in a way that confirms their prejudices.

**Reporting Facts of Insanity around the World: The Certification of Lunacy between Stigma and Standardization (1850s-1890s)**

Filippo Sposini (University of Toronto)

The certification of insanity was a medico-legal procedure that became an essential step for civil confinement into lunatic asylums. By mid-nineteenth century, many jurisdictions followed the so-called “English system of certification” which involved two medical practitioners personally examining the alleged insane at the presence of witnesses. Each doctor was required to fill a standardized certificate which required them indicate “facts of insanity personally observed” and “facts of insanity communicated by others”. Only after the completion of this form, people could be officially certified as insane and be recommended for asylum treatment. In spite of the medical, legal, and social impact of the certification process, we still know very little about this procedure. My presentation will trace the development of the “English system of certification” for then exploring its international diffusion in North America, Australia, India, and the Caribbean during the second half of the nineteenth century. I will explore how practitioners engaged with their

role as certifiers, how they proposed to depict “facts of insanity”, and the legal bearings of their actions. By considering its transnational trajectory, I will suggest that the certification of insanity provides an interesting opportunity for addressing the origins of stigma in mental health and disability. As statutory documents holding legal power, certificates of insanity transformed family concerns into a medical, social, and political issue. Not only personal examination exposed intimate family dynamics to the public, but it also created a written record difficult to erase from bureaucracy and social memory.

**10C - The medium for the message | Chair: Tim Boon**

**“A machine to supersede the pen”: The development of typewriter advertising in Scotland, 1870s to 1920s**

James Inglis (University of St Andrews & National Museums Scotland)

In 1874, American arms and sewing machine manufacturers E Remington & Sons released the Sholes & Glidden “Type Writer”, one of the earliest commercially manufactured writing machines. Within two years, a handful of retail agents in Scotland began importing the typewriter and set about finding a market for the new machine. At first, Scottish retailers concentrated their advertising efforts on explaining to the public what the typewriter was and why it was an improvement over the pen. By the early twentieth century the picture had completely transformed. Typewriters had become essential devices which were widely used in businesses and government offices. Facilitating this demand, dozens of typewriter retailers had established themselves in Scotland’s major towns and cities selling a vast range of brands and models from American and European manufacturers. As retailers looked to differentiate their typewriters from the bewildering array of alternatives, the content of advertisements became increasingly adversarial. Some retailers focused on the design features in their adverts, others on pricing. Sellers of established brands such as Remington capitalized on brand longevity and prestige, conveniently ignoring the fact that their machines were overpriced and outdated in design. This paper makes use of advertisements from Scottish retailers published in newspapers and directories to show how typewriter marketing evolved in response to developments in design and manufacture. Analysing typewriter advertisements from the perspective of retailers will emphasise the crucial role that sellers played in the diffusion of new products, which has often been neglected in technology studies.

**The hick and the scholar: the socio-political uses of nature imaginaries in film and television in late Franco’s Spain (1960s-1970s)**

Carlos Taberner (UAB)

Film and television are rich in conceptualizations of nature and the environment. This work offers a historical reading of a range of narratives present in fiction films and wildlife television documentaries produced in Spain in the 1960s and 1970s, and in which nature

and the environment were either part of the main concern or somehow essential for plot development. Across genres and formats, all these audiovisual products persistently addressed the regime's concerns and strategies regarding a long-sought and promised modernization, which had a crucial bearing on its legitimation at home and abroad. In this sense, they were built around deeply intertwined, and often contradictory dichotomous demarcations between nature and nurture, wilderness and civilization, the rural and the urban, the natural and the artificial, the healthy and the sick, the moral and the immoral, and the local and the global. With this approach, this work contributes to the historical understanding of filmic and televisual displays of nature and the environment. By situating them in the last years of Franco's regime in Spain, a tightly controlled, albeit noticeably changing context regarding politics, the natural sciences, the public perception of wildlife, and media, we will be able to discuss historically how the environment, while increasingly considered as a set of scientific-technological objects of concern, has been used to draw cartographies of economic, gender and race inequalities in the elaboration of socio-political projections and histories of the future.

### **Television, Film, and the Ethology of Primate Facial Expressions, 1960-73**

Miles Kempton (University of Cambridge)

In May 2016, a video appeared online of a moribund chimpanzee's tender reunion with an important figure from her past. The clip shows 'Mama', long-time matriarch of the chimpanzee colony at Arnhem Zoo, lying despondently in a fetal position. It cuts to the arrival of Dutch primatologist Jan van Hooff, whom Mama had known for over forty years. As she recognises his familiar face, her own breaks into a broad grin, and she draws Van Hooff in to stroke his hair rhythmically. The clip prompted an outpouring of sympathy in the press and inspired Van Hooff's first doctoral student, renowned primatologist Frans de Waal, to write his latest book on animal emotions *Mam's Last Hug* (2018). It reminds us of the ongoing emotional and cultural salience of the faces and gestures of our closest relatives. It also magnifies the importance of the media through which they reach us. In this paper, I show how the moving image played a crucial role in establishing modern research on facial expressions in the formative years of television. I use Van Hooff's pioneering research on primates, his collaboration with Granada TV on a 25-minute television film called "Animal Expressions", and his appearances on the BBC to show how the interests of primate ethologists and television producers intersected in a period in which the human face established itself as the quintessential televisual image. I emphasise the multivalent character of footage of primate faces as it was recycled and repurposed.

## Session 11 14:00-15:30 BST

### **11 A - Far from peripheral. Interurban networks in natural history between Argentina and Europe around 1900 | Chair: Daniel Belteki**

Way down in South America, Argentina seems to be very far away from Western metropolitan centres. Yet around 1900 the country was a global player: economically, culturally but also scientifically, particularly in the field of natural history. This session will present three case studies on physical anthropology, zoological gardens and teaching material for natural history. The papers will pursue a transnational and interurban perspective in order to show how the practices of natural history in Argentina were inextricably linked with those in Europe and beyond. They will explore the institutional ties between museums and zoos, but also commercial connections. How was knowledge produced and communicated in these networks? The concept of an increasingly globalized market in natural history will be helpful in this respect. Each case will pay particular attention to the material dimension of exchanges. How did human skulls, exotic animals and teaching devices circulate between Argentina and Europe? How were institutions in Buenos Aires, La Plata and Córdoba linked with Paris, Berlin but also the Canaries? Were there transnational actors that mediated between both spheres? What emerges is a highly dynamic process of transnational knowledge exchanges, marked by eclecticism and appropriation rather than a mere passive “reception”. These interurban exchanges were rather multidirectional than unilinear, hence concepts of centre and periphery lose their meaning.

### **Far from peripheral. Interurban networks in natural history between Argentina and Europe around 1900**

Oliver Hochadel (IMF-CSIC, Barcelona)

In June 2016, the Buenos Aires zoo made headlines around the world. The dire situation of the animals led to its closure. It is supposed to become an “eco-park” now. A century earlier, during the directorship of Clemente Onelli (1904-1924), the zoo, had a different reputation: for Argentines it was a beacon of civic and national pride. Yet the Buenos Aires zoo was also well known internationally and considered innovative and exemplary in many respects. Its “outreach program”, including free guides, reached a large audience. Its journal (published from 1893) was read by naturalists around the world. The *Revista* included many reports about the zoological research carried out in its enclosures, in particular with respect to improving the nutrition of the animals. Despite its seemingly peripheral location the Buenos Aires zoo was firmly integrated in the interurban network of zoological gardens in the early twentieth century. It exported much sought after animals from the Latin American fauna, e.g. anteaters, to European zoos and was at the same time eager to fill its own cages with giraffes, elephants and apes. Zoo architecture was another field where best practices “travelled” between the Old and the New World. This paper will thus use a transnational perspective in order to tease out the numerous material and epistemological exchanges

taking place between the Buenos Aires zoo and other animal keeping institutions in Europe and beyond.

### **European scientific objects for teaching natural history in Argentina (1870-1900)**

Gabriel Mayoni (Universidad de Buenos Aires)

From around 1870 the teaching of natural history in Argentina took off on various institutional levels. This required a substantial amount of teaching materials, mostly imported from Europe. Herbariums, taxidermic specimens, anatomical models, wall charts, minerals, fossils but also text books made their way across the Atlantic to cabinets, museums and laboratories in Buenos Aires, Córdoba and other Argentine cities, reaching a large variety of audiences. In the second half of the nineteenth century the market for teaching materials in natural history became a global one. Companies such as the Paris publisher Hachette, the Edinburgh publishing house Johnston and the German firm Volckmar and Koehler, among others, tapped into the growing demand from South America and diversified their offers. Their natural history collections evolved into standardized items and were mass produced. We need to think of these teaching materials both as commercial commodities and as epistemological objects imbued with a very specific notion of nature. This paper will thus address the transnational circulation of teaching objects within a growing cultural market of science and ask how these were adapted and appropriated in the specific settings of natural history in Argentine. It will discuss how students were exposed to a new scientific vocabulary and specific methods of studying nature through these materials. How did they incorporate knowledge of local fauna, flora and geology into universal classificatory schemes? The globalization of the natural history market promoted access to scientific knowledge but also created tensions between the “universal” and the local/ national.

### **Knowledge networks connecting “peripheries”: the circulation of objects and actors between the Canary Museum and the La Plata Museum (1879-1900)**

Betancor Gómez, María José. Álvaro Girón Sierra (Universidad de Las Palmas de Gran Canaria; IMF-CSIC)

In 1879, “El Museo Canario” (Canary Museum) was founded in Las Palmas de Gran Canaria. It is an institution that exhibits an impressive array of objects of the pre-Hispanic past of the Canaries. True, Las Palmas is far away from any of the cultural and political centres of Spain. Yet El Museo Canario built an important network of exchange between individuals and institutions in both Europe and America. Its founder, the physician Gregorio Chil y Naranjo had studied medicine in Paris. There he had established a life-long friendship with Paul Broca, one of the founders of physical anthropology. In fact, El Museo Canario was better connected with Paris than with Madrid. The Museum was not only a colonial port of French anthropology. Chil’s group was eager to create its own networks. This was facilitated by the widespread interest in human remains (mummies, skulls) of the pre-Hispanic inhabitants of the Canaries, in a period in which the circulation of skulls became instrumental for the

construction of an anthropology based on the concept of race. El Museo Canario was able to establish contact with institutions like the Smithsonian Institution or McGill University. The Argentinian Museo de La Plata became one of the most important associates of “El Museo Canario”. Their collaboration was not limited to the exchange of skulls. Naturalists like Víctor Grau-Bassas worked both in Las Palmas and La Plata. The paper will thus pay particular attention to the circulation of objects, knowledge, practices and actors between two allegedly peripheral institutions.

### **11B - Science and Spiritualism in the Late Victorian Era | Chair: Bernie Lightman**

This panel connects history of science-based approaches to psychical research and belief with new developments in esotericism studies. It does so by examining, challenging, and expanding the historiography of the modern spiritualist movement’s relationship with scientific naturalism. The papers here recognize modern spiritualism—an exoteric movement often unreckoned or marginalized within esotericism studies research—as a key site for challenging whiggish narratives of scientific ascendancy and rationalist *telos*. In doing so, they substantially revise the first wave of science and spiritualism scholarship that emerged in the 1980s and 1990s,<sup>1</sup> one based on a narrative in which seemingly sensible and intelligent scientific figures were fooled into accepting the veracity of the spirit hypothesis, followed by a period of intense scrutiny and intellectual debate, before scientific naturalism pushed spiritualism and telepathy to the margins of society. This account has hitherto received far less scrutiny within the history of science than it has within esotericism studies.<sup>2</sup>

<sup>1</sup> Three key examples are: Janet Oppenheim, *The Other World: Spiritualism and Psychical Research in England, 1850-1914*, (Cambridge: Cambridge University Press, 1985); Ruth Brandon, *The Spiritualists: The Passion for the Occult in the Nineteenth and Twentieth Centuries*, (London: Weidenfeld & Nicholson, 1983); and John Cerullo, *The Secularisation of the Soul: Psychical Research in Modern Britain*, (Philadelphia: Institute for the Study of Human Issues, 1982).

<sup>2</sup> Some key examples include: Olav Hammer, *Strategies of Epistemology from Theosophy to the New Age*, (Leiden: Brill, 2001); John Warne Monroe, *Laboratories of Faith: Mesmerism, Spiritism, and Occultism in Modern France*, (Ithaca: Cornell University Press, 2008); and Egil Asprem, *The Problem of Disenchantment: Scientific Naturalism and Esoteric Discourse, 1900-1939*, (Albany: SUNY Press, 2014).

### **The Limits of Scientific Naturalism: John Tyndall’s Investigation of Modern Spiritualism** Efram Sera-Shriar (Science Museum Group)

The backbone of Victorian spirit investigations rested with the credibility of the witnesses who attended spiritualist events such as séances. But how did someone become a credible witness of spirit or psychic phenomena? What were the processes by which their

testimonies became trustworthy representations of genuine experiences? This paper explores these questions by examining the visual epistemology of the scientific naturalist and sceptic John Tyndall (1820-1893), as a way of understanding the politics of constructing scientific testimony during the late Victorian period. Visual epistemology can be defined as an embodied practice of observation that moves beyond merely being the physical act of looking at things to include a range of skilled activities. Key to this paper is an attempt to challenge earlier whiggish accounts in the historiography that have perpetuated the myth that science conquered spiritualism in the nineteenth century. Instead, it exposes a more complicated narrative about Victorian science's uneasy relationship with spirit and psychic phenomena, and raises important questions about the authority and limit of scientific naturalism.

### **Lentils Beyond the Veil: Spiritualism, Vegetarianism and Dietetics**

Elsa Richardson (University of Strathclyde)

On 15 July 1908 *The Times* advertised a talk on 'recent personal experiences in spirit-photography and the scientific aspect of spiritualism', due to take place that evening at the Eustace Miles Restaurant on Charing Cross. Lecture attendees could look forward to not only 'exhibitions of spirit writing' and a demonstration of how 'occult agency works through matter', but also to enjoying a 'fortifying' and entirely 'flesh-free' meal afterwards. In this paper I would like to suggest that this evening entertainment speaks to a broader confluence of spiritualist belief and vegetarian ideals, which was played out in societies, private seances and public demonstrations from the middle of the nineteenth century. The first Vegetarian Society was inaugurated in Manchester one year before the Fox sisters set the modern spiritualist movement in motion, and from the beginning there existed a great deal of sympathy between the two. Beyond a shared commitment to progressive causes — that might also include temperance, educational reform and eventually, women's suffrage — they held in common a belief in the essential purity of vegetable foods and in the potentially corrupting nature of flesh. Mediums were encouraged to avoid meat before attempting communication with the dead, prominent mystics stressed the importance of vegetarianism to the bringing about of spirit visions and debates over the proper diet for believers raged through the movement's periodicals. Focusing on turn-of-the-century debates, this paper will examine how the language of dietetics and the emerging science of nutrition functioned in the séance, and what this reveals of the tricky negotiation of immateriality and corporality at stake in spiritualist discourse.

### **The Psychic Force Serialized: William Crookes and The Quarterly Journal of Science, 1870–1874**

Ian Hesketh (University of Queensland)

This paper considers the way chemist William Crookes (1832–1919) utilized his editorship of the *Quarterly Journal of Science* to promote the scientific importance of spirit phenomena. It explores the publishing of Crookes's series of sensational articles that investigated the

“Psychic Force,” a purported force of nature that Crookes discovered during experiments with the medium Daniel Dunglas Home (1833–1886). Crookes thus used the space afforded to him in the journal to describe his experiments and present his evidence within the framework of an orthodox scientific discourse. While Crookes endured much criticism from certain scientific men, the serial format of his investigation meant that he was able to generate a great deal of interest. It also meant that his subsequent articles in the series could respond to critics by adjusting his experiments, overcoming perceived difficulties, and providing his readers with new and exciting details concerning his ongoing investigation as it was being conducted. By focussing on the relationship between the form and content of Crookes’s “Psychic Force” series in the *QJS*, this paper thus seeks to build on recent literature on periodical publishing and make a case for bringing a material and print culture analysis to bear on the history of spiritualism and science more generally.

### **11 C - National Sciences | Chair: Francisco Malta Romeiras**

#### **Citizen Science in Portugal. Documenting the history of biological recording through the analysis of old publications**

Cristina Luis (University of Lisbon)

As a way to bridge science and society by engaging members of the public in scientific discovery across disciplines, citizen science has gained increasing relevance in the last decade. It involves society in scientific projects that are difficult to undertake only by scientists who lack the resources to collect or analyse large-scale data, and engages stakeholders in a wide variety of projects, including biodiversity recording. However, the practice is centuries old, a fact that quickly becomes evident by looking through issues of the oldest journals devoted to science. For centuries, people have been interested in identifying and documenting the occurrence of animals and plants, i.e., recording biological data. While the long history of voluntary involvement in biological recording is widely recognised as having played a critical role in science and decision-making, the history of biological recording, its distinctive attributes, and its successes, has been largely untold in many countries. To help reconstruct the history of citizen science in Portugal, we are examining the network of volunteer contributors to the biodiversity record and how information circulated between collectors, amateur naturalists and specialist naturalists. We are, at this stage, concentrating our efforts on surveying information available in secondary sources, but also documenting information from primary sources by analysing a selection of old scientific journals that are available in online repositories. This work promises a significant advance in our understanding of the historical relationship between citizen science and biodiversity monitoring.

**“Quarantining the Empire: The Political Economy of Airborne Contagion in Britain, 1770-1820.”**

Paul Sampson (University of Scranton)

This presentation, part of a larger project on the history of ventilation during the long eighteenth century, examines how conceptions of airborne contagion influenced the work of famous prison reformer John Howard – a connection made explicit in Howard’s sponsorship of a proposed quarantine station to be built on the River Medway near London. Howard’s proposal was contested by free trade advocate Charles Maclean, who argued that quarantine was both ineffective and threatening to the economic health of the British Empire. I will argue that the failure of Howard’s proposal and the perceived failure of quarantine-like reformed prisons marked a transition of the central object of state-sponsored reform from the environment to the individual. By examining this history, we can better understand how debates over free trade continue to fuel the ongoing tension between individual and public responsibility in managing disease.

**‘Am brí a ndai /Am bri danae’: Networking Natural Philosoph(ies) in Early Modern Ireland**

Kevin Tracey (Maynooth University)

To date, accounts of proto-scientific enquiry in early modern Ireland have focused largely on the creation and impact of neo-Baconian projects of ‘improvement’: designed, in the words of Anglo-Irish philosopher Katherine Jones, Viscountess Ranelagh (1615–1691), for ‘the publicke aduantage of this blessing & well-neere ruined Commonwealth’. Historians have explored in detail the interlinked ethnoreligious, colonial, and experimental endeavours through which English, Anglo-Irish, and European figures reconceived of the land as a ‘laboratory for empire’ (Ohlmeyer, 2005). Much less well understood, however, are the efforts of Gaelic Catholic authors to counter such projects and their outcomes; efforts underpinned, in their own way, by readings of the books of scripture and of nature alike. Yet, as the careers of the propagandist, alchemist, and physician Richard Stanihurst (1547–1618) and the Gaelic author and soldier Philip O’Sullivan Beare (c.1590-1660) highlight, natural philosophies at play *in* and *of* early modern Ireland intersected with existing epistemic traditions; the new sciences; and wider continental currents in the study and use of nature - something recurrent historiographical focus on the experimental cultures of colonialism occludes. Presenting research in progress on networks of Irish figures at home and abroad, their works, and their sites of practice, this interdisciplinary paper explores contested cultures of knowledge-making and knowledge-retention. Introducing the Irish Research Council-funded AMERGIN project, it highlights the points of physical and intellectual contact and conflict between nodal figures of differing national, confessional, and philosophical identities, tracing the reconfiguration of epistemic knowledge in convulsive geo-political, philosophical, and textual spaces.

**12 A - Cold War Social Science: What it Was, and What it Wasn't**

This session brings together new lines of research that examine how the Cold War helped to reconfigure the character and social meaning of the social sciences from the 1940s to the 1980s. To do this, the four authors explore a variety of geographical settings, disciplinary and interdisciplinary traditions, institutional contexts, and intellectual currents. Equally important, without denying that at many levels and for a broad range of social sciences the Cold War mattered a great deal, the contributions here focus on specifying exactly how the Cold War mattered and how it didn't, thus deepening our understanding of the appealing and yet often problematic concept of "Cold War Social Science."

**Becoming an Area Expert During the Cold War: Americanism, Lusotropicalismo, and Anti-Racism in the Transnational Career of Anthropologist Charles Wagley, 1939-1971**

Gil-Riaño, Sebastián (University of Pennsylvania)

This paper examines how US anthropologist Charles Wagley became an anti-racist area expert during the Cold War. It tracks key moments from his fieldwork on Tupi-Gurani groups in Brazil during the 1940s and his involvement with the institutionalization of area studies programs in the US during the 1950s. As he became an area expert, Wagley relied on close links to the transnational field of Americanist anthropology. He also embraced the Lusotropicalist discourse of Brazilian intellectuals and elites like Gilberto Freyre, which championed Brazil's history of race-mixing as a counterpoint to European and North American race science. After WWII, Wagley benefitted from the expanded funding for area studies research from US philanthropies and government agencies as well as funding through UNESCO modernization projects. During the Cold War, Wagley developed ambitious hemispheric analyses that moved beyond Brazil and described distinct patterns of 'social race' in the Americas. In contrast to existing historiographic interpretations of area studies, this paper argues that Wagley's Cold War career cannot be reduced to US geopolitical interests alone. By following Wagley through pivotal moments in his career, this essay offers an example of how Cold War area studies expertise emerged from pre-existing intellectual networks outside the US and thus how the styles of thought and geopolitical interests typically associated with this domain of study have colonial and postcolonial antecedents.

**Catastrophes, Cross-cultural Studies, and Cold War: The Transnationalism of US-American Social Science Disaster Research**

Stehrenberger, Cecile (University of Wuppertal)

During the Cold War, several Army-funded US-American "social science disaster research" groups investigated the reactions of individuals, organizations and communities to "natural" and technological "disaster." Military sponsors hoped that social scientists would produce knowledge on civil disasters that could be extrapolated to the prediction and regulation of war-time behavior of US-American civilians under nuclear attack. Already in the 1950's they conducted their field studies not only in the US but also in Latin America and Europe and promoted "cross-cultural" research. From the 1970's onwards, they also studied disaster

behavior in several Asian “developing countries”, and increasingly cooperated with colleagues from other Western countries. My paper provides a provincializing analysis of disaster research’s transnationalism. As I will demonstrate, it was deeply influenced by (neo)colonial structures and discourses, manifest not only in the asymmetrical (non)circulation of knowledge but also in the formation of research objects and in the organization of scientific practices. I will explore how disaster research was in precisely this respect a paradigmatic case of Cold War social science and of scientific knowledge production in the service of Cold War liberal governmentality.

**On the Icy Slopes of Expertise: An Epistemology for Cold War Social Science and its Failure**  
Dayé, Christian (University of Graz)

Beneath other more obvious conflicts, the Cold War was also an era of intensive struggle over the nature and shape of the social sciences. This struggle was enacted on many levels, ranging from the choice of research topics to agency funding priorities, from the debated use—or misuse—of social science in political processes and decisions to social sciences’ role as a channel of international communication and exchange. Many US social scientists working in policy-related or “applied” areas during this era were eager to claim that their research deserved the label “scientific.” This paper recounts one episode of this struggle to corroborate the scientific character of applied social research. In the late 1950s, philosophers Olaf Helmer and Nicholas Rescher returned to a concept they had elaborated two decades earlier: the degree of confirmation. Now, they refurbished it to function as the core of an “Epistemology of the Inexact Sciences.” At that time, both authors worked at the RAND Corporation, a mecca of policy-oriented science in the Cold War era, and the ultimate thrust of their proposed epistemology was to establish the scientific character of RAND’s research activities. Helmer and Rescher’s idea was to allow expert opinion to confirm—or disprove— scientific hypotheses. While this proposal appeared innovative, it was not well received. Contextualizing their proposal in Cold War-inflected debates on the nature of the social sciences, this paper explores this hesitant reception.

**Reimagining Social Inquiry and Social Inquiry for Social Reconstruction in the post-1960’s US: Marcus Raskin and the Institute for Policy Studies**

Solovey, Mark (University of Toronto)

In my 2013 book *Shaky Foundations: The Politics-Patronage-Social Science Nexus in Cold War America*, I showed that a largely new extra-university funding system for American social science emerged in the early Cold War era between the late 1940s and mid-1960s. Major patrons in this system included the Defense Department, National Science Foundation, and Ford Foundation. Of special interest here, all of these patrons embraced two key commitments, to scientism and to social engineering. Yet by the mid-to-late 1960s, those two commitments were under increasing attack from a range of critics, including those who questioned the contributions of defense intellectuals and other supposedly objective social scientists to the US Cold War apparatus. Among the critics was the left-

liberal, activist-scholar Marcus Raskin, a co-founder and long-time leader at the Institute for Policy Studies, arguably the most influential leftist think tank in the latter third of the 20<sup>th</sup> century. Focusing on the period from the 1960s to 1980s, this paper examines Raskin's effort to rethink the nature of social inquiry for the purposes of social reconstruction by drawing on an eclectic mix of Marxism, pragmatism, existentialism, and feminism.

### **12B - Seeing and Imagining the Heavens | Chair: Zoe Screti**

#### **'The unknown heaven': authority and the observation of comets in an early modern astronomical manuscript written in the New Kingdom of Granada**

Sergio Orozco-Echeverri (University of Edinburgh, Universidad de Antioquia)

The appearance of celestial objects challenged astronomers in Europe and the Americas during the sixteenth and seventeenth centuries. Several astronomers calculated that some of these objects appeared beyond the moon, where heavens were expected to remain unaltered. Disputes over the nature of heavens were intertwined with the significance ascribed to comets such as the outcome of wars, the outbreak of epidemics or the manifestation of God. In the Spanish world, political projects aiming to explore and secure control over the "New World" mobilised instruments, books and institutions from which *criollos* and *mestizos* got involved in these debates. The retrieval of a manuscript composed by the *mestizo* Antonio Sánchez in Vélez indicates that interest in astronomy was not limited to practical concerns of administration in the colonial centres of power. In the *Tratado de astronomía*, Sánchez depicts a cosmos where comets circulate around the Earth, in a heaven of dimensions calculated from his observations of the comets of 1681 and 1682. The formulation of this heaven, unknown 'to the ancients' but 'arithmetically evident', reveals tensions between sources of authority (distinctions between astrology, mathematics and natural philosophy; diverging astronomical observations and methods of calculation; individual experience and biblical hermeneutics). These tensions emerge from Sánchez's attempt to encompass local elements – his own observations, his self-representation as *mestizo* – with abstract, universal components (the hexameral tradition, mathematics) in his cosmology. This paper presents these tensions and their significance for the circulation of knowledge in the early modern period and for the connections between knowledge, power, and empire in the Spanish-American world.

#### **Visualising the weather: James Glaisher and the visual representation of meteorological observations at the Royal Observatory, Greenwich from 1838 to 1875**

Daniel Belteki (Royal Museums Greenwich)

James Glaisher's work on snow crystals served as an important example of the truth-to-nature approach in Lorraine Daston and Peter Galison's book on the history of objectivity.

However, their book remains silent about Glaisher's other contributions to meteorology. Therefore, the talk asks whether Glaisher employed the truth-to-nature approach only for his research on snow-crystals or whether he used the same approach for all of his research with a visual component. To answer this question, the talk compares three areas of research that he engaged in. First, it examines his views on the photographic recording of meteorological instruments at the Royal Observatory, Greenwich. The talk shows his close involvement in the early development of photographic techniques, and their subsequent applications to meteorological research. Thereby the talk argues that Glaisher also relied on mechanical objectivity through his photographic work. Second, the talk examines his observations of aurorae. It showcases how he combined visual observations of aurorae with the observations of magnetic and meteorological instruments. It also notes the close involvement of his wife, Cecilia Glaisher, in the production of visual images, and their use of periodicals to communicate their findings. Finally, the talk revisits Glaisher's work on snow-crystals to demonstrate that the production and dissemination of illustrations involved a mixture of approaches to objectivity. The talk argues that Glaisher's intention to commercialise the snow crystal illustrations was essential in the alteration of the final images to reflect the harmony and symmetry emphasised by Daston and Galison.