Session 1 – Wednesday May 16th, 1500-1630

1A: Travel

1. Mapping the Swedish Atlantis: History and geography in the work of Olof Rudbeck
Charlotta Forss (Stockholm University)

In 1679, the renowned Swedish scholar Olof Rudbeck published the first volume of his treatise Atlantica, arguing that Sweden was the sunken continent Atlantis. Four hundred years later, Rudbeck continues to offer insights into early modern ways of making and legitimating knowledge.

This paper shows how Rudbeck used geographic and historical evidence to build the argument that Sweden had once been home to the Goths, that Troy was a Swedish colony and that Sweden's geography closely resembled that of Plato's Atlantis. In particular, the paper focuses on Rudbeck's use of cartography to bring together different kinds of evidence and to present his results.

Maps were an integral part of Atlantica. Not only was the text accompanied by an atlas of Rudbeck's making, but already in the opening lines the author made clear that the inspiration to Atlantica had come from working with cartography. Over the course of the next two decades, Rudbeck continued to make annotations to his maps and incorporate new evidence in the margins. The cartographic material must thus be understood as an integral part of the composition and argument of Atlantica.

While seeming far fetched today, Rudbeck's view of the world had a different resonance for contemporaries. His use of cartography tied into early modern ways of making and presenting knowledge, and his use of historical and geographical evidence can tell us much of the formation of scholarly disciplines. This paper contributes to an understanding of the boundaries and overlaps between 'history' and 'geography' in the early modern period, and to how cartography played a part in both.

2. Landscape Humanism
Raphael Falco (University of Maryland, Baltimore County)

This paper examines how early modern authors applied patently humanist methods and terminology to the study of geography and the description of landscape. Among the works discussed are Ranzano's *Descriptio totius italiae* (1526), Alberti's *Descrittione di tutta Italia* (1526), Leland's *Itinerary* (1549), Camden's *Britannia* (1586), Speed's *Theatre* (1611/12), and Drayton's *Poly-Olbion* (1612). In the literary arena—the *res publica litterarum*—the humanist project had survived by producing elaborate cultural genealogies to justify its supposed intellectual descent from Greco-Roman antiquity. In a similar fashion, relying on comparable textual and linguistic scholarship—and comparable legerdemain—humanist authors created a new descriptive technology for their environments. They brought together source-hunting, heraldry, cartography, chorography, rhetoric, poetry, and history—all to justify phenomenological representations of the landscape, representations that, not accidentally, helped to legitimize nationalist, chauvinist, and familial claims. Like cultural genealogy, landscape humanism depended on invention, figurative language, and

mythicization. Rivers, mountains, forests, barrows, caves, and shorelines came to life as ekphrastic creations. Moreover, the humanists' habitual mixing of approaches and methodologies not only predated modern disciplinary configurations, but in all likelihood helped to define the very categories by which we now separate those approaches and methodologies. Landscape humanism began, ostensibly, as a practice with the aim of describing the origins and status of geographical phenomena. Yet it developed into a discourse with unexpectedly wide ramifications. Along with the newest scientific heraldry and cartographical innovations, the multi-disciplinary discourse of landscape humanism contributed immeasurably to the establishment of land-based social hierarchies and the concomitant blood myth, to modern concepts of national consciousness, and, not least, to the process of writing environmental history.

3. Imagining Earth – Prints as Evidence in the work of Willem Goeree
Wouter de Vries (VU Amsterdam)

Topics such as the Creation and the Deluge were highly debated by natural philosophers, historians, theologians and others during the sixteenth, seventeenth and eighteenth centuries. Images came to play an important role in publications on this topic, as scholars aimed to make the invisible visible and depict that which cannot otherwise be witnessed. An international selection of scholars, engravers and publishers such as Willem Goeree, Thomas Burnet and Pieter de Hondt experimented with the use of prints both to elucidate their points and to serve as evidence for their claims. Not only did the amount and intended function of images change, their mode of representation changed too: what appear to be 'allegorical' representations or schematic overviews are replaced by seemingly more 'realistic' scenes over the course of the seventeenth century, aimed at making the viewer a virtual witness to creation itself.

This paper discusses developments in the representation of the earth in natural philosophical, theological and historical discourse, in order to investigate how prints and the visualization of ideas came to play a central role in the practice of science and scholarship. It moves beyond a conception of prints as mere visualizations or carriers of knowledge, by claiming that prints and visualization came to lie at the heart of the natural philosophic process on this topic. The study combines art-historical, historical and philosophical theories to research the historical representation and understanding of the earth, while simultaneously providing innovative insights and methodologies for studying the history of knowledge, prints and images.

1B: Religion and Medicine

1. Authenticating Demon Possession in the Age of the New Empiricism
Richard Raiswell (University of Prince Edward Island)

In his 1627 *Guide to Grand Jury Men*, Richard Bernard lamented that those visiting a putative demoniac were often beguiled by the spectacle, coming—in their unease—to imagine that they hear and see more than is actually being exhibited. The issue of the staging and management of possessions has received a fair amount of attention in the literature over the last decade. However, in this paper, I intend to examine how authors of published accounts of particular English possessions constructed their works to convince the broader reading public—those who could not so readily be deceived by strange spectacles and dumb shows—of the reality and significance of what they described.

The reality of possession was well attested by the New Testament. But by the second half of the sixteenth century, it had become a deeply contested issue, with both Catholics and Puritans seeking to dispossess demoniacs for their propaganda value in their respective struggles against the state church. As such, establishing the authenticity of particular possessions as broadly as possible was vital to their proponents. Yet they had to do so according to the new, more rigorous approach towards evidence and its relationship to proof that had emerged in law and was beginning to be applied in natural philosophy. As such, possession texts provide a unique opportunity to see various theories of evidence at work on the eve of the scientific revolution.

2. Speik between the Alps and the Orient: local knowledge, botany and economy in circulation

Marianne Klemun (University of Vienna)

Research on the history of the economic impact of plants has hitherto focused mainly on cultivated species. The role of wild plants, on the other hand, has been widely ignored. In fact, uncultivated plants have never been as economically important as the potato, the tomato or the carnation on a global scale. However, they still played a certain role at the trans-national economic level. Spikenard or nard oil, also called nard or nardin, an extract from the roots of the valerian plant, is one of those natural substances that had economic significance. For centuries, this essential oil enjoyed great popularity as a versatile medicinal and hygiene product due to its intense fragrance and its refreshing, almost camphorous effects. Traditionally, nard oil was made from plants that came from different regions. As early as in ancient times, Indian, Syrian and mountain varieties were known and distinguished. For instance, nard was known in sixteenth century Hungary as “Béchy fiu”, that is “Viennese Herb”, because it was imported from Vienna to Hungary. The best spikenard in terms of fragrance comes from a small alpine region in Carinthia and Styria, where even mountain summits are called after the herb (Speikkogel).

The paper addresses the practices of collecting and circulation of this vernacular knowledge through the idea of mercantilism and the changes to the universal botanical knowledge.

3. Drug expertise and drug experts in Antiquity, Oriental Middle Ages and Occidental Renaissance: knowledge, know-how, social impact

Dina Bacalexi (Centre Jean-Pépin) and Mehrnaz Katouzian-Safadi (University Denis-Diderot)

Knowledge and know-how are a part of medical expertise. Ancient physicians such as Dioscorides and Galen write treatises about materia medica, drug classification and use. They often relate their personal experience in collecting medicinal substances. Paramedical drug specialists are rare: Galen mentions servants acting under his guidance, or sellers of medicinal components; but he is the specialist. The target public of pharmacological treatises and drug narratives is mostly physicians or at least people with a comparable social status.

In the Oriental Medieval world, physicians continue to be the drug experts and to write pharmacological treatises. However, physicians as well as patients must buy their drugs at the market, from druggists. Druggists’ social and economic position is regarded as extremely important by the authorities; hence a specialized police or muḥtasib, which

controls drugs, prevents cheating, and establishes the relation between the expertise of physicians and the know-how of druggists.

The Renaissance humanists (Leonhart Fuchs, Conrad Gesner, Guillaume Cop, François Valleriole) translate and comment on Dioscorides and Galen, teach medicine or write treatises on medicinal substances, targeting students and physicians. They hardly address practical aspects of pharmacology, but recognize the qualifications of druggists, whose competence depends on their understanding of Greek authors.
We will examine the difference of social and economic status between drug experts and physicians; the ways physicians speak to druggists: terminology, instructions, assessment of their work; the relationship between trade activity and know-how; and a gender issue: the physician's point of view on druggists compared to midwives, both paramedics who possess know-how and skill.

1C: Alchemy

1. Between Poetical Aspirations and Scientific Endeavours: The Morroccan Alchemist Ibn Arfaʿ Raʾs (d. 1197) and His Collection of Poems The Shards of Gold (Shudhūr al-dhabab)

Christopher Braun (University of Zurich)

In the middle of the eighth/twelfth century, during the rule of the Almohads, the Moroccan scholar and alchemist Ibn Arfaʿ Raʾs (d. 1197) composed a collection of poems on the transmutation of base metals into silver and gold. Arab and Arabic-writing alchemists before him had turned to poetry to impart their knowledge. However, Ibn Arfaʿ Raʾs and his magnum opus, *The Shards of Gold* (*Shudhūr al-dhahab*), achieved unprecedented popularity among the adepts of "the Art". Many later alchemists cited his verses to substantiate their own theories. Others tried to fully comprehend Ibn Arfaʿ Raʾs's notoriously opaque language and composed extensive commentaries on his diwan. With more than 100 manuscripts still extant in libraries across the Middle East and North Africa, *The Shards of Gold* must have largely contributed to the dissemination of alchemical knowledge in these regions.

While didactic poems are by no means exceptional in the pre-modern Middle East and North Africa, *The Shards of Gold* belong to the least comprehensible poems ever written. Already the historian Ibn Khaldūn (d. 1406) asserted that Ibn Arfaʿ Raʾs's poems are particularly cryptic (*malghūz*). The alchemist seems to have been guided by poetical aspirations as well as scientific endeavours. His mastery of poetry paired with a penchant for concealment – in full compliance with the alchemists' oath of secrecy – bequeathed to us a highly enigmatic piece of literature that oscillates between poetry and alchemical treatise.

This paper presents the latest research on a major figure in the long history of Arabic alchemy and retraces the stunning career of a unique collection of poems. It explores the relationship between poetry and scientific knowledge and, thereby, engages in recent discussions on the various modes of sharing and disseminating knowledge in premodern Islamicate societies.

2. The Afterlife of *Atalanta fugiens*
Donna Bilak (Columbia University)

Atalanta fugiens (1618) is a musical alchemical emblem book by the German physician and alchemist Michael Maier that blends art and science into a paean to wisdom achieved through alchemical practice. To communicate an interlocking program of alchemical philosophy and technology, Maier fused together three distinct genres of publication: hermetics, emblematics, and secular vocal music. *Atalanta fugiens* is thus engineered as an interactive, multimedia work that engages the senses of sound and sight in order for the reader to find and solve the clues that Maier hid amid its various components, and to thus discern his core message: that the pursuit of alchemy is the true path to wisdom.

This paper is about the recovery of lost intellectual values around an epistemology of playfulness through a re-evaluation of *Atalanta fugiens*. It considers shifts in the reader's use and reception of Maier's multimedia alchemical project sixty-five years after his death apropos of its reissue in 1687 without the music. An examination of this edition, retitled *Secretioris naturæ secretorum scrutinium chymicum* (The Alchemical Investigation of the Most Secret Nature of Secrets) presents a fascinating counterpoint to Maier's original 1618 publication as a fundamental alteration of his intentionally ludic and multi-sensory experience of the book. This tale of two editions illuminates a reorientation in early modern notions of the nature of knowledge and probes the deep changes that this shift engendered, in which an outcome is the separation of the humanities and the sciences, and subsequent disciplinary divisions about what knowledge is and should be.

Maier was a polymath, yet hitherto scholarship around *Atalanta fugiens* has reflected disciplinary specialization, resulting in silos of studies. This examination of *Atalanta's* afterlife extends to its digital (re)presentation, and deliberates on questions about current modes and future possibilities of knowledge production and application, in which humanists also tell a science story.

3. Alchemy and Poetic Form: The Chymical-Devotional Lyrics of Hester Pulter
Cassandra Gorman (Anglia Ruskin University)

In the mid-1990s, a manuscript of more than 130 poems – including what is thought to be the first collection of original ‘Emblems’ written by an Englishwoman – was discovered to be by the Royalist Hester Pulter (1605-78). Strikingly, for a female writer who spent much of her life in rural isolation, Pulter’s political and devotional writings are characterised by strong, informed interests in natural philosophy, including atomism, astronomy and, most dominantly, alchemy. The key concept of alchemical ‘transmutation’, of perfecting or renewing forms through the mixing and transformation of elements, provides a focus for the theological priorities of Pulter’s poetry: of the aspiration of the human being – via the poem – towards God, simultaneously the ultimate alchemist and the perfection found at the end of the alchemical process.

This paper addresses the ways in which Pulter explores alchemy as a means to trusting in the divine promise of resurrection. For Pulter, alchemical movement both liberates and humbles her poetic spaces: it is to the benefit of individuals – human beings, ideas and bodies – that they are imperfectly formed or liable to change. In unconventional poetic forms that are analogous to these unfixed states of being, she discovers the liberty of faith, expression and creative potential in that which can be done and re-done. Nor was Pulter an anomaly: this

paper concludes by observing parallels between Pulter's work and the presence of alchemy elsewhere in early modern women's manuscript poetry, raising broader questions about how and why seventeenth-century women were engaging with alchemical ideas.

Session 2 - Thursday May 17th, 900-1030

2A: The Many Dimensions of the Premodern Mathematics of Number

Panel A of **The Many Dimensions of Premodern Mathematics**

Our two linked panels (see Session 5) propose an exploration of the many different aspects of mathematics as a part of premodern scientiae in Europe and its world. Our point of departure is the conviction that the modern disciplines nascent after 1800 have created distorting lenses through which the historiography of premodern mathematics continues to gaze. When conceived from this modernist perspective, mathematics is taken in its current professionalized academic form to be a naturally constituted way of knowing, and the history of mathematics becomes a projection back in time of this falsely naturalized and thus anachronistic conception of mathematics and its core epistemologies, agendas, and practices. Our panels will break from this modernist historiography by approaching mathematics and its practice before 1800 according to its fully premodern historical understandings and epistemological orientations. Our two panels are conceived as one joint intervention, but to allow for their division in the program we have organized one panel around conceptions of number and arithmetic/algebra and the second around premodern geometry. Each panel also contains speakers from different disciplines approaching mathematics in terms of its relationship to the wider premodern disciplinary map of scientiae.

1. Algebra: Scientia or Ars?
William B. Branson (St. Cloud State University)

Sixteenth century algebra was a difficult beast for Renaissance people to categorize. It was not classically Greek, but Arabic, and it did not seem to rest on axioms and common notions of Euclid. Furthermore, the practitioners of algebra were associated with merchants and commercial interests, whose social standing was always shaky. In this paper, I investigate stances towards algebra in Northern Italy throughout the sixteenth century, showing how its standing as a branch of knowledge was tangled with its Arabic origins and commercial applications, and how the discovery and translation of Diophantus that allowed algebra to be recast as the lost Greek technique of analysis helped establish algebra within mathematics.

2. The Number in Early Modern Spain: Technology, Organization, and Imperial Discourse in the Transatlantic Context
Molly Tun (St. Olaf College)

Numbers present a paradox for early modern studies. While facilitating technological progress and unprecedented possibilities, they also prohibit such freedoms by strictly measuring, standardizing, and organizing a population and its resources in certain normative ways. While mathematics and its applications are oftentimes considered concrete, exact, infallible signifiers, they are culturally embedded codes with significant implications for society. In the reflections that follow I will make a case for the importance of numbers in the context of the early modern Spanish conquest and colonization and outline the connection

that existed between these math practices and the imperial ideologies they endorsed; colonial Spanish texts reveal the paradoxical nature of numbers as both innovative technology and normative standardization, ultimately indicative of an imperial discourse of wealth, morality, authority, and infallibility.

3. The "Newton of Harmony" in the Age of Enlightenment: Jean-Philippe Rameau's Quest to Unify Science and Aesthetics
Adam Fix (University of Minnesota, Twin Cities)

In 1722, the composer Jean-Philippe Rameau (1683–1764) proposed a "science of music." Lauded as a "philosopher-artist" and the "Newton of harmony," Rameau replaced the intuitive and haphazard methods of past composers with fixed mathematical rules of harmony, basing his music theory on the mechanical principle of vibrating bodies, or corps sonores. Rameau's ambitions, however, extended beyond mere rules of composition. Regarding music theory as an illustrious science that fused reason with emotion and invoked a principle unmatched "in its evidence, in its riches, and in its superiority which it draws from nature itself," Rameau believed analogous laws existed in all fine arts. In the baroque era, when contemporary art and music was derided as outlandish, malformed, or unnatural, Rameau asserted that aesthetic beauty was not culturally contingent but intrinsic within mathematical nature. As he proclaimed, "the arts, which have been called the arts of good taste, are less arbitrary than this title has made us suppose up until now." The principle of the corps sonore opened the possibility of unifying science and aesthetics and, Rameau hoped, rekindling Pythagorean notions of natural harmony absent from philosophy since the scientific revolution. This quest set Rameau on a collision course with the philosophes of the Enlightenment. My talk illuminates the tumultuous relationship between science and art in the premodern world through the lens of music history. Historians should view Rameau as an aspiring man of science and treat his theory as a unique vision of what kinds of knowledge science could grasp.

2B: Historiography

1. Boethius and Disciplinarity
Krista Twu (University of Minnesota, Duluth)

Too late for Classics
Too early for Medievalists
Too literary for Philosophy
Too philosophical for Literature
Too humanistic for Mathematics
Too technical for the Humanities
Too secular for the Seminary
Too religious for the University

Boethius falls between the cracks in the modern academy. Everyone agrees on his importance, yet nobody seems to teach him, obliged as we are to our departmental and programmatic missions. On the other hand, in scholarly work, our contemporary disciplinary lenses distort our apprehension of his corpus. When we call him a philosopher, a mathematician, a rhetorician, a politician, a medieval or a classical writer, we over-determine his disciplinary alignment with ours.

Boethius's work predates the university and academic disciplinarity, of course, and the medieval writers who followed and transmitted his work explored the harmonies among the trivium and quadrivium. Even the works of a 14th-century writer like Geoffrey Chaucer range from a "Treatise on the Astrolabe" to a life of St. Cecilia, from sexual farce to historical romance. In fact, Geoffrey Chaucer may have been the last great translator of Boethius, by virtue of his pre-disciplinary comprehension of the world. Since then, translators have brought Boethius into their disciplines of knowing, thereby fragmenting our understanding of him.

My paper proposes to consider the ways the rise of disciplinary specialization has shaped Boethius scholarship and translation from the early modern period through the present, while creating the conditions for his disappearance from the curriculum.

2. Science in Two Empires: Recognizing Continuities in Safavid and Mughal Science
Peter Barker (University of Oklahoma)

The Safavid Empire in early modern Iran (1501-1722), and the contemporary Mughal Empire in India (1526-1739), shared a court culture that has been acknowledged in literature (especially poetry), the visual arts and architecture. In this paper I argue for a similar commonality in the sciences. In the early sixteenth century the first Safavid shahs compelled their subjects to practice Shi'a Islam. This caused migrations of Sunni intellectuals West into the Ottoman empire and East into the nascent Mughal empire and its satellites. Counterflows of Shia intellectuals moved to fill the vacuum, notably from Ottoman Lebanon. However, the intellectual biographies of important Safavid scholars from the early seventeenth century show that, in subjects like mathematics, astronomy, and medicine, the religious affiliation of teachers was no obstacle to studying or receiving credentials from them. Astronomy and medicine were both strongly supported at the Safavid and Mughal imperial courts. Moreover, the Safavid empire remained the single most important source of scholars, and especially scientists, for the expanding Mughal empire. Here, Persian-speaking scholars trained in Iran met Indian astronomers and medical specialists, and together created new hybrid scholarship. Indian medical advances were exported to Iran, and Persian astronomy adopted in India led to the construction of no less than five large observatories in India between 1720 and 1743. As a consequence, I will suggest that the scientific traditions of the Safavids and Mughals should be analyzed as a single, complex, but interconnected whole.

3. From common sense to the enlightened mind. Claude Perrault's shared cognitive basis of the sciences and arts
Sjoerdieke Nicolson-Feenstra (Leiden University)

As shown by recent studies of history of science, philosophy, and literature, discussions on the epistemological basis of the arts and sciences in France during the second half of the seventeenth century may roughly be grouped around the rationalist 'Cartesians' and the sceptic 'Gassendists'. One of the main causes of the dispute was the fact that, in very general lines, the ideas upon the relation between the senses and the intellect ran in opposite direction. This paper aims to reassess the work of Claude Perrault in light of this debate. The first point this paper would like to argue is that in the sceptic approach of the physician-architect, the varying sciences and arts shared the same cognitive basis. In the theory of Perrault, ultimately all knowledge was derived from the habituation of our senses. These particular observations are turned into general scientific principles by means of analogies

drawn with other disciplines. Hence, Perrault's approach is encyclopaedic, and neither the mathematical nor the physical sciences are given a foundational status. The second point this paper would like to argue is that this approach designated a special position for the cross-disciplinary researcher and connoisseur, whom alone could move beyond common sense through the aid of extensive learning and an innately enlightened mind. Interestingly, this same characteristic simultaneously enabled both the highest achievements in scientific research as well as the finest experience of artistic beauty.

2C: Local Knowledge / Global Networks: Botanizing for the Empire in the Late Eighteenth Century

Recent studies of early modern botany and plant exchange have shown these enterprises to have been highly collaborative and intricately networked, where naturalists, plant hunters, seamen, and a range of other "go betweens" all played key roles. At the same time, scholars working in a variety of national and imperial settings have demonstrated differences in the ways major colonial powers conducted botanical exploration and scholarship. For instance, royal financial backing supported French botanical expeditions, while England depended heavily on an informal network of gentlemanly "plant hunters" for specimens and information. The Spanish government, on the other hand, privileged illustrations and supported artists' extended stays in colonial contexts.

This panel examines the contributions of previously understudied "go betweens" who "botanized" in a range of imperial contexts: English, French, Dutch, and Swedish. Some of these were indigenous informants who supported field naturalists in South Africa and Tahiti. Others facilitated fieldwork closer to home, as British women plant collectors did when they made rare exotic flowers available to local botanists. Together these papers will raise questions about hierarchies of knowledge within early modern botanical networks – and their variance across imperial boundaries, the location of "fieldwork," and the usefulness of categories like "expert" and "amateur." To cultivate audience engagement, the panelists would like to precirculate a selection of primary sources along with a brief statement of why they are important to each project.

1. Naturalizing the Empire: Women Plant Collectors and the Making of British Botany c. 1785-1810
Nicole LaBouff (Minneapolis Institute of Art)

This paper considers three women plant collectors who worked closely with James Edward Smith, co-founder and president of the Linnean Society. The women's expertise in naturalizing difficult-to-cultivate species – imported from Australia, Sierra Leone, Jamaica, India, and China – was so valuable that both Smith and Joseph Banks integrated these "agents of empire" within their global botanical networks. Here we see women's gardening practice as experimental and scientifically-oriented, not merely a fashionable pastime. Moreover, the private hothouse emerges as a "field" for scientific research which paralleled and supported studies conducted at nearby Kew or in wilderness contexts overseas.

2. Visibility: People, Plants, and Taxonomies in Early-Modern Botanical Landscapes
Laura Mitchell (UC Irvine)

The presence of local informants—whether settlers or indigenous hunters and herders—varies greatly in the accounts of Europeans who collected specimens while "abotonizing" in the South African veld, to use Swedish naturalist Anders Sparrman's term for his field work. This paper compares field notes, private correspondence, and published narratives to interrogate the sources of knowledge that eighteenth-century natural philosophers relied on to find, identify, draw, describe, collect, categorize, and exchange plants. The circulation of information from the Cape of Good Hope to Britain, France, and the Netherlands helped forge modern botany. The relative visibility of local informants in some accounts (such as Robert Jacob Gordon and Francis Masson) and paucity in others (such as Sparrman) suggests intentional elisions that bear closer scrutiny.

3. Aotourou and Botanical Knowledge in the French Pacific
Margaret Carlyle (University of Chicago)

This paper problematizes our understanding of the little-known Tahitian named Aotourou, who ostensibly served as an "indigenous informant" to Louis-Antoine de Bougainville's French-led global expedition of 1766–69. Aotourou presented the crew's naturalist, Philibert Commerson, with local botanical specimens and taxonomies before being brought to Paris, where he was further scrutinized within savant circles. By reading available sources both with and against the grain, Aotourou emerges as a dynamic "go between" who fails to clearly fulfill any passive/active paradigm. Instead, he presents as a situated "networker" occupying a node in global knowledge networks with a robust vantage point.

Session 3 - Thursday May 17th, 1100-1300

3A: Philosophy 1

1. A Third Kind of Knowledge? Plato's Bastard Reasoning in the Early Modern Period
Guy Claessens (KU Leuven)

Throughout the history of Platonism, few concepts have proved to be more elusive than the cosmological and philosophical center-piece of the *Timaeus*: the so-called receptacle of all becoming (*Tim.* 48e-53b). From the fifteenth century onwards, early modern readers of the dialogue have discussed the ontological status of this ambiguous concept and tried to square it with traditional notions of matter and space. However, by means of the receptacle Plato not only left his early modern audience with an ontological obstacle, but with an epistemological conundrum as well. After all, in his discussion of this enigmatic third kind, Plato introduced an equally troubling third kind of knowledge. According to Plato, the receptacle cannot be known through the intellect or the senses, but is merely apprehended by a kind of bastard reasoning (*nothos logismos*, 52b2). Unfortunately, but not unexpectedly, Plato never fully clarified the nature of this hybrid form of knowing. In this paper I will examine how early modern readers of the *Timaeus* each in their own way tried to interpret and to explore the potential of this mode of "bastard reasoning". The corpus includes, among other texts, the commentaries on the *Timaeus* written by Sebastián Fox-Morcillo (1554) and Paolo Beni (1594), as well as Jacopo Mazzoni's *Comparatio Platonis et Aristotelis* (1597) and Francesco Piccolomini's *Academicae contemplationes* (1576). I will show how the Platonic idea of bastard reasoning was interpreted vis-à-vis Aristotelian notions such as analogy and abstraction.

2. The Structural Intellectualist Theology of Descartes' Discours de la Méthode
Patrick Brissey (University of South Carolina)

In his 1630 letters to Marin Mersenne, Descartes seems to provide a voluntarist, theological explanation of the modality of the eternal truths. On this reading, Descartes' doctrines of divine simplicity and divine indifference entail that God was free to create any idea as possible, necessary, or true before the establishment of the eternal truths, even ideas that are morally repugnant or irrational to our present intellects. I argue that this interpretation—be it a formulation of universal possibilism, limited possibilism, or some variant—ignores a crucial passage given at the end of the last epistle to Mersenne in the 1630 letters. In this passage, Descartes tells us that God may deny any idea as necessary (the voluntarist component of the standard theories), but adds that God must, if such a denial is possible, make the collection of ideas perfect because He is perfect, what I take to be the intellectualist component of his theory. In this paper, I explore the meaning and the evidence supporting this soft intellectualist proposal during the period of his *Discours de la Méthode* (1637), bracketing, of course, the more hyperbolic passages made during the period of the *Meditationes* (1641) and the *Principia* (1644). My proposal is that the structural intellectualist interpretation of Descartes' 1630 correspondence and the *Discours* provides a plausible alternative to the standard interpretations. I conclude with brief remarks on whether the post-*Discours* Descartes is a theological voluntarist or an intellectualist.

3. The fourth hypothesis on the union of soul and body
Lloyd Strickland (Manchester Metropolitan University)

Descartes's separation of the human being into two separate substances – soul (mind) and body – struck many in the early modern period as introducing a new problem, namely how these two substances could form a unity, or, as many understood it, how these two substances could act upon each other. In the years that followed, a number of solutions to this problem were put forward. By the end of the seventeenth century, it was believed that there were three (and only three) hypotheses regarding the union of mind and body: (1) physical influence, (2) occasionalism, and (3) pre-established harmony. Modern commentators likewise assume that, to address the problem of the union of soul and body that arises under substance dualism, only these three hypotheses were developed by early modern thinkers. But this is not the case. In 1763, a fourth hypothesis was put forward by the French thinker André Pierre Le Guay de Prémontval (1716-1764), in a series of papers read at the Berlin Academy of Sciences, and later published in successive volumes of its Proceedings. Prémontval's own hypothesis, given the grand name of "psychocracy" (i.e. the dominion or the rule of the soul), held that there was a real influence between soul and body, but that this was an immaterial kind of influence as opposed to the physical kind that had been entertained heretofore. Prémontval's hypothesis, along with its genesis and fate, is the focus of this paper.

4. The Philosopher Instrument: The Musical Physiology of the Montpellier School of Medicine
Edward Halley Barnet (Stanford University)

In Denis Diderot's *Le rêve de d'Alembert*, the French philosopher emphasized the centrality of nervous sensibility to his understanding of life by comparing the body to a network of vibrating fibres, communicating with each other through sympathetic resonance. Diderot called this "philosopher-instrument" an "organized harpsichord," capable of memory and sensation. Historians of the Enlightenment have long been familiar with the importance of

sensibility for the *philosophe*'s "science of man," but few have recognized that the physiological basis of *sensibilité* relied on the musico-acoustical paradigm of the vibrating string. Indeed, starting in the 1730s and lasting until the 1770s, French physicians from a variety of backgrounds began to ascribe the acoustical properties of musical strings to the human body, describing health in terms of tension, resonance and even harmony. The Montpellier school of medicine played a vital role in these developments: for instance, Boissier de Sauvages, in his prize-winning dissertation on the effect of air on the body, used variations in the tension of "nervous fibres" to explain differences in temperament, while Théophile de Bordeu's treatise on medicinal waters represented the primary scholarly influence on Diderot's physiological speculations. In this paper, I will argue that the lexical field of the physiology of sensibility in eighteenth century France was essentially musical. By comparing the human body to a musical instrument, philosophers found a way to seamlessly explain the unity of the body, while remaining within the mechanist framework bequeathed by the natural philosophy of the late seventeenth century.

3B: Power in the 17th Century and its Legacy

The notion of power as *potentas* in early modern discourse bears certain obvious etymological and conceptual ties to the *potentia* of the schools. However, when it finally broke away from the limits of its quodlibetical use, it became the center of a logical inversion that is of the utmost value to the historian of ideas. If, by 'power,' the schoolmen of the 13th century had meant an *incomplete state* or a *prior stage* in the course of natural change, viz. the *not-yet real*, by the time Francis Bacon postulated that "knowledge is power [*scientia potestas est*]" it was taken to mean something positive for a change; no more worthy of being attributed to the scientist than to the divine. It is, indeed, a long road from a God thought perfectly actual, to a God whose "power is his essence itself," and whose devotees would treat any limitation to that divine potential being as an outright heresy. That particular meaning of power happened to prevail both in matters earthly and heavenly. And, as a result, the idea of power can be now found cutting across many different subject matters, prior to their eventual demarcation into isolated disciplines. It also speaks to the rise of a variety of practical reason that is reported much more invasive of reality than the previous paradigm; setting a measure of the truth of the ideas in terms of *effects produced*, *people affected*, *things put in motion*, *elements controlled*.

The panel revolves around the idea of power in 17th-century discourse as well as its incorporation into later uses of the concept of power, with the aim that it be reconstructed as the multi-faceted product of early modern scientific, literary and political imagination. To that end, we present three papers that focus on: *Psychic Power and the Omnipotence of Thoughts in Shakespeare's The Tempest*, by Ben Jeffery; *Natural Right as Power in Spinoza* by Andrea Ray; *Hume and the Balance of Power* by Danielle Charette. Michail Vlasopoulos will serve as commentator.

1. Psychic Power and the Omnipotence of Thoughts in Shakespeare's *The Tempest*
Benjamin Jeffery (University of Chicago)

In Act 1, Scene 2 of *The Tempest*, Miranda watches the spectacle of the wrecked ship and laments that she would have saved the lives of those on board "Had I been any god of power." Prospero is evidently the "god of power" on the island – but the status of his magical abilities is notoriously ambivalent, not least because they are at once a symbol of omnipotence and yet also, seemingly, an expression of an impassable gulf between wishes

and reality. This paper will explore the intersection of power and frustrated wishes in Shakespeare's play, by examining the capacities of magic within its world.

2. Natural Right as Power in Spinoza
Andrea Ray (University of Chicago)

In the *Theological-Political Treatise,* Spinoza famously equates natural right with the power of the individual. The paper will address two questions raised by the relation between right and power in Spinoza's philosophy. 1) Given Spinoza's determinist metaphysics, what is it in fact to which the individual has a natural right, that is, how far can the individual's power really be said to extend? 2) How does living under the form of government advocated for in the *Treatise* alter the individual's power and thus his natural right?

3. Hume and the Balance of Power
Danielle S. Charette (University of Chicago)

David Hume's writings on a constitutional "Balance of Power" owe a surprising debt to the republican tradition and the so-called "myth of Venice." Indeed, his *Essays* and many discussions of parliamentary dynamics in the *History of England* demonstrate an analysis of power greatly influenced by the Italians. Although he was ultimately wary of "neo-Harrington" strategies for silencing discord or giving an aristocratic senate the power to wield a "negative voice," Hume's historical engagement with the Italian city-states reveals that he was more public-spirited than is often realized. Hume attempted to adopt a republican balance of power within a liberal, commercial society.

Commentator: Michail Vlasopoulos (University of Chicago)

3C: Interdisciplinary aspects of Athanasius Kircher's Encyclopaedia of Music *Musurgia Universalis* (1650)

Even though the two-volume encyclopaedia of music *Musurgia Universalis* by the German Jesuit polymath Athanasius Kircher (1602-1680) appeared in Rome in 1650 (half a century into the baroque era), being as it is a compendium of theory and history of music, it draws heavily on the theories, practices and perspectives on music of previous periods, mainly the renaissance. So much so, that it might arguably be viewed as a summary these views on music during the late renaissance rather than of the early baroque, written at the end of that era and just after the conclusion of both the lives and oeuvre of the greatest exponents of the style.

The research group "*Artes y Modelos de Pensamiento*" ("Arts and Models of Thought") of the Universidad de Antioquia (Colombia) has been researching on the book since March 2016, and wishes to share with the international academic community a few of its findings so far. The papers presented will include:

1.The research group "*Artes y Modelos de Pensamiento*" of the Universidad de Antioquia (Colombia) and its research project on the appearances of musical notation in the *Musurgia Universalis*" (15 minutes) Johann F.W. Hasler

2. "Proto-zoomusicology" in the XVIIth century? Birdsong and other proposed 'musics of Nature' of both the Old and New Worlds, as reported in the *Musurgia Universalis* (30 minutes) Juan Camilo Toro & Hasler (as co-author).

3. "Proto-ethnomusicology" in the XVIIth century? Approaches to extra-European musics in the Musurgia Universalis (30 minutes) David Gaviria Piedrahíta & Hasler (as co-author).

4. Early computer music in the XVIIth century? Automatic and randomly generated music in the Musurgia Universalis (30 minutes) Susana Gómez Castaño & Hasler (as co-author).

5. Panel discussion with audience, questions & answers, etc. (15 minutes) Full panel of presenters, commentator and audience.

Session 4 - Thursday May 17th, 1430 – 1630

4A: Observing and Collecting

1. The Early Modern culture of collecting, museums and cabinets: A rationale according to Aristotelian epistemology
Per Landgren (University of Oxford)

Collecting specimens became a predominant activity not only for many naturalists but also for amateurs outside the academia. The so called "information overload" stemmed, in a substantial amount, from these efforts and, not the least, from discoveries in "the New World". But, why this explosion of interest in natural history? And what place had the Museums and the cabinets in this development?

My point of departure will be the Danish medical doctor, natural philosopher and professor at the university of Copenhagen Olaus Wormius (1588-1654), his probably most famous and long-lived achievement, namely the book *Museum Wormianum*, and the Museum itself. In the spirit of Aristotle, Pliny the elder, Albertus Magnus, Conrad Gesner, Theodor Zwinger, Ulisse Aldrovandi, and others. Wormius collected specimens and even created a museum in Copenhagen. But what was this Museum? In his book, Wormius describes, in detail, all the facts and artefacts of the museum, but why did he call it, in capital letters, *HISTORIA RERUM RARIORUM*? What did this Museum and the book have to do with history? What did this collection express? In what context can we understand it and his earlier models, foremost in Italy?

In my paper I will put this Wormian project in an Aristotelian context. I will show how the Aristotelian meaning of *historia* elucidates the motives of Wormius as well as his early modern Aristotelian context of Natural philosophy and Medicine. This will be illustrated by a fresh translation of Wormius preface to his *Museum Wormianum seu HISTORIA RERUM RARIORUM.*

2. The curious observers of inhabited worlds: Huygens and Fontenelle on scientific curiosity
Daniel Špelda (Masaryk University, Brno)

In my paper, I want to deal with the theme of scientific curiosity in Huygens' and Fontenelle's books on the plurality of inhabited worlds. Recent scholarship (H. Blumenberg, L. Daston, P. Harrison *et al.*) presented and explained the process of legitimization of scientific curiosity in early modern thought – especially in the first half of the seventeenth century and often focusing on Bacon. In my opinion, evaluation of scientific curiosity in the second half of seventeenth century did not attract so much scholarly attention. I want to show that Christiaan Huygens in *Cosmotheoros* (1698) and Bernard de Fontenelle in his *Entretiens sur la pluralité des mondes* (1686) understand scientific curiosity neither as traditional critics of curiosity (e. g. Augustine) nor as its early modern defenders such as Francis Bacon.

I would like to show four differences. 1) While the earlier authors understood scientific curiosity as vice resulting from human pride, Huygens and Fontenelle understand curiosity as natural characteristics of rational beings: What must be justified is its limitation, not its application. 2) While earlier condemnations of curiosity were related to the belief in limitedness of the cosmos and human knowledge, Huygens' and Fontenelle's books show that scientific curiosity emerged as the natural epistemological correlate of the limitless cosmos. 3) While in the philosophical tradition curiosity was not related to astonishment or admiration, in early modern thought – as shown by L. Daston – there was a connection: admiration awakened curiosity. Huygens' and Fontenelle's texts show that this relationship also worked in reverse: Curiosity awakened admiration, especially in the context of natural theology. 4) And the last point, in natural philosophical tradition certain objects caused fear (typically eclipses and comets). Huygens and Fontenelle show how fear was infantilized to the level of mere superstition at the very beginning of the Enlightenment. Unsatiable scientific curiosity replaced eschatological anxiety.

3. How the Eighteenth-Century Traveler Looked at the World: Joseph Banks and the Tahiti Journals

Mona Scheuermann (Oakton Community College)

Despite all of the politically motivated "scholarship" to the contrary, looking closely at European eighteenth-century travel literature reveals chronicles by both male and female travelers that are full of delight and fascination with what they see and the people whom they meet. These travelers do not travel with minds already shaped by preconceptions and clichés, as so many critics and even historians since at least the 1980s have been claiming. One of the most fascinating of these travellers is Joseph Banks.

Banks sailed with Captain Cook as, in effect, botanist-in-chief; always fascinated by botany (when his own university did not have a sufficiently accomplished professor of botany, the very rich Banks had them import one), Banks paid his own way on Cook's ship, bringing not only all kinds of equipment, but an artist to draw the specimens as they were collected. Science indeed in the eighteenth-century had not yet split into precise disciplines, and although botany had been defined, anthropology had not. Yet if any "discipline" is more prominent than others in Banks's wonderful journal of his voyage with Cook, it would today be called anthropology. Banks, immensely skilled at social interaction, becomes the primary interface for Cook with the natives of Tahiti; it is Banks who does the trading with the natives for all provisions that sustain the crew during their protracted stay in Tahiti. Banks makes no social barriers between himself and his native friends. And in his journals we meet these natives as they are, with their warmth, their laughter, and their faults (stealing is more than a slight problem). The goal of the trip is to document the Transit of Venus. The complications

that ensue when some parts of the most important instruments for that study go missing would by themselves make it worthwhile to look at Banks's journal.

My presentation will examine Banks's perspectives on Tahitian life and mores. As context for the discussion of Banks, I will talk briefly about the ways in which other travellers regarded the lands and the people they met. My argument is that whether one is looking at, for example, Lady Wortley Montagu in Vienna, and then in Turkey, or Banks in Tahiti, the honesty and the joy of discovery is the same. The ill will that so much of modern scholarship has super-imposed on these accounts, we shall see, is simply a modern fabrication.

4B: End-times Knowledge in the Sixteenth Century: Revelations Now

From the Old Testament prophets to the visions of St. John, the Bible asserts a radical disjunct between the appearance, and the reality, of the world. Reality, moreover, is to displace appearance—the latent becoming manifest—at the last days. The intellectual culture of early-modern Europe, saturated with the Bible, was also steeped in expectation of the end times. The result was a tendency toward radical inquiry under the sign of apocalypse.

Our panel will take up three consecutive exemplars of the period's apocalyptic knowledge. From Columbus's ecstatic understanding of his mission, to Postel's attempt to sketch an eschatological cosmography, to Bacon's appropriation of the prophet Daniel, our papers span the sixteenth century and the Atlantic world. On a literary and archival basis, we are inquiring into the early-modern histories of alchemy, rhetoric, and medicine (inter alia). We assume, however, that the full implication of the apocalyptic trope is much larger.

Why the sixteenth century? Because this is when scripture, so to speak, enters into its inheritance. Humanist pedagogy and print culture, followed by Reformation and Counter-Reformation, inaugurated an unprecedented Biblical literacy. This entailed, a fortiori, a widespread and ever-growing familiarity with the apocalyptic typology.

1. Christopher Columbus's alchemical millenarianism
Ralph Bauer (University of Maryland)

Historians of religion have long been interested in the influence of Joachim of Fiore upon Columbus's apocalyptic rhetoric. However, I will argue that the "Joachimite" tradition inherited by Columbus (1451-1506) was thoroughly mediated by the late medieval (Aristotelian) traditions of alchemy. This mediation renders Columbus's writings of interest not only for historians of religion but also for historians of science. This talk will explore Columbus's ideas about the role that the discovery of "Indian" gold would play in the universal redemption of souls, the Christian recapture of Jerusalem, and the apocalyptic battles of the Eschaton.

2. From the edges of the earth to the end of time: The cosmo-apocalyptic visions of Guillaume Postel (1510-1581)
Vincent Masse (Dalhousie University)

Known to his contemporaries as "*docte et fol*" (learned and mad), Guillaume Postel produced reams of cosmographical lore. Typical of his work are complex geographical and eschatological oppositions, designed to illuminate one another: Orient vs. Occident,

paradisiacal Indonesia vs. infernal America, divine Justice (located in the North Pole) vs. divine Mercy (located in Chasdia, the Southern Continent), etc. His work thus presents a case study in the mutually-informing relationship of 16th-century cosmographical and apocalyptic discourses.

3. Multiplex erit: Philiatros, Bacon, and apocalyptic Brightness
JD Fleming (Simon Fraser University)

The anonymous Paracelsian tract *Philiatros* (London, 1615) appeals to Daniel 12:4—in terms that almost copy Bacon's *Advancement of Learning* (1605). However, the Philiatros author does not mention the great ex-Lord Chancellor. Instead, he turns from Daniel to a forgotten ex-physician: Dr. Timothy Bright (1551-1615). In the 1580s, Bright was a significant figure. But he then lapsed into obscurity. One searches in vain, after 1590, for any published mention of him—until the *Philiatros*. In this paper, I'd like to explore connections between Bacon, Bright, and the anonymous Paracelsian. In particular, I'd like to ask how the apocalyptic vision of Daniel binds and illuminates them all.

Commentator: William B. Eamon (New Mexico State University)

4C: Scholarship and Devotion

1. Elias Ashmole's collection of devotional images
Vittoria Feola (University of Padua)

My paper will begin to explore the obscure collection of Elias Ashmole's devotional images. Elias Ashmole (1617-92) was the founder of the eponymous museum in Oxford, and he is usually referred to as a High Church Anglican.

First, I will consider Ashmole's devotional images as works of art, and, as such, as objects of collections which escaped, to an extent, seventeenth-century confessional divisions. This implies a contextualisation of the pictures within Ashmole's broader collections of visual materials. Next, I will look at the pictures as objects of Catholic worship in the context of Restoration politics. This will complicate matters, and will entail a contextualisation of Ashmole's political action in relation to his collecting practices.

I will argue that Ashmole's collection of devotional images should be best understood as a set of antiquities, whose possession carried both a political and an intellectual meanings. In addition to shedding new light onto a little-known part of Ashmole's heritage, my paper will contribute to current discussions about the Anglican Enlightenment.

2. Spirit and erudition in Jean Le Clerc's biblical scholarship
Andrea Bianchi (Catholic University of Milan)

Jean Le Clerc is often and rightly regarded as one of the key figures of the "Republic of Letters", as well as a champion of the beginnings of the historical-critical method of biblical study. His general erudition, something that made him famous throughout Europe, and his philological competency, together with his skills in ancient Hebrew and Greek, have been often considered a hallmark of his approach to Biblical hermeneutics. Although this is rightly the case, Jean Le Clerc invoked also the importance of a combination of erudition and "spirit"

in interpreting Scripture, something that has often been overlooked by scholars. Under "spirit", Le Clerc conceives of the capacity for a solid critical judgment, as a form of "intelligence", or a kind of rationality that is purified of prejudice. In this paper, I aim at outlining Jean Le Clerc's definition of "spirit" as combined with "erudition" in reading the Bible and in this way to provide a further insight into Le Clerc's stance towards textual and historical truth. In this way, my intention is not only to provide a more faithful picture of Jean Le Clerc's hermeneutics, showing how the interpreter is, for him, as relevant as the philological method itself, but also to shed light on the confluence of Arminian (Simon Episcopius, Etienne de Courcelles) rationalist tradition in Le Clerc's hermeneutics.

3. Oriental and Classical Philology in Eighteenth Century Göttingen: Philology as a Way of Knowing
Kristine Palmieri (University of Chicago)

This paper discusses the work of Oriental and Classical philologists at the University of Göttingen in the Eighteenth Century. It adopts a two pronged approach by focusing on the location(s) of philology within the university as well as on the specifics of philological practice. In particular, this paper emphasizes the importance of three features that typify the kind(s) of philology that developed at the University of Göttingen in this period. These features, in no particular order, are: an emerging appreciation of the historicity of texts, the establishment of new critical tools for the analysis of texts, and the development of new tools of judgement. A discussion of these features highlights the degree to which philology at Göttingen developed due to numerous processes that were neither mutually exclusive nor intentionally collaborative.

By tracing the institutional status of philology as well as the evolution of philological practices, this paper provides an account of the changing function and status of philology during the Eighteenth Century. In so doing, it challenges conventional accounts of the "birth" of philology as a modern discipline in the (very) late eighteenth or early nineteenth centuries. Paper ultimately aims to move beyond narrow accounts of philology within a disciplinary framework by reconceptualizing it as method and asking how philology operated as a way of knowing.

Session 5 - Friday May 18th, 900-1030

5A: The Many Dimensions of Premodern Geometry

Panel B of **The Many Dimensions of Premodern Mathematics** (see Session 2)

1. Euclid's Kingdom
Amir Alexander (UC Los Angeles)

Hardly any field of knowledge was more highly praised in the early modern world than Euclidean geometry. Proceeding from self-evident assumptions, step by logical step to irrefutable conclusions, it was hailed as the embodiment of truth and certainty, an island of stability in a strife-ridden world. While this made geometry a model for other scholarly pursuits, it also invested the field with impressive political cachet. If rulers, bureaucrats, or reformers could establish geometrical authority for their claims, these would become more than the designs of ambitious and powerful individuals: They would, rather, become an

integral part of the deep order of the universe. Among the first to realize the political potential of geometry were the kings of France, who over two centuries systematically associated their rule with geometrical order. From modest beginnings in the reign of Charles VIII to the grand displays of Louis XIV, Valois and Bourbon kings legitimized their rule with court etiquette, political protocol, philosophical treatises, and – most spectacularly – royal gardens, all inspired by unchallengeable geometrical order. In Euclid's kingdom both commoner and aristocrat had their place in a precise and irrevocable hierarchy, underwritten by the universal order of geometry.

2. Peregrine Mathematics: Antonio Nardi's Scene, Hierarchies of Knowledge, and the Odyssey
Edward Chappell (University of Pennsylvania)

The jumble of geometrical, philosophical, theological, and literary material in Antonio Nardi's *Scene* (c. 1640s) has puzzled scholars, especially given Nardi's commitment to a scholastic hierarchy of knowledge that valued the sciences only inasmuch as they lead to God and subjugated mathematics. That Nardi was a mathematician and devotee of Galileo makes this particularly surprising. The solution to this quandary rests in Nardi's consideration of Odysseus that praises the character's journey as the ideal balance of maintaining his ultimate goal of returning home while still prudently enjoying curiosities that lead others astray. By taking this literary material seriously, we can see the *Scene* as a necessarily circuitous quest to know God that justifies Nardi's forays into non-theological material like mathematics. This provides an opportunity to explore how literature is key to understanding how early modern geometers like Nardi made sense of mathematics in relation to other knowledge practices, and just how robust and sophisticated the traditional order of knowledge could be.

3. Materialist Geometry in Premodern Europe, or The Artistic Maker-Knower as Mathematician
JB Shank (University of Minnesota, Twin Cities)
Among the practices that were labelled "mathematics" in premodern Europe were many which involved the manipulation of matter through artistic handiwork. Modernist prejudices insist on a division within these practices between the "purely mathematical," or the immaterial, cognitive, theoretical aspects of this work, and the artistic handiwork which is deemed at best an applied form of mathematics. Premodern Europeans, however, did not insist on this distinction, and a premodern materialist tradition of geometry flourished in this context among those who practiced mathematics through various forms of material manipulation and knowing through making. Especially important in this respect were Renaissance and Baroque artist-geometers who practiced geometry through the production of what modernist taxonomies classify as the visual arts. This paper will explore these visual-material artistic conceptions of geometry and their relation to the historiography of the Euclidean geometric tradition in Europe.

5B: Literature and Medicine

1. Margaret Cavendish, Francis Bacon, and the Fable in the Philosophy
Mary Trull (St. Olaf College)

Among the contributions Margaret Cavendish, Duchess of Newcastle (1623-1673), made to early modern science, her attitudes toward the epistemological issues of skepticism, certainty,

and probabilism are rightly central for scholars. Cavendish wrote extensively on these subjects, which were crucial in the new natural philosophy's attempt to define its own terms and methods. Early on, she was accused of religious skepticism by John Stansby, whose epithet for her was "The great atheistical philosophraster, / That owns no God, no devil, lord nor master." But what exactly is the nature of doubt, for Cavendish? In this paper, I would like to emphasize how the atomist poems of Cavendish's early book of verse, *Poems and Fancies,* convey aspects of her probabilism, limited skepticism, and moderate empiricism. I argue that these features echo Francis Bacon's *De Sapientia veterum* of 1609, translated into English by Arthur Gorges as *The Wisdome of the Ancients* in 1619, which establishes imaginative fiction as a mode for thinking through problems of epistemology and natural philosophy. *The Wisdome of the Ancients,* enormously popular in Cavendish's time, was both an entertaining read full of mythological characters and a subtle investigation of Bacon's philosophy, with a particular focus on Providence and the limits of knowledge. Cavendish's atomist poems, I argue, are like Bacon's essays on Cupid and Prometheus in their use of fancy to outline the limits of knowledge. As Bacon wrote in "Coelum, On the Origins of Things," "as there is philosophy in the fable so there is fable in the philosophy."

2. Discourse and Empiricism in Paradise Lost
J. Antonio Templanza (SUNY New Paltz)

In Milton's *Paradise Lost*, the self-reported creation narratives of Adam and Eve include their descriptions of learning in the newly created world. These descriptions reflect the Platonic and Aristotelian models of education available at the time, as presented in the *Republic* and *Physics*. Milton's innovation, however, consists in mapping these traditionally opposed models onto the cooperative relationship of the first marriage. Milton's gendered conception of Plato and Aristotle also inverts the Pauline hierarchy of man over woman. In *Paradise Lost*, we read the familiar: "he for God, she for God in him." I would like to suggest that this obvious expression of masculine superiority hides a sublte acknowledgement of the power of discursive reasoning – a power, moreover, that tends to be most fruitfully exercised by Eve herself.

My paper comprises a new chapter in my current book project, "Know to Know No More," which engages the poetry of Milton in order to understand the tension in seventeenth-century intellectual culture between provocative creativity and scientific objectivity. Rejecting the hermeneutic assumption that we can pinpoint Milton's thought somewhere on a spectrum between Baconian empiricism and Calvinist anti-intellectualism, I argue that Milton's work questions the emerging discourse of science by means of a radical new poetics of practical reasoning. The writing and reading of poetry thus become exercises of political engagement based more on rational dialogue than adherence to fundamentalisms. By incorporating reading methods and conceptual insights from the philosophy of science into a more rigorous and comprehensive intellectual historicism, my project articulates a vibrant account of Milton's creative answers to the persistent desire in western philosophy to unify knowledge and ethics.

5C: Mixed Religion

1. Self-Care in Late Medieval Western Astrology
Steven Vanden Broecke (Universiteit Gent)

At least one classic feature of astrological discourse, one might argue, is its focus on embodiment as the basis for personal projects of care of the self. Indeed, astrology can be seen as a singularly successful metaphor for possession of the self (by visible celestial bodies), through the intermediary of the natural body. Likewise, embracing and articulating this specific metaphor has allowed generations to practice care of the self as something made possible through work on, and with, the body. Astrology simultaneously conceptualizes the body as the primary *point d'appui* of astral influences, and as a privileged site for negotiating and combating their hold on the self.

In this paper, I explore how late medieval Western astrologers conceptualized possession of the self by celestial bodies on the one hand, and human agency through negotiation of this situation on the other. We will focus on such central themes as: (1) the simultaneity of corporeal and spiritual concerns; (2) the relation between action and prophecy; (3) the kind of bodywork that astrologers considered meaningful; (4) the importance of fortune as a central concept.

2. Greek Doxography and Patterns of Natural History from Telesio and Patrizi to Bacon
Stefano Gulizia (UC Sacramento)

This paper takes a fresh look at the relation between Francis Bacon and the debate that originated in the Veneto during the 1570s and 1580s around the circulation of Bernardino Telesio's pioneering brand of natural history. A key of such debate was a series of methodological objections moved by Francesco Patrizi through Antonio Persio's intermediation and Patrizi's allegation that Telesio had suspiciously restored the worldview of Parmenides. Following the work of Spruit and Plastina, I show that Bacon's knowledge of Telesio was not direct; it was facilitated by Henry Savile and the heterodox network operated by the Hungarian humanist Andreas Dudith. And I claim that, despite several changes that Bacon made to his sources, Telesio's naturalism preserved its Presocratic associations largely due to the deep influence of Paduan doxography. Telesio remained at least as strong an explanation of nature's inner activities as Della Porta's natural magic. Moreover, his theory of matter developed largely outside of a fascination with monsters and *mirabilia*. Conversely, Telesio's influence on seventeenth-century experimental communities can be better understood if we relate it to the pivotal role of Patrizi's *Discussiones peripateticae* (1571) as a major originator of intellectual arguments that bear fruits far beyond our traditional discussion of 'primordial wisdom'.

3. The Role of Czech Brethren in Dissemination of Biblical Knowledge Using Humanistic Layout and Advanced Philological Methods
Veronika Sladká (Charles University, Prague)

This paper focuses on the book printing, editorial, and pedagogical practices (1500-1600) of the Unity of Brethren. The Brethren were an early modern reformed religious community in the Czech lands in the Wycliffe and Hus traditions, which served as an inspiration for the later Lutherian Reformation. They were unique in that they pioneered the spread of humanistic, Biblical knowledge, by means of Western-style, high-quality book printing, editing, and visual typography practices in Czech speaking lands. They also educated apprentices, both men and women, in a dedicated school, and sent their alumni to learn the newest techniques in printing and visual presentation of Biblical exegesis from knowledge centers such as Basil or Heidelberg. Their lavishly decorated Hymnbook was famous across

the religious spectrum both in Czech and Germany, including Catholics and Lutherans. The community's highly egalitarian organization and their humanistic focus directly impacted the editorial process. In this paper, I will discuss three recently discovered pieces of evidence regarding the structure of, and the Western influence on, the process, and introduce a fourth piece of evidence, a music-theory textbook, that I discovered in 2017 in the Wroclaw University Library. None of this information is currently available to English speaking audiences. I will present my discovery of the corrected music-theory textbook and argue that we can clearly trace the influence of Froben's print shop in Basil, and other humanistic printers, such as Plantin in Antwerp, on the Brethren's editorial process. I will support my thesis using comparative analysis of specific proof-sheets and edited book examples from the Brethren and relevant Western European sources.

Session 6 - Friday May 18th, 1100-1230

6A: Philosophy 2

1. Leibniz's a priori demonstration of vis viva and the structural foundations of physics
Tzuchien Tho (University of Bristol)

In the public statements of Leibniz's concept of *vis viva*, he relied on an *a posteriori* demonstration of the conservation quantity. The crucial step in his various demonstrations (raised bodies, pendulums, etc.) all depend on invoking Galileo's law of falling bodies which was itself a result of *a posteriori* experimentation. While the *a posteriori* status of the *vis viva* demonstration was adequate for polemical exchanges and solving particular mechanical problems, it was insufficient for the systematic aims of the *Dynamica*.

In the posthumously published works of the dynamics and related correspondences (J. Bernoulli and B. de Volder), we do find a developed *a priori* demonstration of *vis viva*. Leibniz's confidence in this demonstration was such that he saw this argument as capable of providing an *a priori* justification of the law of falling bodies itself.

This presentation aims to argue that Leibniz's *a priori* argument for *vis viva* provides an alluring avenue for understanding the historical emergence of a generically physical concept of structure, independent of mathematical relations and the properties of bodies (mass). The presentation will proceed in three steps. First, it will examine the method of dimensional analysis that led Leibniz to the *a priori* argument. Second, it will contextualize the argument *vis-a-vis* the contemporaneous accounts of gravitation (in Huygens and Newton). Third, it will evaluate the role that Leibniz intended for the argument to establish a generic concept of physical structure.

2. Intelligibility and Hume's rendition of the law of universal gravitation
Matias Slavov (UC Los Angeles)

Newton's argument for the law of universal gravitation was not readily accepted by early modern philosophers. One central issue in the reception of the argument is whether natural philosophical principles require intelligibility. Newton's third law together with the law of universal gravitation imply instantaneous action at a distance among all the massy particles in the universe. No matter how long the distance, or how small the masses, the laws countenance instant non-mediated causal action between the particles. Leibniz did not object

to the mathematical formulation of the inverse-square law, but he criticized Newton's argument because it violated his principle of sufficient reason.

In this talk, I will turn my focus on Hume's position on intelligibility in natural philosophy. I shall argue that for Hume natural philosophical principles do not require a reason. Rather, laws of motion are known by experience of constant conjunctions of objects. There is no ultimate rational explanation for why bodies move the way they do. However, inquiring into Hume's rules by which to judge causes and effects reveals that his concept of causation itself stipulates mechanical intelligibility. He rejects ultimate explanation of gravity law insisted by Leibniz's principle, but maintains that the law is still understandable in terms of causal reasoning. I shall conclude that because Hume's concept of causality retains a residue of the mechanical philosophy, his philosophy of science is in tension with Newton's dynamics.

6B: Literature

1. On the beach: the preternatural origins of drift whale conflicts in the later Icelandic sagas (ca. 1350-1450)

David Winter (Brandon University)

Throughout the sagas and in other late medieval/early modern Icelandic sources, the appearance of a drift whale on Iceland's shores was frequently depicted as a disruptive event. Heaved up from the deep by storms (or possibly by some other subtler or more sinister cause), and thrown against the liminal space of the intertidal zone—frequently on stretches of common or unclaimed land in remote parts of the island—dead cetaceans typically became sites of contestation. Their presence almost invariably provoked fights amongst the partisan followers of rival *goðar* (*i.e.*, regional chieftains) for ownership of their valuable carcasses. Though these were reliably desultory affairs, they were often accorded the exalted status of "battles."

While such conflicts are often read through a modern empirical lens, Stuart Clark has advised us to "think with demons" in our understanding of how premodern people experienced and comprehended the natural world. Thus, in this paper, I will argue that saga writers embedded narrations about these contests over resources strategically, usually to identify the existence of potentially catastrophic imbalances in the natural order or to point to the operation of diabolic influences elsewhere in the text.
The structure of drift whale narrations, then, keyed and stimulated knowledge of how demons interacted with creation in an intellectual and cultural climate still infused (or contaminated—depending on one's perspective) with the lingering legacy of northern paganism. I contend that readers/listeners were attuned to the supposed preternatural bases of such contests, and therefore, even in the absence of explicit diabolical content, could be relied upon to see the agency of demons (or trolls) at work. Such appearances fostered a kind of "recursive dependence": the disruptive presence of a drift whale implied the action of malevolent forces, while the operation of demons implied the appearance of prodigious, or preternatural, signs.

Hints of such motives/origins can be seen in where saga writers chose to weave accounts of driftage into their tales (drift whale episodes were seldom part of the core narrative), as well as in the increasing tendency of authors of "post-classical" sagas (*i.e.*, late fourteenth- and fifteenth-century works) to include increasingly fantastic elements in their accounts of whale fights. The three most notable examples--and the sagas which I will focus on in this paper--

include: 1) *Hávarðar saga Ísfirðings* (early fifteenth century), 2) *Grettis saga Ásmundarsson* (fourteenth century), and 3) *Bárðar saga Snjófellsáss* (fifteenth century). In the first two works, contests over driftage were situated at pivotal plot points, near or adjacent to accounts in which troll- or revenant-battling protagonists are introduced or identified. In the final source, a Christianized (but clearly pagan-inspired) *landvættr* (tutelary spirit) battles a troll for the flesh of a whale in a story set during the *Landnám* (original colonization). The *landvættr*'s defeat of the troll is characterized as a great "land cleansing."

2. Black and white: the natural world as conceived by Jón Guðmundsson the Learned (1574-1658)

Viðar Hreinsson (Icelandic Museum of Natural History)

Jón Guðmundsson, nicknamed "the Learned" (1574-1658) was an Icelandic farmer, fisherman, scribe, poet, writer, historian, artist, magician, healer and a rebel. He was persecuted for decades after revealing the atrocities connected with the massacre of shipwrecked Basque whalers in Iceland's remote Westfjords region in 1615, an attack that was led by a local sheriff. Paradoxically, Jón the Learned was held in esteem by some parts of the Icelandic aristocracy. Nevertheless, in 1631, he was sentenced to exile for sorcery. He travelled to Copenhagen in 1636, where he was interrogated by the board of the University of Copenhagen in order to review the sentence to outlawry. The King of Denmark recommended that his case be reopened, but despite this, the court in Iceland confirmed the exile. Jón was, however, allowed to stay in the eastern part of the country for the rest of his life. In the 1640s, he wrote some extremely interesting works on lore and Icelandic natural history, incorporating a strange mixture of traditional knowledge and the exploring spirit of the burgeoning Scientific Revolution. Among these works was the first description of Icelandic nature in the vernacular. The paper will give a brief account of Jón's life and works and then analyse his conception of nature, especially his investigation of the raven, which he viewed as a semi magical bird, as well as his descriptions and drawings of the beluga whale and a few other whale species. Jón's unique drawings of a number of whale species are probably the world's oldest realistically drawn pictures of at least some of those species.

3. Making knowledge of foreign places: the conventions of English travel writing in the Americas and elsewhere

Michael LaCombe (Adelphi University)

Historians of early modern English travel writing usually focus on travelers to places other than the Americas, arguing that that literature is part of a debate over humanistic theories of education, or else part of an effort to define the English nation. Joan-Pau Rubies has examined writers like Sir Thomas Palmer, who sought to codify a set of conventions for travel accounts that anticipated Robert Boyle's efforts to construct a community of trusted scientific observers.

This paper will suggest that distinguishing between travelers to the Americas and those who traveled elsewhere has negatively affected all of us who read their accounts. Historians of early America struggle with the assumption that our subject is a national origin myth, with all the assumptions built into that term. Bridging this distinction shows that the meeting of "Old World" and New was an epochal moment in many ways, but the many encounters between European travelers and native people were marked instead by communication and negotiation almost from the start.

Further, the efforts of men like Ralph Hamor shed light on the assumptions of the well-born traveler/writers Palmer and others hoped to educate. Ironically, it is precisely Hamor's naiveté that makes his text so valuable to us today. Hamor did not understand in the least what his counterpart Wahunsenacawh was saying and so dutifully recorded many details that a more "expert" observer would have ignored as irrelevant, raising questions about how his contemporaries and ours make use of those details in creating knowledge.

6C: Editing Hobbes

The hostility between Hobbes and the academy that complicated his latter years continued long after his death. If not decried, his works were ignored—allowed to languish on the shelves of libraries and antiquarian bookshops. The first attempt to put together a complete edition of his works was a labor of love by the Radical MP William Molesworth, in the middle of the nineteenth century (1839-1845). It was prepared single-handedly, and published at considerable cost, both to his estate and to his reputation. While the late nineteenth and twentieth centuries saw some classic editions of individual works (e.g., Toennies's *Elements of Law*, Oakeshott's *Leviathan*), these tended to be in the field of political philosophy and did not reflect the full range of Hobbes's work. Not until the late twentieth century was a university press persuaded to place its resources behind a complete, scholarly edition of Hobbes's works.

Since scholarship is nourished by reliable texts, the study of many areas of Hobbes's work remains relatively underdeveloped: Hobbes's physics, for example, and his optics. In such areas, several works remain unpublished. And even in well-tilled fields, many textual witnesses remain inadequately examined. There will be revelations, and many assumptions will have to be revised, as The Clarendon Edition of the Works of Thomas Hobbes makes its way towards completion.

This panel brings together three Clarendon editors. They will talk about the challenges posed and the opportunities for improved scholarly understanding presented by the editions on which they are working.

1. Why optics in De Homine?
Elaine Stroud (University of Wisconsin)

In translating the whole of *De Homine* (1658) into English for the first time, a unique opportunity is presented to compare Hobbes's rendering of optics in both English and Latin: his self-proclaimed plan to make his name in the new science of optics by "polishing" and translating into Latin his "Minute or First Draught of the Optiques" (1646). While some of the chapters in *De Homine* are very close to "First Draught," the variation between the two texts reveals some of the changes in Hobbes ideas as well as the science of optics and the language itself in the intervening time between the two documents. A structural comparison of Part II of "First Draught" and chapters 2-9 of *De Homine* elucidates the difficulties and benefits of translating all of *De Homine*, and provides hints at how well Hobbes succeeded.

2. Editing Hobbes's De corpore: manuscripts, scribes, and witnessing
Stephen Clucas (Birkbeck, University of London)

In this presentation I will examine some of the difficulties which arise when considering the relationship between a non-authorial scribal transcription, and the work which is assumed to underlie it. Are ‘absences’ or ‘omissions’ in a scribal transcription evidence of an earlier stage of composition, or a product of the vagaries of scribal interest or attention? How easy is it to distinguish the authentically Hobbesian elements in a manuscript where the scribe has a wider set of interests in contemporary works on similar themes? How do we interpret the often complex *mise-en-page* of manuscripts when creating editions of them?

3. The Evolution of Hobbes’s First Philosophy
Timothy Raylor (Carleton College)

Hobbes’s mature definition of philosophy, first published in *De corpore* (1655) is as the (certain) knowledge of effects from known causes and, conversely, the (conjectural) knowledge of possible causes from known effects. The definition attempts to bridge between the two accounts of knowledge with which he was wrestling: the one purely linguistic and rationalist; the other concerned with the phenomena of experience. This paper examines the draft versions underlying the printed text in order to shed light on the process by which Hobbes arrived at his final definition.

Session 7 - Friday May 18th, 1400-1600

7A: Workshop “Listening in the New Atlantic”

“We have harmony which you have not,” a guide tells the visitors to the scientific utopia of Bensalem in Francis Bacon’s *New Atlantis*, and “divers instruments of music likewise to you unknown.” In the laboratories of Bacon's imagination, sound is produced as a mimetic study of the known world, where "we represent and imitate all articulate sounds and letters, and the voices and notes of birds and beasts"—yet it is also speculative, experimental, and disorienting, its "tremblings and warblings" unheard in nature and its “strange lines and distances” difficult to gauge.

This impossible collection of sounds, at once earthly and unearthly, "sweeter than any" we know and a calculated study of distortion, emerges from the intersection of Edenic aspiration, scientific imperialism, and relentless conquest that characterized European colonial ambition in the period. We can hear its enchanting, perplexing tones not only in the *New Atlantis*, whose sensory experiments are dedicated to "enlarging the boundaries of human empire," but across the new Atlantic of the early modern period as well: in the "thousand twangling instruments" that "hum" in Caliban's ears in *The Tempest*, for instance, and in the "great uproar, the sound of many voices...flutes and tambourines and other instruments" that Cabeza de Vaca and his compatriots hear in the tempests of Santo Domingo during their doomed 1527 expedition. It is the music of a profoundly alien geography, and the music of the spheres; the music of empire, and the music of the colonized.

Can we know how any of it might have sounded? "Listening in the New Atlantic" is an interdisciplinary project that brings early modern scholarship together with professional instrument making and sound design to consider this issue from a range of historical, theoretical, musicological, audiological, technical, and artistic perspectives. On what celestial mechanics, for instance, is Bacon drawing when he imagines an unknown harmony produced scientifically by a remote civilization? Using digital analogues in combination with

historically informed lutherie, can we approximate the kind of sound he may have been imagining, or the "trunks and pipes" he pictures as conveying sound in "strange lines"? Can we hear something like the "twangling instruments" and sleep-inducing voices that lull and torment Caliban? Can we build tools to help us understand how a hurricane could have sounded, to terrified colonial ears, like an alien orchestra?

We propose a two-hour workshop on these and related questions, as an opening step in an ongoing collaborative project. The workshop will focus on what constituted imaginary or "impossible" sound and music in an early modern colonial context, and on how we might go about imaginatively and practically reconstructing it. Adam Rzepka will lead a presentation and discussion of conceptions of celestial and exotic music in the period, with an emphasis on what theology and faculty psychology considered to be the cognitive limits of hearing. Toby Rzepka will then conduct a demonstration and discussion of historical differences in the perception of tone and interval rooted in music theory and instrument construction. Finally, we will conduct a collective experiment in the reconstruction of impossible sounds like those in Bacon and Shakespeare, using digital and historical tools.

7B: Physiognomy and Natural Temperament in the Renaissance

In the sixteenth century, scholars and naturalists became increasingly convinced that external physical characteristics could predict behavior and personality. Most famously, Neapolitan magus Giovanni Battista della Porta shared this secret way of seeing the natural world in his 1586 *De humana physiognomonia.* Theorists like Porta believed that anyone equipped with knowledge of physiognomy might, in principle, use animal features to understand someone's character at a glance, detecting both the virtuous and the vicious. A classic example of grand theories of nature gone terribly awry, by the end of the Renaissance, physiognomy became increasingly tied to a racist vision that limited human potential to external form. This panel will examine the late Renaissance diffusion of physiognomic theories. It engages with the sharply divergent reactions to the promise and peril of physiognomy and the use of external characteristics as a heuristic key to nature. As a deterministic theory, physiognomy seemed to threaten free will. Acerbic religious divides centered in part on the role of free will in human salvation consequently influenced whether physiognomic ideas were condemned or accepted. Moving between Italy, Switzerland, Spain, and Iberian overseas empire, these papers trace the creation of physiognomic ideas and their diffusion across an early modern world intent on fostering greater natural and social order. This panel seeks to address theories of physiognomy through the overlapping histories of art, religion, science, and empire.

1. The physiognomic theory of a Calvinist physician: Guglielmo Grataroli's De predictione morum naturarumque hominum (Basel, 1554)
Alessandra Celati (Stanford University)

In 1554, the Italian Calvinist physician Guglielmo Grataroli argued that human temperament could be predicted according to physical features. Scarcely studied so far, Grataroli's *De predictione morum* anticipated some of the physiognomic works that would gain prominence during the second half of the sixteenth century. This paper will offer a first exploration of Grataroli's work. Moreover, as part of my ongoing research on the relationship between early modern science and the Reformation, it will inquire into physiognomy's place in the mental

frame of a physician whose religious views were informed by the doctrine of predestination and the denial of free will.

2. Book of Nature, Book of Beasts: Physiognomy and Natural History in the Bestiario de Don Juan de Austria (c.1570)
Mackenzie Cooley (Stanford University)

Physiognomists analytically divided animals into their physical features, understood those features in relation to the animal's essential character, and used those animal parts as guides to explain variation in human temperament as a function of external appearance. The more physiognomists knew about animals, the better they could understand the influence of their traits on humans; physiognomy was thus tied to natural history. This paper explores this connection through the little-studied manuscript *Bestiary of Don Juan of Austria* (c.1570), which played with the boundaries of the bestiary tradition and natural historical treatises by integrating New and Old World animals.

3. Francisco Pacheco and the Edge of Physiognomy
Maria Lumbreras (Johns Hopkins University)

Few early modern portrait-books were as adamant in their rejection of physiognomic theories as was Francisco Pacheco's *Libro de retratos* , an arresting collection of portrait drawings and biographies compiled in Seville between 1599 and 1649. This paper considers Pacheco's struggle to coordinate physical and moral description against the religious, legal, and ethnic instrumentalization of natural temperament in early modern Spain. Enlisted as a natural science in the increasingly bureaucratized procedures of identification, physiognomy posed serious problems to Pacheco's memorializing project. The artist's response, however, capitalized on physiognomy's descriptive fissures: Pacheco used them to redefine drawing's epistemic possibilities in novel ways.

Commentator: Brian Brege (Syracuse University)

7C: Food for Thought

1. Sacred and Universal Time in Francis Bacon's *The New Atlantis*
Erin Webster (College of William and Mary)

In *Time and the Other*, Johannes Fabian argues that the "decisive steps towards modernity…must be sought…in a succession of attempts to secularize Judeo-Christian Time by generalizing and universalizing it," a process that, while not hitting its watershed until the eighteenth century, "was probably established concretely and politically in the Renaissance in response to…the cognitive challenges presented by the age of discoveries opening up in the wake of the earth's circumnavigation."1 In this paper, I examine Francis Bacon's utopian fiction *The New Atlantis* as a work in which Fabian's categories of "sacred Time" and "universal Time" operate in tandem to bring the extra-biblical lands and peoples of the New World into a universalizing vision of humanity that simultaneously projects the indigenous peoples of the Americas backward in time to a position of relative technological, political and theological delay.

Bacon's narrative actually contains two New World civilizations: that of the indigenous

Americans, as it is imagined to exist by Bacon, and that of the fictional Bensalemites, a technologically and theologically advanced Christian society discovered in the mid-Atlantic. While both civilizations are brought into the framework of sacred Time via a series of retellings of the Genesis flood narrative, the Americans are additionally located within a nascent conception of universal time that establishes both geographical and temporal distance between them and the rest of the world. By untangling these two types of time within Bacon's narrative, I expose the contradictions inherent in their simultaneous application, as well as the political motivations driving it.

2. The "Occult" and the "Manifest" in Early Modern Science: Reassessing the Contrast and Mersenne's Contribution
Guilherme Sanches de Oliveira (University of Cincinnati)

In his account of the scientific revolution, Grayling (2016) draws a sharp contrast between "genuine science" and "occultism" based on the publicity of knowledge: occultism was intrinsically solitary and secretive (i.e., 'occult'), whereas science was collaborative and public (i.e., 'manifest'). Grayling accordingly describes Marin Mersenne as playing a pivotal role in the emerging science because of his his efforts to facilitate collaboration and communication -|in Grayling's view, the hallmarks of scientific knowledge. While Grayling's assessment is partially correct, in this paper I draw from accounts of Mersenne's role in the scientific revolution to motivate an alternative distinction.

Following Grayling's interpretation, Mersenne's correspondence and editorial work established a clear boundary between 'occult' and 'manifest' knowledge by promoting science as a public endeavor. But a distinct sense of 'occult' and 'manifest' provides a better frame for understanding the rise of modern science. The label 'occultism' was intimately connected to interest in the "hidden" or "occult" qualities of objects, which was conceptually akin to Aristotelian scholasticism and its four causes. Thus, instead of opposing occultism with "genuine science" in terms of methodological publicity, as in Grayling's account, I argue that the proper contrast is an ontological one, between the occultist-Aristotelian tradition and the emerging mechanical natural philosophy's focus on "manifest" material causes. This interpretation coheres with influential accounts of the scientific revolution (e.g. Hutchison 1982, Henry 2008), and is supported by evidence of Mersenne's stance as a critic of both occultism and Aristotelianism, including his choice of what knowledge to make public.

3. The Geology of Art: Agostino del Riccio's Istorie delle Pietre
Lindsay Alberts (Lesley University)

In the late 16th century, the Dominican monk Agostino del Riccio composed his treatise on stones, naming, describing, and ordering the wide variety of stones with which he was familiar through visits to the Medici granducal workshops in Florence. Del Riccio's *Istoria delle pietre* (*The History of Stones*), published posthumously in 1589, records the origins, characteristics, and primary uses of over 130 different stones, ranging from the dazzling, such as lapis and ruby, to the more common, including alabaster and marble.

Del Riccio's compendium of mineralogical knowledge, garnered from his exposure to late Renaissance artistic workshops, reflects the predisciplinary relationship between the fine arts and natural philosophy in the early modern period. Compiling contemporary geological and chemical understanding of stones – combined with a healthy dose of the Renaissance

classifying impulse – del Riccio's text was borne of his familiarity with cutting-edge sculptural trends in late Renaissance Florence, in particular the popularity of hardstones such as jasper and exotic marbles. These physically hard and unusual-looking materials, often richly colored and shot through with veins and whorls, required both new technology to fashion them into sculpture, decorative revetments, and mosaics and new ways of interpreting their variegated appearance. This paper investigates late 16th and early 17th century Florentine chapels decorated with hardstones through the lens of del Riccio's text, examining how contemporary natural philosophy made sense of these materials and how such knowledge aided the visual strategies at work in these decorations.

4. Praiseworthy chyle": intersections of theology and nutrition in 18th century French dietetics
Julia Reed (Harvard University)

In 1709 the Jansenist physician Philippe Hecquet lamented the lack of a "Catholic cook" in French cuisine. The Catholic laity, according to Hecquet, were becoming increasingly immoderate with the rise of secular cookbooks and urban gastronomy; Hecquet was especially concerned to intervene in the debate over physicians' traditional and increasingly exercised authority to issue exemptions from Lenten fasting. A proper Catholic diet, Hecquet argued, was lean, vegetarian, and bland—not only insofar as it promoted a properly abstinent lifestyle, but because it was more nutritious than a diet of rich, fatty foods. A lean vegetarian diet was the more nutritious, furthermore, because it best approximated our prelapsarian diet in Eden, and following the diet of uncorrupted humanity brought us closer to the state of physical and spiritual health before the Fall.

Hecquet's work, including this *Treatise on the Lenten Disputations* (1709) and his later *Theological Medicine* (1733), reveals several ways in which 18th-century French dietary debates were sites of theological and scientific conflict over the meanings of, and authority over, life and health. This paper traces the debates around two related questions in 18th century French dietetics: the meaning of *digestion* (the transformation of food into nutrition) and the meaning of *nutrition.* The answers to both questions invoked theological questions of Eucharistic consumption (namely, how the body and blood of Christ was digested in the communicant's body and transformed it) and the spiritual nature of health, as well as debates in natural philosophy over chemical and mechanical models of the living body. I will argue that dietary debates both made explicit and developed theological and philosophical commitments to defining and promoting a healthy life in pre-revolutionary France, and show the imbrication of theological, political, and philosophical investments in particular understandings of individual and social well-being.

Session 8 - Saturday May 19th, 900-1030

8A: Mixed Maths

1. Solving Ptolemaic Problems: A Continued Interest in Early Modern Islamicate Astronomy
Younes Mahdavi (University of Oklahoma)

Problems of Ptolemaic astronomy were distinguished and treated by Islamicate astronomers as early as the eleventh century. The first attempt was made by Avicenna's (d. 1037) disciple ʿAbū ʿUbayd al-Juzjānī (d. 1070), but a full-fledged criticism to the whole Ptolemaic system first appeared in Ibn al-Haytham's (d.1040) *Doubts on Ptolemy*. However, Ibn al-Haytham did not provide solutions to the problems. The tradition of criticizing Ptolemaic astronomy developed and continued well into the thirteenth century when a group of scholars, associated with the Ilkhānid sponsored observatory of Marāgha in northwestern Persia, proposed new geometrical models for planetary movements and succeeded to solve some of the problems. Further attempts were made by independent scholars like the Damascene timekeeper Ibn al-Shāṭir (d. 1375) who developed planetary models upon previous models of Marāgha scholars. The latest Islamicate scholar who is known to have provided solutions to the remaining problems was the early Safavid astronomer Shams al-Dīn al-Khafrī (d. after 1525). In this presentation, I want to show that ideas critical of Ptolemaic astronomy and solutions to its problems, as well as comments on previous solutions, were a continuing interest among the Islamicate astronomers of the late sixteenth and the seventeenth century. Moreover, as I will show, by this time, the difficulties of Ptolemaic astronomy had been recapitulated in a standard set of problem-solutions. It is also noticeable that this standard set of problem-solutions became an integral part of commentaries on elementary works of astronomy from this period.

2. The Practice of Theory: The material intellectual operations underpinning the geometrical divinationes of Vincenzio Viviani (1622—1703)
Simon Dumas Primbault (European University Institute, Florence)

Having proclaimed himself Galileo's last disciple, Vincenzio Viviani fashioned himself a persona as the heir of the ancient Euclidean mathematic tradition. Extolling the supposed purity of Euclid's geometry, he sought to recover the lost knowledge of the Ancients. His so-called *divinationes* attempted to retrieve the content of lost works of antique geometry by logically expanding on extant books. This *divinatio* practice was accompanied by rhetorical claims of transparent and straightforward rediscovery.

However, attention to the scholar's material practice sheds light on the multiple and diverse intellectual operations underpinning his rhetoric of the purity of the Ancients' lost knowledge and its rediscovery. The methods Viviani mobilises in his *divinatio* (1658) of Apollonius of Perga's *Conics* (2nd century BC) prove to be a mixed set of practices, drawing together philological know-how in the identification of extant manuscripts, "archival science" in the compilation and classification of books and notes, mathematical expertise in the logical extension of acquired knowledge, and editorial awareness in the mimicking of ancient treatises in print. Such hybrid practices testify to contextual re-construction rather than pure divination, and end up serving the purposes of a mixed science, as the supposed purity of Apollonius' recovered knowledge was of great use for physico-mathematics.

This paper will delve into Viviani's drafts and working notes to explore the multifarious embodied practices of theory behind the baroque *sprezzatura* of a Florentine courtier.

3. "He studies Mathematics, because he heard it can be of use there": The motivations behind Jesuit petitions for Chinese missionary assignments (17th-18th centuries)
Elisa Frei (Institute for Advanced Jesuit Studies, Boston College)

The Society of Jesus—established by Ignatius of Loyola and approved by Paul III in 1540—was initially intended to engage in priestly evangelization and apostolic ministry. This apostolic work benefited from close relations with the Spanish and Portuguese empire, providing the crowns with capable and devoted missionaries and allowing Jesuits to travel to almost any corner of the world. The Eastern Indies were one of the Jesuits' most distant and exotic destinations.

The motives behind these missionary vocations are found in the *Litterae indipetae*, the voluntary petitions European Jesuits wrote to their leadership in Rome requesting assignments abroad. Members from the Italian provinces alone submitted more than 1,500 such letters between the end of the seventeenth and the beginning of the eighteenth centuries.

Competition for missionary assignments, especially in the Indies, was fierce, and the candidates employed multiple strategies in their *indipetae*. As it has been extensively studied, Jesuits at China's Qing court were desired for their work as astronomers, scientists, cartographers, and translators. It was in stressing their mathematical proficiency that some *indipeti* writers most sought to distance themselves from their rival applicants and to receive their superior's permission to be sent abroad.
This paper aims to follow the careers of two Italian Jesuits asking for a Chinese assignment, who underlined their mathematical skills. We will see how the Roman Ludovico Gonzaga and the Sicilian Antonino Porzio had a similar approach but different results, because Mathematics was only *one* of the influential factors of a candidacy for the Eastern Indies.

8B: Mad Max 2

There is something missing in our thinking. A whole body of concepts and ideas fundamental to early modern scholars and natural philosophers is left out of mainstream modern historiography. Those that do study these concepts often do so through a lens distorted by both Reformation and Enlightenment. How come we have lost sight of what were common tropes for the likes of Francis Bacon, Henry More, and Isaac Newton? Moreover, how come our reconstruction of early modern knowledge-making has failed to recognize the importance of these concepts? In this unorthodox duo-presentation, we reintroduce ideas once considered orthodox and demonstrate how these were transmitted through the ages. Eventually, we aim to open up the debate on the great instauration of early modern historiography.

8C: Science and Religion

1. The Virgin and the Globe: the cosmological work of Sor María de Agreda
Kathleen Crowther (University of Oklahoma)

This paper focuses on the scientific work of the Spanish nun María de Ágreda (1602-65). Sor María's book the *Mystical City of God*, on the life of the Virgin Mary, was widely read and reprinted several times in different languages. She was a spiritual and political advisor to King Philip IV. And she was famous for her mystical "bilocations," visions in which she was transported by angels to New Spain in order to convert the Jumano Indians to Christianity. While Sor María has long been recognized as one of the most powerful and influential people

in seventeenth-century Spain, her scientific writing has received little attention. Sor María wrote a "Treatise on the roundness of the earth and of its inhabitants," in which she described the structure of the cosmos and the different regions of the earth. This treatise, like many Spanish cosmographical works of the same period, remains in manuscript. It reflects the rich vernacular scientific culture of early modern Spain, and demonstrates that women as well as men were active participants in this culture. Sor María's description of the cosmos was informed by her reading of medieval scientific texts like Sacrobosco's *Sphere*, by the accounts of European travelers of distant lands and peoples, and by her own mystical visions of the heavens and the earth. The treatise is an amalgam of religious piety, colonial ambition and scientific discovery, and as such offers a unique window into the changing epistemological claims about natural knowledge in early modern Spain.

2. Theorizing Knowledge Through Literary Forms: Ways of Knowing in António Vieira and Calderón de La Barca
Leonardo Grao Velloso Damato Oliveira (Stanford University)

In this paper, I compare two works from the seventeenth century Iberian tradition: a sermon by António Vieira and an *auto sacramental* by Calderón de la Barca. I focus on the twofold notion of interpretation that are at work in Vieira's *Sermão da Sexagésima* and Calderón's *El Gran Teatro del Mundo*. Reading both works through this twofold notion of *interpretar*, at once to interpret and to perform, shows the tension between constructed and embodied knowledge that is at the center of Vieira's and Calderón's literary works, as well as at the heart of Iberian seventeenth-century culture. On the one hand, there is a significant presence of Christian exegetical tradition, which emphasizes interpretation as an act of meaning attribution to things in the world through the mediation of biblical knowledge. On the other hand, several excerpts in both texts emphasize a concern with levels of immediacy implicated in the ways human beings interact with things in the world. In these more experiential interactions, acts of meaning attribution function both as means to establish the knowledge necessary for humans to play their designated roles within society and as a set of boundaries that prevents the irruption of unwanted experiential knowledge. I argue that such tension translates into both literary forms discussed in this paper—the sermon and the *auto sacramental*—as they combine both the knowledge built through rhetoric and the knowledge that can only be experienced through one's own body, especially due to the self-reflexive nature of these two pieces.

3. Observatio in the thought and practice of Martinus Szent-Ivany SJ (1633-1705)
Svorad Zavarský (Slovak Academy of Sciences)

In his *De scientiis in genere*, the Central European Jesuit polymath Martinus Szent-Ivany proposed his own version of the universal method of knowledge acquisition which, consisting of six parts or "sources", took its point of departure from the practice of observation. In this, his immediate model seems to have been his fellow Jesuit Sebastián Izquierdo who too considered observation to be the first "instrument of knowing" (*Pharus scientiarum*, Disp. 24). Szent-Ivany's works, non-theological and theological alike, provide us with ample material for exploring his use of the intellectual tool of observation: his *Curiosiora et selectiora variarum scientiarum miscellanea* (1689-1709) contain twenty "hundreds" of observations (*centuriae observationum*), of which those on plants are, interestingly, almost wholly excerpted from Francis Bacon's *Sylva sylvarum*. Besides that, *observationes* form part of many of his dissertations included in the *Curiosiora miscellanea*, of which one, entitled *Rectus modus interpretandi Scripturam Sacram* (1696), is an assemblage of more than five

hundred observations simply following one another. A case apart is Szent-Ivany's use of observation in his polemical theological treatises where it serves the purpose of defining the adversary and his strategies. Thus we can explore the character of Szent-Ivany's observation in a broad spectrum of texts and from different perspectives. Particularly intriguing will be to consider his intrumentalization of *observatio* in relation to the other "sources" of his method—axioms, analysis, and analogy—with which it often overlaps. Aiming to make a contribution to the understanding of the early modern notion of *observatio*, this paper will examine Szent-Ivany's practice in the light of Izquierdo's elaborate theory.

Session 9 - Saturday May 19th, 1100-1230

9A: The Inquisition and the Censorship of Science in Early Modern Europe

The role played the Congregations of the Holy Office and of the Index in the censorship of scientific books and authors has been a topic of special interest for historians of early modern science. Boosted by the opening of the Archive of the Congregation for the Doctrine of the Faith in 1997, recent scholarship has focused on a series of related issues, namely the promulgation and enforcement of the Indexes of Prohibited Books, the granting of licenses for reading condemned books, and the trials of renowned men of science. In this context, the works by Paul F. Grendler, José Pardo Tomás, Ugo Baldini, Leen Spruit and Owen Gingerich have laid the groundwork for all future studies regarding the complex relations between the European Inquisitions and early modern science. Although most accounts classically regarded the involvement of the Spanish and the Roman Inquisitions in the censorship of scientific books and authors, some attention is also being paid to the role played by the Portuguese Inquisition since the past few years. Nevertheless, few comparative approaches have been tried. By integrating three different case studies, this panel plans to shed some light into the similarities and discrepancies in the censorship of different scientific subjects by the Inquisition in early modern Europe, namely the condemnation of natural history, natural philosophy and medicine in Portugal, and the censorship of astrology and Newtonianism in the Italian Peninsula.

1. Putting the Indexes into Practice: A Bibliographical Analysis of Prohibited Books
Francisco Malta Romeiras (Universidade de Lisboa)

The most elemental issues regarding the censorship of scientific books in Portugal have been overlooked in the past decades. By using an innovative bibliographical approach in the analysis of ca. 200 prohibited books of medicine, natural philosophy and natural history in the collections of the Portuguese National Library, this paper will shed some light into the differences between what was written in the Indexes of Forbidden Books and what was effectively put in to practice. This paper will also provide an original typology of censures that can be replicated in the study of other collections of expurgated books.

2. Ambiguities of Censorship in Post-Tridentine Italy: The Case of Astrology
Neil Tarrant (University of York)

This paper examines how the Roman Inquisition approached the censorship of astrological texts in the second half of the sixteenth century. Historians have previously argued that by the end of Council of Trent the Catholic Church had established Thomas

Aquinas's ideas on the legitimate boundaries on astrology as the basis for Catholic orthodoxy. Using the examination of Girolamo Cardano's De rerum varietate in 1570 as a case study, I consider whether censors possessed a clear set of criteria for determining the orthodoxy of specific ideas and practices. I suggest that the legitimate limits of astral influence remained both ambiguous and contested.

3. Rome and Information Control after Galileo: Gravitation and Studies on the Nature of Light
Daniele Macuglia (Art Institute of Chicago)

Presenting results from my dissertation work, in my talk I will trace the way in which Catholic mathematicians and natural philosophers operating in eighteenth-century Rome responded to Isaac Newton's (1642–1727) ideas on gravitation and on the nature of light. I will focus on precise instances of the Church's intention to limit, control or modify the dissemination of Newtonianism in the Catholic world, and on the way Catholic scholars contributed to initiating, in the Italian peninsula, a well-defined strand of Enlightenment thought.

9B: How Europe knew War

This panel takes an interdisciplinary approach to the ways war was both the object and instigator of forms of knowledge in early modern Europe. Our panel spans the years from 1500-1800, taking its case studies from intersections of Shakespeare with the early globalist theology of the School of Salamanca; from military modes of rhetoric adopted in seventeenth-century astronomy; and from firsthand accounts of the late eighteenthcentury French invasion of the Italian peninsula.

War can be understood as the human behavior most directly disruptive to life and thus to the preservation and development of knowledge practices. But it is not merely cliché or cheerleading the "military-industrial complex" to observe that war both generates its own forms of knowing and intensifies the demands for others. These papers complicate the usual narrative of war as progenitor of innovative battlefield technology and decimator of humanistic endeavor. Whether analyzing the possibilities and limits of sixteenth-century Spanish concepts of domestic space in the face of colonial violence, pursuing Kepler's pacifist "war astronomy" in confessionally-torn Europe, or reading art criticism in the face of Napoleon's advances, the papers uncover the fraught ambiguity of war's place in the European episteme.

Can we ethically ignore the etiology of war knowledge? What happens when we collapse metaphor and ground ourselves in war's destruction? Does it make sense to decenter battle technology when re-thinking the history of war and knowledge? We invite an audience to help us debate these questions, and add further ones.

1. "Even during War with the Turks": Shakespeare, the School of Salamanca, and the Sanctity of the Home
Colby Gordon (Bryn Mawr College)
When is a house a home, and when is it a legitimate military target? This paper addresses the legal precarity of domestic space in Haider, a 2014 adaptation of Hamlet set in occupied Kashmir, to consider the early modern roots of the principle of noncombatant

immunity, a precept crafted by the Catholic scholars of the School of Salamanca attempting to regulate and humanize the Spanish colonization of the New World. Attending to the colonial and confessional context that produced this body of international law, I consider the possibilities and limits of noncombatant immunity to protect precarious populations and the shelters designed to shield them from war.

2. Fighting for Peace, or Kepler's War with Mars
Raz Chen-Morris (The Hebrew University of Jerusalem)
Dedicating his celebrated Astronomia Nova to Rudolph II, Kepler describes his intellectual struggle in calculating the path of Mars as a military campaign. This paper will initially posit Kepler's description in relation to his contemporaries' notion of how to manage a military campaign. This will provide a vantage point from which to assess Kepler's aspiration to transform his intellectual victory over Mars into a cornerstone of the efforts to bring peace to confessionally-divided Christendom, shedding further light on early modern fashioning of the scholar as a politically engaged persona.

3. "To the Vandals they are stone": German Art Criticism and the Napoleonic Looting of Italy
Alice Goff (University of Chicago)

With Napoleon's first conquests on the Italian peninsula in 1796, French officials undertook the systematic despoliation of art collections in the region. For German witnesses of these events, this "Kunstraub" provoked an urgent confrontation with the limits of art's social and political power as it had been constructed in the late eighteenth century. Relying on eyewitness accounts of the French invasions by German artists in Italy, this paper tracks the emergence of a conflict in German art criticism over the kinds of knowledge that can be drawn from an art object in the face of its violent displacement.

9C: Medicine

1. "'Examined, Skilled, and Experienced:' Learned and Lay Equine Healers in Sixteenth-Century Castile
Janice Gunther Martin (University of Notre Dame)

For sixteenth-century Castilians, the health of horses, mules, and donkeys meant the difference between prosperity and penury, even life and death. Licensed equine doctors (albéitares) treated ailing equines, along with people from other walks of life. Despite the dependence of early modern societies on equines for everything from agriculture to warfare, the medical treatment of equines in Castile remains unexamined in Anglophone scholarship. This paper explores the status and rhetoric that distinguished equine doctors from others who cared for horses, mules, and donkeys. It does so by examining lawsuit records pertaining to medical malpractice, animal maltreatment, and disputed equine sales. These sources allow comparisons of the medical perspectives expressed in the testimony of equine doctors and the other parties and witnesses. Not only equine doctors, but also people in other trades cited their own authoritative experience and expertise healing equines to support their medical testimony. At the same time, status as a practitioner of equine medicine gave equine doctors privileged standing in the legal context. They also employed more technical vocabulary and theoretical explanations in their testimony compared to other witnesses, partially echoing contemporary equine medical treatises. This study contributes to understanding the meaning

of experience and expertise in early modern Europe, the overlap and divergences between lay and learned medical knowledge and practice, and the development of professional veterinary medicine.

2. The Regurgitated Knife and the Boundaries of Nature in Early Modern Medicine
Laura Sumrall (University of Sydney)

Concerning demonic illness, Dutch-born physician Johann Weyer (1515-1588) writes that the physician's work ends and the priest's work begins when the "evil" of an illness "surpasses natural limits." With this limit as imprecise as it was absolute, the distinction between the domain of the physician and that of the priest opened itself to considerable debate. At the heart of these debates over the limitations of contemporary medicine and the uncertain disciplinary boundary between secular and ecclesiastical healing, lay the regurgitated knife – a distinct sign of demonic illness resistant to naturalized explanation. With both theologians and physicians aiming to account for demonic activity in nature, the regurgitated knife provided a sparring ground for theories of demonic influence over the human body and, by extension, the natural world. In attempting to assert their authority over potentially demonic illness, physicians had to make claims about what constituted natural action and operations, and whether or not the whole of nature was subject to human knowledge and influence – or if indeed there were secrets of nature that only demons could know and exploit to the detriment of human beings. In this paper, I will use the symptom of the regurgitated knife to explore how diverging theories of demonic and natural action informed medicine in the Early Modern period, when the physician's claims to medical authority necessitated engagement in demonological debates over the boundaries of natural operations.

3. *Theoremata* ex *historia*: Observational and Conceptual dynamics shaping Harvey's account of epigenesis
Peter Distelzweig (University of St. Thomas)

Harvey's *Exercitationes de Generatione Animalium* is rich with complex, overlapping discussions of generation prominently marked by a wide range of robust concepts, derived from Aristotelian and Galenic sources, including soul, faculty, vital operation, actuality and potentiality, plastic powers, concoction, the four elements, spirits, and so on. Not without reason, this work can be called speculative, and contrasted with *De motu cordis*. But care should be taken in making such claims and comparisons.

In its 25th chapter, Harvey concludes his primarily descriptive *historia* of the generation of the egg and the formation of the chick in the egg and, in response to an imagined complaint at it excessive length, states that he will now exhibit its fruit and relate *theoremata* that have been collected from this historia. These *theoremata* are just those conceptually rich discussions earning the work its speculative reputation. Thus, Harvey presents these discussions, these *theoremata*, as collected from his historia. And indeed, throughout, Harvey regularly points back to and invokes his *historia* as he articulates and evaluates various theoretical claims about generation made in terms of souls, faculties, etc. But just how does Harvey collect *theoremata* from *historia*? It is this question I wish to answer: my goal in is to characterize the interplay between observational considerations and conceptual resources in Harvey's efforts to advance theoretical understanding of the generation of animals.