

SCIENTIAE 2019: ABSTRACTS (FRIDAY, June 14th).

Friday 8:30-10:15, Parallel Session (PS) 1: “Regulating the Transfer of Secret Knowledge: Ships, Ciphers, and Masks.”

Djoeke van Netten: The panel will focus on the attempts of early modern authorities to regulate the transfer of privileged knowledge in the Dutch Republic and the Republic of Venice for three distinct reasons: to maintain economic monopolies; to ensure the safe communication of ‘classified’ information of political value; and to infiltrate various networks of secret knowledge exchange through the sanctioned use of the Venetian masks. The panel will discuss the paradoxical nature of secrecy as a communicative act that enables the safe transfer of privileged knowledge.

Ioanna Iordanou (Oxford Brookes), “Ciphers as tools of management in early modern Venice.” This paper analyses formal regulations that determined and dictated the transfer of official knowledge – usually of diplomatic, political, and military nature – that had to be protected and concealed through encryption. The focal point of the paper is sixteenth century Venice, the state that boasts one of the world’s earliest centrally organised state intelligence organisations, branching out across Europe, the Near East, and even North Africa. The regulations in question stemmed from formal governmental decrees that dictated commonly accepted patterns of conduct. Using Max Weber’s foundational work on management, the paper discusses how these regulations transcended the realm of mere instructions to assume a managerial overtone, even an outright managerial function. Moreover, examining early sociological theorisations of secrecy, the paper shows how methods of encryption acted as enablers of, rather than obstacles to, the transfer of official knowledge.

Jola Pellumbi (Independent), “Masquerading in 16th-century Venice: Disguise or government-sanctioned attire?” Masquerading in Venice was seen as both desirable and problematic. It was regularly the subject of Great Council discussions and at the centre of sumptuary laws. This paper focuses on carnival attire as a complex form of dress encompassing not only the popular notion that this kind of disguise facilitated freedom from inhibitions, but also the concept that it functioned as an alternative style of sanctioned attire during a specific time of the year, when the Venetian government strictly regulated all the seemingly spontaneous events that took place throughout the city. Ultimately, this form of authorised attire functioned as an avenue, linking various social classes in an equal playing field, which was constructed by the Venetian government and could be used to its advantage for the purpose of knowledge and information exchange. The secrecy and anonymity associated with “the mask” enabled the Venetian government to gain access to a variety of spaces and infiltrate various networks of secret knowledge exchange.

Djoeke van Netten (Amsterdam), “Communication and secrecy on Dutch East India Company ships.” Ships sailing from Europe to the Far East and back transferred not only people and products, but also knowledge. There has been much research into the far-ranging effects of new knowledge on European scholarship and society, but there was also knowledge at the outset. Knowledge had to be transferred from land to ship to reach the Indies as safely and as quickly as possible. This paper will zoom in on Dutch ships destined for Asia in the late 16th and early 17th century. How was this transfer of knowledge regulated, and can we find out how it worked in practice on board? Two paradoxes are at play, firstly the paradox of secrecy: not-communicating knowledge, but at the same time a communicative, performative, event. Secondly, the various European East and West India Companies had to keep certain knowledge secret to maintain monopolies and stay ahead of competitors; yet this very knowledge had to be spread to enable their own ships to arrive at their destinations and complete transactions.

Friday 8:30-10:15, PS 2: “Literary Technologies.”

Caroline Curtis (Birmingham), “An Essay-Writer must practise in the chymical method’: The Early Royal Society’s adoption of the essay genre.” This paper will examine the use made of the emergent genre of the essay by seventeenth century members and associates of the Royal Society. The essay form was ethically inflected in two ways: through the conscious eschewing or adoption of rhetoric, and the espousal of ethical theories of how to live. Above all, it was a genre which relied on the communication of personal experience. Robert Boyle is often cited as the epitome of the experimentalist essay writers. However, works titled as essays were generally written to advance the Society as well as the scientific method itself. Boyle can be seen as an exception to, rather than the epitome of, the use of the essay form by Royal Society members and associates; yet the essay was still a vital tool for the promotion of the new natural philosophy.

Mayer Juni (Brown), “Inquisitors as empiricists: The Spanish Inquisition’s biographical questionnaires and their contribution to the history of knowledge.” Historians of Iberian science have persuasively shown how the sixteenth-century trans-Atlantic expansion helped generate new epistemologies. This scholarship, however, tends to highlight the role of the Casa de Contratación in promoting the Crown’s expropriation of American riches. In contrast, the Spanish Inquisition’s contributions to such epistemological and bureaucratic developments have largely remained unexamined. This paper situates the study of Spanish Inquisitorial procedure within the history of knowledge, by highlighting the development of an ‘empirical turn’ within sixteenth-century Inquisitorial procedure. I will explore how, and why, Inquisitors began interrogating suspects before the start of the trial in order to obtain first-hand knowledge about the alleged crimes. Subsequent attempts to regulate these interrogations, in order to ensure that they would yield unmediated first-hand knowledge, led the Supreme Council of the Inquisition to craft a systematic questionnaire, which it printed in 1568. This ‘paper technology’ helped standardize the Inquisition’s intake of information, and also established new fields of inquiry.

Morgan Vanek (Calgary), “Theories of environment in Anthony Henday’s inland journals, 1754-1755.” Anthony Henday is often celebrated as the first Englishman to see the Rocky Mountains. During his 1754-55 journey inland, however, Henday also became the first Hudson’s Bay Company explorer to use the empirical forms of record-keeping that the Royal Society would later recommend to all agents of the British empire. Like many explorers’ journals, Henday’s account was heavily revised on its way to print – but unlike other explorers’ journals of the eighteenth century, Henday’s account survives in multiple manuscript copies. Each version of Henday’s journal captures a vision of the plains and its people entirely unseen in the others – and even small changes have significant consequences for the journal’s argument about how best to manage the people and places observed. In this paper, I first examine the implications of these formal changes for the theory of environment that Henday appears to endorse, and then demonstrate how these changes in the forms of empirical record-keeping might be correlated to changes in both Company and Cree land management practices in western Canada in the second half of the eighteenth century.

Friday 8:30-10:15, PS 3: “Natural History, High and Low.”

Anna Svensson (Stockholm), “Botanicon: A study in botanical marginalia over 250 years.” This presentation approaches the history of botany via a sixteenth-century herbal, Theodore Dorsten’s *Botanicon* (Frankfurt, 1540) held in the late eighteenth-century Bergius Library in Stockholm. As a palimpsest of traces left by owners over several centuries, this volume hints at the continuities and changes shaping the emerging field of botany, particularly in relation to the central role of books. The volume can be traced to Poznan in the seventeenth century, and Stockholm in the eighteenth century. Manuscript notes in Latin, Polish and German suggest a process of updating and repurposing along both geographical and chronological lines. This updating process is not only textual, but also visual, reflected in the crude hand-colouring of the woodcuts and the pressed plants pasted directly alongside relevant entries. As the book has changed hands, it has moved between the popular and the scholarly, and its value has shifted and expanded: as a source of medical and perhaps also botanical knowledge, as a personal gift, a container in which to preserve plants, and a curiosity.

Simona Boscani Leoni (Bern), “Centre or periphery? Global and local perspectives in the study of early modern correspondence networks.” I focus on the correspondence network of a Swiss physician and naturalist, Johann Jakob Scheuchzer (1672-1733) and present a project aiming at the online publication of a selection of his correspondence. Scheuchzer had a network of 800 correspondents across Europe, and his correspondence legacy includes 7000 letters. Scheuchzer is well known as one of the first scientific travelers in the Alps, and as a pioneer of the natural-historical investigation of mountains. I will show how important the collection, the circulation of information and of knowledge about botany, geology, mineralogy and zoology was between his contacts dwelling in small villages in the Alps and the other ones situated in the most important cultural centers of his epoch, like London and Paris. At the same time, I will point out how the same Scheuchzer followed the example of the Royal Society, using questionnaires for a better investigation of (local) natural history, and implemented this tool for collecting information and knowledge in the Alps.

Pamela Mackenzie (UBC), “Microscopy and metaphor: The terrae incognitae of 17th-century natural philosophy.” Nehemiah Grew was one of the earliest people to conduct a detailed exploration of plant life with the use of a microscope. The things he discovered he had no language to describe. In the presentation of his research, Grew borrowed freely from other knowledge systems in development at that time, including bookbinding, the study of animal anatomy and his own vitalist metaphysics. However, one of the most striking features of how he framed his research was in the language of territorial expansion. This paper will argue that his reference to the British imperialist project was more than simply a rhetorical appeal by Grew; rather it was central to both the discursive and visual language he developed around his work. The engravings that accompanied Grew’s publications were necessarily abstract, resembling less the tradition of botanical illustration than a series of maps or mathematical diagrams. I will trace the visual form of Grew’s illustrations through the tradition of cartography and consider the implications of this way of imagining the microscopic world geographically – as a place to be surveyed and conquered.

Friday 8:30-10:15, PS 4: “The Science of an Enchanted World.”

Neil Tarrant: During the early modern period demonological and scientific knowledge were intimately connected. This panel seeks to examine some of the implications of this insight, by investigating the process of making scientific knowledge in an enchanted world. Our papers consider how contemporaries’ acceptance of preternatural causation – whether the actions of angels or demons – informed and shaped the production of natural philosophical knowledge.

Neil Tarrant (York), “The Roman index and Arnald of Villanova: The Rejection of Albert the Great’s astrology.” In the late 1580s the Congregation of the Index of Forbidden Books began to scrutinise the published works of the physician and mathematician Arnald of Villanova (1240-1311). Arnald’s works made reference to the creation and use of talismans. On these, Albertus Magnus (1193-1280) and his student Thomas Aquinas (1225-74), held diametrically opposed opinions. Whilst Albertus accepted that it was possible naturally to create astrological images that worked specific effects, Aquinas condemned the creation and use of all such images. Subsequent generations of Christians, including scholars, theologians and inquisitors made use of each of the two theologians’ opinions. In this paper I examine the views that the Roman censors expressed about Arnald’s writings on the subject of astrological talismans. I suggest that they followed the opinions of Aquinas, rejecting those of Albertus. In this manner the centralised Roman censors played an active role in determining the bounds of astrological knowledge for physicians in early modern Italy.

Jessica Price (Cornell), “Enchantment in English Restoration thought: Robert Boyle, witchcraft, and travel literature.” Enchanted topics of inquiry pepper Robert Boyle’s personal archive. Boyle used amanuenses to curate a large collection of notes on published sources, trial accounts, stories gathered from informants. As well as witch stories and reports of strange occurrences across England, Boyle wrote notes on accounts of foreign fantastical phenomena, like the water that spontaneously combusted upon removal from India, and the Sumatran worm that turned itself into a tree. By simultaneously discussing Boyle’s demonological research and travel literature next to each other, this paper offers a novel way to understand “enchantment” in the philosopher’s corpus. It broadens the geographical scope of the understanding of the history of enchantment towards the end of the seventeenth century, as well as offering a new perspective on the history of demonology, exploration, and colonialism.

Andrew Campbell (UCL), “A Storm in a handbook: The New meteorological corpus.” Before the invention of meteorological instruments, the main source for predicting changes in the weather was experience. In the early modern period, this came in the form of personal observations or, more commonly, extracts from the works of classical authors. These extracts constituted a meteorological corpus that was reproduced in prognostications, commentaries on natural philosophical texts and handbooks of weather forecasting. In the sixteenth century, however, extracts from modern works began to supplement, and in many cases supersede, the classical corpus. This paper will outline the formation, composition and impact of this new meteorological corpus in sixteenth- and seventeenth-century Europe, highlighting the contributions of figures as diverse as Antoine Mizauld, Guglielmo Gratarolo and Giovanni Nicolò Dogliani. In their discussion of divination, theological authorities such as Thomas Aquinas cited weather forecasting as an example of a legitimate form of foreknowledge. This paper will also examine the extent to which the new meteorological corpus challenged these boundaries.

Friday 10:45-12:30, PS 1: “War and Empire: Spanish Revisions of the Just War Theory.”

Victor Zorilla: As Spain undertook its overseas expansion, it was confronted with ethical and legal dilemmas. Thinkers from different intellectual backgrounds engaged in the debate, raised issues, and proposed solutions. They appealed to the medieval just war theory and adjusted it to new circumstances. Thus Thomist, Scotist, and anti-Machiavellian authors, among others, assessed the nature of wars and the conditions required for a just war in the context of Spanish imperial expansion. Knowingly or not, they adapted the classical just war theory.

David González (UI de La Rioja), “Laws of nature and just wars: A Scotistic view of the American conquest.” The purpose of this paper is to provide the Scotistic context of the notion of rationality and ask whether there could be a just war in the context of the conquest of the Americas. There was a complex discussion among Thomists, Scotists, and their Jesuit followers regarding what constitutes a cause for just war. Scotists were accused of defending war for the sake of religion. This presentation would address Scotus's position and that of his disciples, such as Juan Focher and Alfonso de Castro.

Miguel Saralegui (Bilbao, Spain), “Just war theory in Spanish Anti-Machiavellian political thought.” In Spanish political thought, just war theories are generally associated with scholastic thought. Francisco de Vitoria's *De indiis* and *De bello* are the most recognisable pieces of this tradition of political thought. In this paper, I will examine the just war theory in the other great tradition of Spanish Renaissance thought: the anti-Machiavellian thinking developed in works such as Pedro de Ribadeneira's *El príncipe cristiano*. I will show that both intellectual traditions share the idea that a war needs a just cause and not only a reason of state. Thus this paper will prove that these two very different traditions of political thought –scholastic and anti-Machiavellian– have a deep common intellectual background, a fact that is frequently neglected by historians of political thought such as Skinner or Maravall.

Víctor Zorrilla (Monterrey), “The Just war theory on the fringes of the Spanish Empire: War and enslavement in two advocates of the Arauco War.” In the sixteenth century, the Indians living on the southern fringes of the Spanish empire offered a tenacious resistance to the Spaniards' advance. Spanish authorities undertook a series of wars (the “Arauco war”) in response. Some members of religious orders objected. Among the religious persons who addressed the Arauco war were Dominican Reginaldo de Lizárraga and Augustinian Juan de Vascones. Quoting liberally from legal and theological literature, they asserted the justice of the war. Moreover, they accepted the capture of slaves as compensation for damages. When Vascones put forth nine reasons in favour of the war against the Mapuches and other frontier Indians, he was highly aware of his departure from traditional Spanish theologians' proclivity to defend the Indians—including his own previous efforts in that direction. This paper will analyse Lizárraga's and Vascones's arguments in favour of the Arauco war, and situate them in the context of the Spanish adaptations of the just war theory.

Friday 10:45-12:30, PS 2: “Seeds, Plants, and Fruits: Investigation of Vegetal Bodies.”

Fabrizio Baldassarri: The study of plants in the sixteenth and seventeenth centuries gained momentum via singularities and rarities collected in herbaria or planted in gardens; yet, while natural historical efforts concentrated on the diversities of plants, natural philosophers investigated the inner structure, functioning, and virtues of vegetal bodies.

Francesco Luzzini (Berlin), “(Re)generative theories and botanical analogies in the early modern debate on mineral ores.” The use of organic analogies to explain the genesis and growth of mineral ores was a dominant tradition in medieval and early modern mining and natural philosophy. Ore veins were seen as dendritic structures moving upwards and (just like trees) producing fruits and undergoing a natural cycle of generation, growth, and decay. Some, like Paracelsus and Johann Mathesius, went so far as to describe the mineral world as the “miner's harvest.” Even mining terminologies were profoundly affected by the organic view, as is clearly attested by a number of technical and more or less colloquial expressions that are still widely used among miners. These words are precious terminological clues to understand how the botanical model in the early modern period influenced (and somehow still influences) our perception of geological phenomena, as well as our approach to natural resources.

Lucie Čermáková (Prague), “Stony seeds, corals and petrifying algae: Between mineral and vegetal.” Aristotle's categories were the basic framework for scholars who described nature in the early modern era. Already in the works of classical authors (like Pliny, Theophrastus etc.), we can, however, find some natural objects which possess attributes of diverse categories and are therefore uneasy to classify. This contribution focuses on some specific cases of the early modern understanding of the boundary between the mineral and the vegetal world. In my talk I focus on three questions these cases raise: Which characteristics are essential for distinguishing between inert (minerals) and living (vegetal) bodies? How did early modern scholars perceive the analogies in appearances of living and inanimate objects? Which conclusions did they make out of their observations of objects like corals and petrifying algae? I answer these questions mostly by analysing Adam Zaluziansky's and Francesco Stelluti's work.

Fabrizio Baldassarri (Bucharest), “A Clockwork orange: Citruses in Natural Philosophy.” Between the sixteenth and early seventeenth century, the interest in citrus fruits peaked, freed from the traditional association with medical dietetics. This reviving interest concerned, at first, natural histories, but also intersected the natural philosophical attempts to describe living nature in its diversities. I am going to focus on Cartesian philosophy, which provided a mechanical description of these fruits, together with other related specimens. In one of the notes collected in the posthumous *Excerpta anatomica* (1859-1860), Descartes provides an important explanation of oranges, especially dealing with their formation and virtues, in the mechanical terms of his physics. Several Cartesian scholars applied Descartes's interpretation of nature as a clockwork system to vegetal bodies, plants and fruits. These cases reveal a broad attention to vegetation and a compelling and innovative attempt to explain fruits, oranges and citruses in the seventeenth century mechanical philosophy.

Christoffer Basse Eriksen (Aarhus), “Picturing seeds of poppy in early modern England.” From 1664 to 1677, three treatises featuring microscopical observations of seeds were produced in England: Henry Power's *Experimental Philosophy* (1664), Robert Hooke's *Micrographia* (1665) and Nehemiah Grew's *The Anatomy of Seeds* (1677). Curiously, the only specimen to be represented visually in all three treatises is the seed of the poppy. In the early modern period, poppy seeds were used as a medicinal simple, as a spice as well as in bread and pastry baking. From this, I argue that microscopy should be seen in relation to the production of everyday knowledge. Moreover, focusing on the observation of the same specimen allows me to identify the different representational strategies employed by Power, Hooke and Grew. One of their greatest challenges was to mediate and impart the change of scale as they studied seeds under the microscope. Overall, the paper will make a case for the central role of botanical specimens in early modern microscopy.

Friday 10:45-12:30, PS 3: “Toward Enlightenment.”

Petr Pavlas (Czech Academy of Sciences), “The search for the intellectual and personal links between Comenius and Leibniz.” Research in Comenius studies on the one hand and Leibniz studies on the other has proceeded entirely separately. There have been some attempts to investigate the common links between the two polymaths. In spite of that, the theme is still awaiting an integrated and detailed treatment: the striking similarity of Comenius’ and Leibniz’ ideas on the universal science and language, above all the idea of *combinatio definitionum* as the ordering principle of the encyclopaedia and as the instrument for creating the lexicon of the perfect language, has been mostly overlooked. Moreover, these intellectual links go hand in hand with the personal links between both thinkers. Thus, this paper intends to introduce the possible ways to trace the links between Comenius and Leibniz systematically and in detail.

Margaret Gaida (Oklahoma), “Marie Colonna Mancini and early modern astrology: Women as authors and readers.” In 1671, the infamous Marie Colonna Mancini published her *Discorso Astrosofico delle mutationi de’ tempi e d’altri accidenti mondani dell’anno 1672*. This text combined an extensive discussion of astronomical and astrological topics, as well as an annual prognostication. This paper places Marie’s interest in astrology within the broader seventeenth-century framework. Scholarship on early modern women in recent years has focused on philosophy, natural philosophy, alchemy, literature, and publishing. In turn, scholarship on astrology in the seventeenth century is sparse. As a result, there are several basic questions which have been left unanswered, including identifying female astrological authors such as Mancini, addressing notions of readership, and establishing the relationship between gender and the marginalization of astrology.

Antonia Karaisl von Karais (Warburg), “A rational primer for the good life? Christian Wolff’s scientific method put to the test.” Arguably, Christian Wolff’s (1679-1754) most pertinent legacy was the development of a universal, scientific method and a comprehensive philosophical system – the latter, however, left incomplete. Wolff’s philosophical system was completed posthumously by Michael Hanov, professor and scholar from Gdansk. Hanov’s completion of the Wolffian oeuvre provides a poignant test case for the universality of Wolff’s method: here, two hands are at work on the same material. My talk will focus on the *Oeconomica methodo scientifica pertractata*, a work on household morality Wolff died writing and Hanov lived to complete. The *Oeconomica* shows to what degree method really can compel two authors to conform on a subject matter typically governed by personal opinion – and where tacit assumptions soften the outcomes of hard science.

Ann Talbot (Independent), “The Influence of Chinese philosophy in early modern Europe.” The prevailing view that Chinese philosophy cannot influence European philosophy has made the Enlightenment look far more parochial than it was. The first detailed accounts of Chinese philosophy were written by Jesuit missionaries. The object of the Jesuits’ mission was to win the greatest empire in the world for Rome but the unintended consequence was to spark an intellectual revolution in Europe. I propose to consider what the Jesuits knew about Chinese philosophy, how they communicated it to their European readers and what impact it had on some of those readers. I will focus particularly on the work of John Locke and his followers. This will involve examining the work of the English deists Anthony Collins, John Toland and Matthew Tindal as well as the Independent Whig writers John Trenchard and Thomas Gordon.

Friday 10:45-12:30, PS 4: “Epistemic Imaging (II).”

Gwendoline de Müelenaere (UGent/FWO), “Illustrated dictata at the Old University of Louvain.” In the handwritten lecture notebooks produced in the universities of the early modern Southern Netherlands, the text is often accompanied by title pages, ink drawings, and engraved plates inserted between or pasted onto the pages. At the University of Louvain, visual materials appeared in 15th-century dictata and the practice continued until the end of the 18th century. Illustrated notebooks are situated at the crossroads between multiple scopes of investigation: emblematic literature, printed production, visualization of science, history of education. This well-preserved corpus is representative of the combinatorial art that developed in the early modern visual culture in Europe. My paper intends to analyze the nature and the functioning of such syncretic images in order to assess their role in the transmission of knowledge within the framework of higher education institutions in the Southern Netherlands.

Ruth S. Noyes (National Museum, Copenhagen), “Ingenium as protean iterative technology: The Jesuits, Galileo, Peter Paul Rubens, and the *Opticorum libri sex* between Italy and the Spanish Netherlands.” The proposed paper takes up a transactional methodological approach to cut across the cultural milieu of Galileo Galilei, artist Peter Paul Rubens, and Jesuit astronomer-mathematicians in Rome and the Spanish Netherlands. I take as a paradigmatic case study the production of Franciscus Aguilonius’s *Opticorum libri sex* (Antwerp, 1613), arguing for its collaborative authorship between Jesuit experts in the Low Countries and Rome, for the vital role in this project of combined artistic-Jesuitic notions of imaginative ingenium in the illustrations designed together by Jesuits and the Flemish master Rubens, and the hitherto unacknowledged innovative nature of the book—revealed primarily through readers’ bodily psycho-somatic engagement with its images.

Rosemary Moore (UCL), “Banister and the mobility of the anatomical image.” This paper will consider the extraordinary paintings commissioned by the barber-surgeon John Banister for his *Anatomical Tables* (c. 1580), now held in the University of Glasgow Library Special Collection. Banister is widely credited with having introduced the ‘renaissance’ anatomy of continental Europe into England. But while the frontispiece of his *Tables* has been the subject of considerable scholarly attention, the other twelve paintings in the folio remain overlooked. Banister’s artist seems to have drawn on a diverse range of printed sources – from scholarly treatises to cheaper loose-leaf broadsides. The translation from print to painting obviously brought about a number of changes. Yet I propose that the paintings also strive to hold onto the sense of *mobility* that is one of the most productive characteristics of the printed image. Mobility not just in terms of print’s potential for dissemination, but also its ability to integrate/alter existing images, and the possibilities of cut and pasted layers.

Friday 10:45-12:30, PS 5: “Practical Methods (I).”

Lucia Delaini (Northwestern), “Ready-Minds: Acquiring knowledge through the body in early modern Italy.” The Art of War and the Art of Memory seemingly have very little in common. In 16th century Italy however, their different goals converged. I will firstly analyze 16th century practices described in Italian Memory Arts treatises. These books taught how to shape and craft human minds, enhancing their cognitive potential. My analysis of several Italian texts will show A) that they recognized the body as essential in certain types of learning, like the acquisition of mental habits, and B) that they thought this kind of learning could make people much more efficient at dealing virtuously with sudden changes, incertitude, and generally with improvisation. Secondly, I will relate this conception of the body with that expressed by Machiavelli in his only published work: *The Art of War* (1521). Here too, bodily training is crucial for the acquisition of citizen virtue. Ultimately, I aim to hypothesize that C) Authors of this period were aware of the potentials an of embodied acquisition of knowledge –and even recognized it as a valid political asset.

Lucia Randone (Northwestern), “Humanistic Galenism and non-systematic forms of understanding.” The purpose of my presentation is to highlight how humanistic medicine in England in the 1600s attributed great importance to judgment. First of all, I will present the qualities which must be acquired by he who investigates health: a) familiarity with the object to be handled; b) self-knowledge, in its most anti-intellectual and anti-dogmatic connotation; and c) a union of knowledge and ingenuity. I will then illustrate how this investigative approach was able to rid the mind of what is described as the greatest obstacle to effectively comprehending reality: the yearning for thoroughness. The pursuit of thoroughness was presented as a form of “anticipation of nature”, and could be translated as hypochondria or excessive adherence to a method. I will analyze these points intertwining three areas which are often approached separately: methodological debate, scientific research and medical practice. I will then conclude by explaining in what terms one may consider the influence of humanistic Galenism in Locke’s *Conduct of Understanding*.

Katerina Lolou (NTUA), “Claude Perrault and the instauration of scientific knowledge.” The figure of the physician–architect Claude Perrault is emblematic of architecture’s transformation by the so-called scientific revolution. Perrault’s use of the term observation in his translation of Vitruvius is portrayed as a tool modelled on the methods of new science. I will argue that Perrault’s insistence on observation reflects an emphasis on Hippocratic observation which revived among early 17th century French Galenists. Thus, Perrault’s remarks on Vitruvius’s authority can be broadened to the quest for a guide to living, transcending disciplinary boundaries between natural science and art. This quest forms the springboard for his renewal of art in conjunction with science, shifting attention from medical to social and moral concerns. Furthermore, Perrault’s claims for naturalness in observation share a double perspective; observation as a new form of learned experience reflects the ethos of the scientist, while as an old activity of laymen it reflects a raw empirical knowledge about rules of life, enabling common people to be physicians of themselves.

Friday 1:30-3:15, PS 1: “Light and Gaze.”

Ofer Gal (Sydney), “Naturalizing the mind: From Kepler’s optics to Descartes’s passions.” In 1604 Kepler published his *Optical Part of Astronomy*, dramatically changing the role of optics and the fundamental concept of vision. Instead of a window through which visual rays informed reason about its surrounding objects, the eye became a screen on which light painted images of no inherent cognitive value. Descartes dealt with the implications to natural philosophy and epistemology of this turn throughout his opera, and dedicated the *Meditations* to summarizing his tentative conclusions: Kepler’s optics had turned sensations into purely causal effects, and in this causality rested both the mystery of human knowledge and its resolution. The naturalization of the senses did not call for feigned skeptical arguments but for a corresponding naturalization of the mind, which Descartes attempted to offer with a theory of the passions. Steering the body between what is “opportune by means of a certain sensation of pleasure, and what was inopportune by a sensation of pain,” the passions both endowed the merely-causal sense perceptions with meaning and warranted their validity.

Robert Goulding (Notre Dame), “Walter Warner and the secret of refraction.” In 1634, the mathematician Walter Warner introduced himself to Sir Charles Cavendish. Warner, now in his 70s, had worked with Thomas Harriot, and had witnessed Harriot’s experimental determination of the law of refraction. Warner’s own interests remained fixed on this mathematical law which, as far as he was aware, was known to no one else in the world. Warner was seeking patronage from Cavendish for the theoretical and experimental investigation of light. He promised an optical machine that could see things at a great distance and burn ships from afar; moreover, he would also reveal the secret law of refraction on which the machine was constructed. Cavendish and his associates, Robert Payne and Thomas Hobbes, were skeptical, which Warner perhaps might have expected. But to his utter surprise, this little philosophical circle in Nottinghamshire was already very familiar with the secret of refraction, having been informed of it by one of Cavendish’s clients: The Parisian mathematical practitioner Claude Mydorge, who had discovered it in collaboration with Descartes. There followed a rapid exchange of information between France and England. Warner’s papers are a valuable resource not only for Harriot’s research into refraction, but also for Descartes’s. They are also a fascinating record of the social world of early-modern refraction theorists.

Berthold Hub (Zürich/Vienna), “The Science of the evil eye.” The theory of physical visual rays emanating from the eye, reaching out to the objects and touching them, was the most influential theory of vision throughout antiquity. In combination with humoral pathology, it established the scientific explanation for the notion of the ‘performative’ gaze, which is ubiquitous in ancient, medieval and early modern texts: The gaze of the gods, the gaze of love, the evil eye, the transmission of sickness through the eye, etc. Conversely, the theory of the material visual ray was proved by reference to the empirical phenomenon of the performative gaze and its material effects. My paper explores the reasons for the emergence and intensification of scientific discussions of the evil eye in the late thirteenth and early fourteenth centuries, answers the question why the scientifically explained evil eye could become an argument for both misogynistic proponents and enlightened opponents of witch hunt in the sixteenth century, and traces the waning of the persuasiveness of the mutual explanation of evil eye and visual ray in the seventeenth century, with particular attention to Thomas Browne’s second edition of his *Pseudodoxia Epidemica*.

Friday 1:30-3:15, PS 2: “Borelli’s World: A Map through His Letters.”

Federica Favino: The Italian physiologist, physicist, and mathematician Giovanni Alfonso Borelli (1608-1679) played a leading role among the second generation of Galilean disciples. Despite his unquestionable value, this figure has not yet been the object of a monographic project. Our panel aims at focusing on different aspects of Borelli’s life and work, and shedding fresh light on his role within the 17th century ‘Republic of Letters’.

Antonio Clericuzio (Roma Tre), “News from Etna: Borelli, the 1669 eruption and the Royal Society.” On 18 May 1669 Henry Oldenburg (on behalf of the Royal Society) wrote to Borelli (then living in Messina) requesting an account of the eruption of Etna that took place in Spring of the same year. On 11 June Borelli received the same request from Cardinal Leopoldo de’ Medici. Borelli provided the Cardinal with a detailed report of the eruption as well as specimens of rocks and minerals from the volcano. In 1670 he sent to the press his investigations of Etna, with the title *Historia et meteorologia incendii Aetnaei* - which reached the Royal Society in 1671. Borelli’s work was celebrated as a landmark of the early modern earth sciences. In the present paper I take into account the relationship between Borelli and the Royal Society, as well as the reception of his work on Etna among the English Virtuosi.

Maria Conforti (La Sapienza), “Worms, animalcula and fevers: Borelli’s pathology.” A 1658 letter from Giovanni Alfonso Borelli and Famiano Michelini to Leopoldo de’ Medici discusses Athanasius Kircher’s hypothesis of *animalcula* in the blood as the cause of diseases. The letter contains the drawing of a *verme*, a worm, to be found in the blood of patients suffering from leprosy. This is a small, but altogether precious witness to the interest elicited in Italian medicine and science by the observation of living beings in pathological bodies, both living and dead. Borelli had planned a vast physiological work, the *De Motu*, which was posthumously published in Rome in 1680-1. His model of animal, far from being simplistically iatromechanical, was based on a corpuscular theory of matter. Borelli’s pathology, documented in his early work *Delle cagioni delle febbri maligne della Sicilia*, 1649, as well as in his correspondence, mirrors his effort to extend mechanics and corpuscularism so as to make them viable foundations for the understanding of living organisms as well.

Federica Favino (La Sapienza/Stanford), “Visualizing Borelli’s world: The Horizon 2020 ‘BorGal’ Project.” Recent scholarship suggests that, everywhere he happened to live, Borelli was a strong presence, able to direct the sociability of the local communities of learned men. This was the case in Pisa, where he led the ‘Galileists’ vs. the followers of Aristotle; the same happened in Rome, where he marked the difference between ‘orthodox’ Galilaeans and the natural philosophers devoted to mere empiricism. It is reasonable to suppose that elsewhere it was not different but, how can we prove the point? Information technologies, in particular the visualization and exploration softwares for complex, multi-dimensional data, can help us to answer questions like these. My contribution will present the methodology and the first results of the Horizon 2020 Project ‘Borelli Galaxy. Visualizing Galileo’s heritage’, which aims at processing the metadata collected from Borelli’s correspondence in order to reconstruct the ‘galaxy’ which revolved around him, made as it was of relationships, objects, information, and debates.

Friday 1:30-3:15, PS 3: “Writing Medicine in the Italian Cinquecento: Self-fashioning, Cure, Communication.”

Teodoro Katinis: 16th-century medical literature offers a variety of cases in which the literary aspects of the works are as interesting as the contents. Both authors and editors engaged in the spread of knowledge within an increasingly crowded book market. A specific type of writer, the polygraphs, changed the concept of authorship and became central figures in the divulgation of several literary genres, such as the very popular books of secrets.

Ruben Celani (Ghent), “Professors of secrets: Personae, identities, authorities.” The publication of the so-called books of secrets—collections of recipes on a wide range of technical subjects—was one of the most outstanding editorial successes in the late 16th century. Though their production was concentrated in Italy, and especially in Venice, their circulation was European and their fortune went on for at least two centuries. Among the factors that contributed to the international, long-lasting tradition of this genre, a prominent position has to be assigned to the careful fashioning of a new, appealing persona, whose archetype is somehow depicted in the very first book of secrets: The *Secreti del reverendo Donno Alessio Piemontese* (Venice, 1555). This persona, tailored - and worn - by Alessio Piemontese and his followers, was soon to be labelled the “professor of secrets”. By taking into account a selected group of texts, the talk will focus on the (sometimes contrasting) features of these authors and on the strategies adopted in order to craft their personae.

Teodoro Katinis (Ghent), “A Woman writing Medicine: Isabella Cortese’s Secreti.” Isabella Cortese is one of the most enigmatic female writers of the Italian Cinquecento. We still have very little biographical information on her, while her work (*I secreti*) is still waiting for a complete study. Her authorship is controversial and some scholars have suspected that a different author crafted a fake figure and published the *Secreti* under her name. Despite the doubt on her identity, her work was a true best-seller: fifteen editions from 1561 to 1677, twelve of them printed in Venice. As usual with books of secrets, her *Secreti* is a collection of medical and alchemical advice on various topics. Her approach is characterised by a willingness to reveal secrets for the benefit of the largest possible public. For this purpose she also wrote in the vernacular. This paper aims at exploring two specific aspects of Cortese’s intellectual profile and work: first, the criticism against traditions, in particular the obscure philosophers; second, the anecdotal style within the work. I hope to make a contribution to the exploration of one of the most fascinating figures of the vernacular medical literature of the Renaissance.

Jonathan Regier (Ghent), “Girolamo Cardano and the physician under threat.” Girolamo Cardano’s autobiography, the *De vita propria*, is an incredible sixteenth-century reconstruction of a single life. Deeply sensitive to his own uniqueness, Cardano accounts for his individuality by meditating, in a distinctly scattered fashion, on his character, his experiences profound and superficial, his intellectual history, his medical career, and an assortment of other topics. This paper will first reconstruct how the individual, by Cardano’s reckoning, lives in a network of natural danger: from bodily illness and accident, to chance events, to the vagaries of ambition and passion. Cardano is, in this light, a raconteur of threat *par excellence*. Of all the threatened individuals—from condemned prisoners to sick patients—the physician is forefront. He is at the mercy of fate, providence, chance, as well as jealous colleagues and angry clients. But there is another fundamental element at play: just as nature is an interplay of regularity and irregularity, the physician can never be completely sure of how he achieved success; he is continuously thrown back upon the peculiarity of a given situation. The goal of this paper will be to connect the literary structure of the *De vita propria* to Cardano’s quixotic mix of confidence and skepticism in medical matters.

Friday 1:30-3:15, PS 4: “Practical Methods (II).”

Agata Paluch (Berlin), “Early modern kabbalistic how-to books and cross-cultural transfers of knowledge.” The emergence of the European books of recipes marks a move towards reconciling hitherto distant disciplines of knowing and discernment with practice and making. Both ways of knowing and learning by the sixteenth century began to be regarded as mutually interconnected means of cognition, with the epistemic genre of recipes reflecting a general predilection of the epoch to validating theoretical knowledge through demonstrations of facts in practice. Also in the sixteenth century, a particular type of recipe books begins to circulate in Jewish-language manuscripts more widely than before, one that includes methods of practical application of speculative kabbalistic theories to exert effects in the natural world. The presentation will centre on those features of how-to books which enabled crossing boundaries between linguistically and culturally distinct groups, and point to distinct commonalities in the ways the genre facilitated creation, compilation, and transfer of practical knowledge in the context of early modern kabbalistic theosophy as expressed in East-Central European sources.

Alix Cooper (Stony Brook), “Family projects: Fathers, sons, and the study of science in the early modern home.” This paper aims to present research from an ongoing book project examining the ways in which natural inquiry during the early modern period tended to “run in the family”—that is, the ways in which fathers often tended to pass on their scientific interests and careers to their offspring, and in particular their sons. While especially pronounced in natural history, this pattern of family inheritance of natural pursuits can also be seen in many of the other branches of the sciences. For example, the Cassini dynasty saw successive sets of the latter ruling over the Paris Observatory, such that historians have been reduced to labelling them as Cassini I, II, III, and IV. The goal of this paper will be to focus on the ways in which early training at home, carried out by fathers, helped to foster sons’ interest and involvement in activities we would today deem scientific. Drawing on both manuscript and printed primary sources, including (but not limited to) the Cassinis’ own archive, the paper will explore the impact of fathers’ training of their sons on the pursuit and promotion of science in early modern Europe.

Leonie Hannan (QUB), “Domestic praxis in the eighteenth century.” The eighteenth-century home comprised diverse and specially adapted spaces for conducting a wide range of activities, from cheese-making to sleeping. It was populated by individuals with the tacit knowledge necessary to conduct a repertoire of material processes. This many faceted and dynamic location, which necessarily connected with other domestic, social, artisanal and commercial spaces, offered those of a curious nature an ideal environment for investigative work. Here, the study of domestic praxis is proposed as a productive approach to understanding the nature of enquiry in eighteenth-century society. This prism also helps us to see who engaged in intellectual life in this period. Rather than asking how high-profile natural philosophers used their homes as laboratories, this article considers how the spatial and material conditions of home were exploited by householders more generally – householders who may not have been Fellows of the Royal Society or published writers on natural philosophy but who were nonetheless intellectually curious.

Friday 1:30-3:15, Roundtable Discussion: “Lost in the Shadow of the Enlightenment.”

This roundtable intends to foster an open discussion of the nature and type of distortions we have faced, and continue to face, in our interdisciplinary research. The panel will compare a selection of case studies which illustrate how the eras of “antiquity,” the “medieval,” “renaissance,” and the concept of “Enlightenment” itself were developed in the Enlightenment and may have served to shape or eclipse the evidence before us.

Friday 3:45-5:30, PS 1: “Instrumentation and Orientation.”

Hui Luan Tran (Munich), “Through the eyes and with the words of Nicolas Bion: The treatises of the royal mathematician of Louis XIV.” The *Traité de la Construction et des principaux usages des instruments de mathématiques* (1709), by the royal engineer, mathematician and cosmographer Nicolas Bion, has so far been almost entirely ignored by art-historical research. This book and further writings of Bion focused explicitly on the construction and use of geometrical and optical instruments. Treating devices for perspective and sight in the period of the Enlightenment, his work is thus per se highly significant. Furthermore, it allows an insight into the linguistic expressions used for an audience which consisted not only of mathematical experts but also of other “artists”. It seems to be not without reason that Bion, in the dedication to the edition of 1752 – the year right after Denis Diderot had criticized the language of art in the *Encyclopédie ou Dictionnaire raisonné des sciences, des arts et des métiers* (1751–76) – underlines his effort to perfect his work as it is presented in a period dedicated to the studies of literature. The paper will present the works of Nicolas Bion. With a focus on the instructional use, it will investigate the writings and their illustrations under the aspect of the affection of the audience it is written for.

Leonardo Ariel Carrió Cataldi (UCL), “The measure of the Iberian empires: An intellectual and cultural history of early modern instruments.” In this paper I will argue that calibrating and adjusting measurement and orientation devices was not only a technical practice, but also an intellectual enterprise, aimed at making them workable outside their original place of manufacture or geographical area. To this end, I will select some significant case studies, from a wide range of sources (navigational instruments, travelogues, maps, clocks, calendars and nautical and cosmographical treatises) produced in, or circulating within the Iberian world. The research covers a period of crucial transformation in the scope of practical knowledge of the Iberian empires, from the beginning of their overseas expansion until the end of the Iberian Crown Union (1580–1640). During this period, the combined monarchy faced unprecedented epistemological challenges in the course of its sweeping conquest of new territories. This historical process put at the core of the imperial enterprise systems of measurement and orientation, while at the same time emphasizing their conceptual and technical limits.

Cesare Pastorino (Berlin), “The Features of the early modern study of ancient measures.” The early modern period saw a widespread interest in the study of ancient weights and measures. The study of ancient measures indeed regarded antiquarians interested in the historical reconstruction of classical, biblical or Near Eastern cultures. At the same time, it was also informed by present-day concerns. Johann Caspar Eisenschmid, a French mathematician and cartographer from Strasbourg of the second half of the seventeenth century, summarized well the goals of historical metrologists and stressed how the knowledge of ancient units was necessary for “theologians, lawyers, physicians, and those who study the ancient texts of philosophers, historians, poets, and especially geographers, architects and writers of agriculture.” Eisenschmid belonged and was referring to a long tradition of treatises *De mensuris et ponderibus*, spanning the sixteenth and seventeenth centuries. In this talk, I will focus on this largely overlooked genre and consider some of the reasons that made historical metrology a crucial field of early modern scholarship.

Friday 3:45-5:30, PS 2: “Sacred Perspectives (I).”

Gábor Almási (Budapest), “Who is the impious here? The debate over astrology around 1580.” In the centre of this paper is the common anti-astrological publication of Andreas Dudith, Thomas Erastus, Marcello Squarcialupi and Symon Grynaeus, *De Cometis dissertationes novae* (Basel, 1580). The men who produced the book were scholarly friends. They were supported by a larger network of people such as Johannes Crato and Theodor Zwinger. However, in the same network of learned men we find astronomers who felt deeply offended by the publication, most profoundly probably Tadeáš Hájek, who started a debate with Andreas Dudith both in letters and print. This paper most importantly asks what set these friends and foes of astrology apart. It was certainly not their adherence to or refusal of Aristotle, which divided even the authors of the *De Cometis* dissertations. Although apparently both parties shared common epistemological views—and appealed continuously to reason and experience—in other respects they lived in worlds apart. Not denying the significance of Lutheranism, confessional alliances only partially explain their differences. The paper will show that one of the most delicate questions behind the debate on astrology was the question about the place of the miraculous in the universe.

Edward B. Davis (Messiah College), “Boyle’s philosophy of religion.” Boyle’s passion for apologetics was already evident in his early twenties, when he was profoundly impressed by reading defenses of Christianity by Philippe de Mornay and others. His primary motive was to persuade wayward Christians, including members of his immediate family, to live more piously and to devote themselves to charitable works. After he accepted the mechanical philosophy, he integrated it fully into his program to prove the truth of Christianity, especially against those sceptics who used the new science to justify their godlessness. The clockwork universe required a Creator, made genuine biblical miracles easier to identify, enhanced human dominion over the creation, and drove pagan notions of nature to the periphery of natural philosophy. Simultaneously, Boyle carefully limited the scope of human reason, while underscoring God’s freedom and sovereignty over the laws of nature. Thus, the world could be discovered only empirically.

Stephen D. Snobelen (King’s College), “Theology and natural philosophy in the thought of Isaac Newton.” This talk provides the first comprehensive assessment of a series of programmatic statements Newton made about the relationship between theology and natural philosophy. It will also offer illustrative examples of this relationship in his own career. This includes not only the theological contexts and contents of his great scientific books, the *Principia* (1687) and the *Opticks* (1704), but also evidence from his manuscripts that demonstrate his commitments to natural theology and the design argument; his reconciliation of heliocentric astronomy with biblical interpretation; and the similarities between his views of a dynamic cosmos and prophetic history. These points of contact provide insight into the creative and wide-ranging mind of Newton and the nature of his life-long, grand intellectual project to understand God and the universe.

Friday 3:45-5:30, PS 3: “Mapping Communication between Naturalists.”

Marianne Klemun and Johannes Mattes: Contrary to the assumption of recent research that social systems suppress the relevance of space between the intersections of learned networks, our session addresses the spatial aspects of these relationships: 1) Communication always takes place in geographical settings. 2) Furthermore, spatial settings can also be established through social practices related to a real topography. 3) In addition, letter-based communication is also used to reflect the spatial multi-dimensionality of its medium.

Marianne Klemun (Vienna), “Entangled spacial and epistemic categories in the cooperation between botanists.” In 1752, the young scholar Nikolaus Jacquin left Paris and moved to Vienna on the initiative and with the help of his patron Gerard von Swieten. Initially, he shared his patron’s strong prejudices against the imperial city. For him, living in Vienna felt like living on the fringes of civilisation. Jacquin deplored in his letters to his friend in Leiden that the Austrian capital was so remote from the North where intellectuality and Latin were far more treasured than in the South. This was about to change when Maria Theresia entrusted Swieten with reforming the university system. After Jacquin’s successful expedition to the Caribbean that made him a “true botanist” his perception of spatial differences changed substantially. From 1764 he could establish himself as an esteemed botanist and chemist in Vienna. He developed a close cooperation with Carl von Linné, who considered him a source for information about regional authors of floras (“Florenschreiber”) of the Habsburg lands. Depending on the level of competition with those “Florenschreiber”, Jacquin developed close contacts to some of them and was rather distant to others.

Yuko Takigawa (Kagawa), “Natural historians’ letters to reconstruct western diplomatic interests in Japan in the late 18th century.” This presentation evaluates the roles of letters to reconstruct the approaches to Japan by western countries in the late 18th century. Since the first half of the 17th century, Japan closed her doors to the western countries except for the Netherlands, which kept sole trading relations through the Dutch East India Company. In the late 18th century, among the European countries, Russia and Britain were aiming to establish trading relations with Japan to enhance their economic activities in the Far East and in the Northern Pacific. Natural historians took advantages of expeditions to collect objects and knowledge. In 1792, Russia sent Adam Laxman to Ezo, modern day Hokkaido. In the same year, Britain sent George Macartney as its first envoy to China, and subsequently, to Japan, the latter trip was cancelled. Correspondences between natural historians, especially, Eric Laxman, Carl Peter Thunberg, and Joseph Banks, were used to examine their interests in Japan and its natural history, as well as other diplomatic correspondences and reports concerned.

Ezio Vaccari (Insubria), “The space of a new science: From mineralogy to geology in the letters about the journey through Italy (1771-1772) by Johann Jakob Ferber.” The *Briefe aus Wälschland über natürliche merkwürdigkeiten dieses landes* (1773) by the Swedish mineralogist Johann Jakob Ferber (1743-1791), are generally considered within a late eighteenth-century travel literature produced in an epistolary form. The European success of this book lies particularly in its wide diffusion and good quality of its translations into French and English. The two were both distinguished scholars in geo-mineralogical sciences: Philippe Friedrich Dietrich (1748-1793) and Rudolf Erich Raspe (1737-1794). Moreover, the Italian translation of Ferber’s four letters concerning the Veneto was published in 1774 by the Venetian newspaper “Giornale d’Italia” directed by Francesco Grisellini. The aim of this paper is to investigate the definition of a new space of scientific research, above and below the Earth’s surface, within the context of a travel correspondence.

Friday 3:45-5:30, PS 4: “The Metaphysical Foundations of Natural Teleology.”

Andrea Sangiacomo: Early modern natural philosophers disagree about the status of final causality in nature. This panel suggests that the early modern debate on final causes is rooted in theological and metaphysical concerns.

Andrea Sangiacomo (Groningen), “Suárez on agent causation, final causality and the cognition condition.” Despite a number of disagreements about natural teleology, early modern natural philosophers agree on one point: natural teleology requires some form of cognition on the part of the causal agent. This ‘cognition condition’ can be used to show that in a purely mechanist universe, natural beings cannot act for an end; or it may be used to show that the existence of teleological behaviours is a proof for God’s providential ruling of nature. This paper traces back the wide acceptance of the cognition condition to the way in which Francisco Suárez integrated it in his discussion of final causality. Suárez argues that some form of cognition is necessarily required for an agent to elicit an act of its will, since the will by itself is a blind power. This point has crucial ramifications for Suárez’s account of freedom of indifference and his theological controversy with rival Thomist theories. The paper contends that while Suárez’s discussion is animated by moral and theological concerns, its legacy had a crucial impact on the early modern debate in natural philosophy. By accepting and defending the cognition condition, natural philosophers preserve a fundamental and widely shared commitment to a specific account of agent causation.

Christian Henkel (Groningen), “Occasionalism and final causes in Johann Christoph Sturm’s mechanical philosophy.” In his main work, the *Physica electiva sive hypothetica* (1697/1722), Johann Christoph Sturm (1635 – 1703) carves out a metaphysical physics explaining the working of nature by means of mechanical principles and occasional causes. God is the only true causal agent acting on matter and its forms, which are both passive. Hence, while God is the universal principle for why there is something rather than nothing, the *causa essendi*, passive mechanical forms constitute the reason for why the world is such as it is. They are the *causae fiendi*. Although physics is concerned with mechanical principles, and final causes are to be dealt with in metaphysics and not physics, Sturm realises that things in nature are neatly designed so as to follow certain ends. Sturm not only accepts that final causes are real, but he also endorses the ‘cognition condition’, according to which final causation requires some form of intentionality. And yet, mechanical principles such as passive material forms are purely material and incapable of cognition. This paper discusses how Sturm attempts to alleviate this tension by grounding natural teleology in God, understood as the *causa efficiens et finalis* of nature.

Lukas Wolf (Groningen), “Samuel Clarke’s rejection of the clockwork analogy in the Leibniz-Clarke correspondence.” The clockmaker analogy states that the world is perfectly designed, God perfectly wise. This analogy justified at once many key assumptions of natural philosophy – such as its regularity, intelligibility, and simplicity – while also maintaining a key role for God. However, as Leibniz noted in his letter to Caroline, Clarke’s claim that God is continuously active in the world is a clear rejection of the clockwork analogy. This is discussed at length in the Leibniz-Clarke correspondence (1715-16). In this paper I will analyse what I consider to be the main bone of contention between the two, namely the idea of perfection. While we know a lot about Leibniz’s notion of perfection, Clarke’s position is far less clear. I will argue that the key to understanding Clarke’s position can be found in his notion of the ‘eternal relations of things’. I will show that the clockwork analogy contradicts these. Resisting the temptation to explain his rejection of the clockwork analogy as a mere consequence of Newton’s natural philosophy, this paper attempts to provide a different perspective by connecting it to Clarke’s wider views regarding the relation between God and creation.

Friday 3:45-5:30, PS 5: “Interpreting and Healing (II).”

Justo Hernández (La Laguna), “Did Servetus discover blood circulation? A misconstruction of the Enlightenment.” The paper explores the contribution of Servetus to the discovery of blood circulation. The history of medicine used to consider him its discoverer, or, at least, one of them. However, from 1543 (the date of *Christianismi Restitutio*) onwards, not even Harvey cites him. The scientific community heard for the first time the name of Servetus from the 1686 lecture by Abraham Hill (1635-1721) at the Royal Society. I will explain the causes of the inflation of Servetus and the deflation of Harvey, the true discoverer. The main one was a misconstruction of the Enlightenment.

Laura A. Sumrall (Sydney), “Occult causes of disease and the critique of anatomical investigation among the English Helmontians.” In 1665, the English physician George Thomson took pen to paper in defense of his chymical medicine and that of Jan Baptista van Helmont (d. 1644). Among the many censures he leveled against van Helmont’s Galenic detractors, Thomson cited their inordinate emphasis on anatomy. In this he was not alone; the physician and chymist George Starkey (d. 1665) had previously voiced the same critique. For these physicians, the epistemic limitations of anatomical investigation presented a problem representative of broader concerns regarding the occult in nature. Van Helmont and his followers did not overlook the benefit of anatomical investigation, but chymical physicians felt a special urgency not merely to observe the physical manifestation of disease but to reveal the quiddity of disease and remedy, both in service to medical practice and in defense of chymical medicine against its academic opponents. The signs leading to knowledge of diseases and their cures were subtler than the signs sought by anatomists in the body.

Arnaud Zimmern (Notre Dame), “Shakespeare’s Henry IV in light of Francis Anthony’s potable gold.” Modern audiences of Shakespeare’s *Henry IV Part II* love the tender reconciliation scene between Prince Hal and his father, as Hal upbraids the crown: “Thou best of gold art worst of gold;/ Other lesse fine in Charract, is more precious / Preserving life in med’cine potable” (4.3.290-93). Yet they seldom pause at Hal’s reference to *aurum potable*. In the course of the century, London’s playgoers would become familiar with the reference, but only ever in farcical and ironic ways. Shakespeare, alone among early modern playwrights, evokes *aurum potable* in a moment of sincere reconciliation. However, if we take into account the contemporary debates raging between the Royal College of Physicians and Francis Anthony, crown alchemist to Elizabeth I and James I, and England’s foremost purveyor of *aurum potable*, then we must acknowledge that a debate over whether it was a hoax or remedy, cured or killed, was being consciously evoked. Does Hal really wish his father a long life, or is his sincerity a sham? This paper offers to read Shakespeare’s history play as a medical-history play, commenting on the difficulty of distinguishing true promises from false ones, “true physicians” from quacks, panaceas from poisons, Prince Hals from Falstaffs.

