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SYSTEMATIZATION, THEOLOGY, AND THE BAROQUE *WUNDERKAMMERN*: SEEING NATURE AFTER LINNAEUS

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Questions of classification, order, and cladistics – and of attempts to unify them all – are ubiquitous in our culture. Indeed, no small part of our Enlightenment heritage has been this urge to systematize, to follow the Encyclopédists and bibliographers in an attempt to mark down in the pages of books a pathway to all knowledge. We have likewise been taught by the Enlightenment to call these systems 'rational,' to conceptualize their origins as progressive steps along a predestined road of ever-greater illumination. But of course, the history of the world is one of contours and conjectures, of complexity, ignorance, genius, and hard work. It is not many steps removed from Diderot to remember God's deference before Adam: 'And the LORD God formed out of the earth all the wild beasts and all the birds of the sky, and brought them to the man to see what he would call them; and whatever the man called each living creature, that would be its name.' (Genesis 2.19) From Adam we learn to ignore Diderot: the schemas that arose to order knowledge in the centuries before the Enlightenment must, in their own context, be christened 'rational' as well. Certainly, when one looks hard enough, those pre-Enlightenment systems follow logically from the assumptions and expectations of their host societies, illumining in their peculiarity a conception of reality markedly different from our own.

Calling pre-Enlightenment ordering systems 'rational' is the intellectual starting point of this essay. Yes, it can quite easily be argued that labeling as 'rational' *any orderly set of ideas that is generated organically in its own unique context* only renders the word useless: that which means everything means nothing. But I think such arguments originate primarily with people already disinclined toward the word 'rational,' and I am not yet such a person. In the following pages, 'rational' functions merely like a plastic meme, a way for us contemporaries (so long acquainted with this word) to recognize presuppositions similar to our own in historical personages and actions. Such a process prepares a way for reading historical works wherein we balance multiple definitions of the rational, with the result being (I hope) a renewed empathy – even pathos – toward former conceptions of natural systems and nature's complexity.

My central postulate, then, is that a society's broader *theological* relationship to nature is encapsulated in the ordering structures it devises for natural historical study. In Baroque Europe, naturalists and natural historians organized and displayed their collections in *Wunderkammern* (curiosity-cabinets), a unique cultural artifact that physically expressed their society's theological relationship to nature. (Though cognizant that 'Baroque' is primarily an art historical term, I use it here as representative of broader trends in seventeenth-century European society.) But ordering schemas articulated by the *Wunderkammern* changed dramatically (and in a way that left the *kammern* mostly obscured) with the publication of Carl Linnaeus's *Systema Naturae* in 1735. Linnaeus's book introduced a system of classification for plants and

animals still in use today, reordering the natural world in a way that followed post-Reformation beliefs about textual truth and historical progress.

The following pages attempt to enter religion-science scholarship through these two epistemic case studies on order in nature – using *systems* and *seeing*, not Divinity (God), as a way of writing their joint history. My interest is in asking if we can understand something about religion and science if we focus on how past societies have looked at order in nature, and if we ask ourselves about what we see and what we don't see due to their theological influence. The goal of this essay is to analyze how theology itself affects *observation* and *order* over time, and thereby, in this post-Linnaean world, to recapture some of the *Wunderkammern*'s excitement at a strange and foreign nature.

I also argue below that by defining the 'rational' in a culturally malleable way we gain two valuable assets for religion-science study in a post-Linnaean age: 1) a common vocabulary with which to describe the past, its efforts at knowledge, and its ultimately ingenious insights; and 2) a linguistic armor for our venture against Linnaean vaults at epistemological superiority. The task I have set forward here is to use the historical evidence of past ordering systems as a cipher by which to expose our own generation's imaginative limitations.

The following essay is divided into three parts. Part one offers an introduction to the phenomenon of the *Wunderkammern* and its place in Baroque intellectual life, both theological and cultural. As a small case study, it looks specifically at two aspects of the printed catalogue of Albertus Seba's *Cabinet of Natural Curiosities*[1] [*Locupletissimi rerum naturalium thesauri 1734–1765*, hereafter called *Thesaurus*], linking this pictorial representation to broader themes of Baroque theology. Part two addresses the epistemological revolution involved in the Linnaean system of classification and its impact on *seeing* in natural history, emphasizing a key moment when natural history was affected by a transformed theology. Part three asks: what can we learn about our own cognitive limitations (as we construct our idea of nature) by reading a comparison of these two ordering systems?

A CABINET FULL OF SYSTEMS

A prince; a wealthy merchant; a Churchman; an apothecary; a ducal lord; a scholar; a wealthy nobleman: these are some of the people of whose *Wunderkammern* history has preserved record.[2] Between about CE 1500 and 1800, rich or well-connected men in central, southern, and western Europe engaged in a practice of collection and display theretofore unseen in history. Alistair McAlpine and Cathy Giangrande note an important shift between late Medieval and Renaissance collecting: whereas formerly the Roman Church was the chief collector of rare and precious objects, by the Renaissance individuals rose to be the primary amassers.[3] Building or converting rooms into display galleries in their private homes and shops, these Europeans literally brought the world into their living rooms. Yet never were *Wunderkammern* assembly-line creations, shaped by some prevailing fashion or need to belong. Each was the unique reflection of its creator, a composite assemblage of bravado, lust, longing, passion, theology, enjoyment, fear, love, speculation, fun, and so much more. They were collections of symbols, of forces; a tactile exchange with the world.

Wunderkammern were also manifestations of a theological view of nature somewhere equidistant from the medieval bestiary and the nineteenth-century botanical garden. Isabel Yaya and Henning Graf Reventlow, among many others, note that well into the seventeenth century the Bible functioned as the originating reference point for zoological exploration and identification, emphasizing especially the unique and exotic.[4] Part of the Bible's purpose was in identifying

how natural objects related in usefulness to humanity, 'Man' being the obvious center-point of creation. Yet the period of the Baroque was not tied so simply to the belief that all nature was created for the use of humans. There was too much new, too much mysterious, for everything coming off the docks of Amsterdam and Venice to be swept so easily into various categories of usefulness. And neither were Baroque thinkers so crude as to group everything new en-mass here or there. Rather, the Baroque was a period when nature first begins to partly possess its own intrinsic significance, to supply its own relevance that could then be incorporated into human theology.

Louis Dupré argues in *Passage to Modernity* that the Baroque was a philosophical moment caught between two more famous conceptions of *Being* and *form* – Medieval and post-Enlightenment modernity. Against this obscurity, Dupré suggests that the Baroque possessed 'the promise of a new cultural integration' arising out of a combination of early Renaissance humanistic interest in *interaction* and *becoming*, and a later, modern conception of the subject as 'sole source of meaning and value.'[5] This account finds its corollary in an article by Jan C. Westerhoff, who describes the Baroque worldview as one of 'pansemioticism,' a term he borrows from Umberto Eco on Kabbalah, and meaning 'the idea that every object, whether natural or artificial signifies one or several other objects (which can in turn be abstract qualities, virtues or vices, or particular states of affairs or events).'[6] Though not as theologically overt as Dupré, Westerhoff depicts the Baroque as an era of signs and symbols, where every one thing is an allegory for something else, often for moral or intellectual reasons. Like Dupré, Westerhoff writes of how Baroque objects impact notions of *Being*, and of how that relationship *creates* meaning in the world through symbolic form. Noticeably, pansemioticism is not a theology of usefulness but rather of one predicated on an intrinsic meaningfulness by natural objects for human existence. The originator of meaning is God, but each symbolic connection is discovered and characterized by people alone.

Importantly, Revelation is not a central component for this human-nature interaction. Instead, individual human minds discern already extant connections and present them to the world. Westerhoff writes, 'The construction of a particular [sign] is still the product of the *ingenium* of its author, and can thus be more or less sophisticated. The meaning depicted in the [sign], however, is objective. It is no internal relationship of the object to its intended signification in the mind of the author, but an external relationship, between the object and the thing it symbolizes.'[7] Westerhoff's use of 'objective' refers to *meaningful external to* or *impactful on* the world, not what is mathematically provable. 'Objective' implies a cultural belief that connections exist in the world, wherein it is the responsibility of scholars to discover them. As will be seen much farther down, Linnaeus's system explicitly *excludes* the scholar from participation in meaning making outside a narrow band of 'objective' – i.e., calculable – observation.

The Baroque urge to display arose from the complicated, fluid, but ultimately axial relationship between object, meaning, and author (scholar). 'At the center of it stands the person, confident in the ability to give form and structure to a nascent world. But – *and here lies its religious significance* – that center remains vertically linked to a transcendent source from which, via a descending scale of mediating bodies, the human creator draws his power.'[8] The individual scholar, composing connections in a social context that expects them, displayed his findings to the world as one now might do in an essay – suggesting examples and points of reference, all in an attempt to present one's discoveries as an authentic example of meaning-making. For both Westerhoff and Dupré, the key to the Baroque was the balance between fluid symbols and transcendent meaning, between authorial (scholarly) creativity and ultimate divine purpose. In such a world, the *Wunderkammern* itself becomes a place of theological originality,

a site at which to reveal a pre-existing divine interaction, and a node out of which will arise a new type of divine *becoming*.

Despite the West's long heritage of various systems and orders, for us today *Wunderkammern* survive merely as a cultural remembrance, a part of European material history all but eradicated by the zeal of eighteenth and nineteenth century reforms. (For a sneering remark to this effect Westerhoff quotes Diderot: The *Wunderkammer* urge 'is often nothing but a confused mass of useless knowledge which one lets out ready-witted and out of place to put on a show.'[9]) They no longer manifest contemporary natural history's interaction with nature, nor express its view toward the appropriate ordering system to describe it. Yet these *kammern* are exemplary *not* of some more archaic consciousness, groping its way toward a rational systematic. Rather, they must be studied as in themselves 'rational' manifestations of adult minds, as sharply conceptualized and fascinating responses to a particular view of nature and a unique set of cultural circumstances. The history of the *Wunderkammer* is one of the few intimate and material records available for direct insight about an alternate consciousness toward nature. Working backward from depictions of their display we can partially reconstruct the Baroque mindset regarding nature, and from there begin to reveal our own presuppositions and gaps, moving (as I attempt at the end of the essay) to a place of expanded vision for natural history.

Before examining questions of order and theology in Albertus Seba's *kammer* directly, let us briefly turn to the issue of organization in Baroque-era intellectual life more generally. Lack of a unified systematic extended to all intellectual settings, including the university library, which often abounded in spectacular overflow and commotion. As William Clark describes it, various libraries' holdings of scholarly and physical wealth – made widely available by the printing press and international exploration – remained enmeshed in a web of connections and affinities that has today almost entirely disappeared and about whose memory there is only a whisper (bookplates, donation placards, building and scholarship names, and endowed chairs are a few of quiet and mostly unnoticed strands remaining from this earlier era). Clark writes,

> Inscribed in the sphere of the *Wunderkammer*, a collection of collections, bequeathed or bought, the Baroque academic library embodied juridical estates in competition with academic disciplines. As a collection of estates or bequests, the library resembled an archive or mausoleum, a juridical plot of private personae, an aggregate of idiosyncratic interests accumulated by extraordinary events. A library of libraries, its catalogue was a collection of books, reflecting the materiality, history, and monstrosity of the collection . . . [I]n the Baroque catalogue, as shelf list, collectors contested with disciplines for supremacy. Authors had less importance than collectors and disciplines.[10]

Notice the importance of private collections, which itself traces a storied history from the early Renaissance. At a time when few universities or private institutions existed anywhere in Europe to facilitate research, manuscripts and reference books were made available to scholars almost exclusively through the benign goodwill of wealthy patrons. Indeed, the supremacy of academic disciplines does not arise until a set of reforms instituted almost a century after the Baroque, in the German principalities of the Holy Roman Empire. Scholars, therefore, were often working and writing in ways that do not easily translate into current intellectual paradigms, instead crisscrossing contemporary academic fiefdoms with startling alacrity.

Such epistemic peregrinations are a reflection both of intellectual needs and a different cultural ethos. *Needs*, because these European Baroque societies were suddenly confronted with a natural world vastly different than the one experienced by their classical and scholastic forbearers. Received category no longer corroborated with present observation. Natural historians were in search of new philosophical models, specifically fashioned to produce sense (and

meaning) out of tremendous diversity. *Cultural ethos*, because unlike scholarship today, Baroque society was not the inheritor of a systematizing tradition.[11] Instead, Baroque natural historians engaged with enthusiasm the philosophical and material transformations taking place in their societies, propelling a vision of the world as much as receiving one. But I again reiterate: the 'muddle' of the *kammern* does not represent some in-between stage of scholarship (e.g. Medieval order – Baroque jumble – Enlightenment order), some haphazard gathering together like that of an excited child in a new toy shop. Baroque *kammern* are socially and epistemologically grounded, reflecting in physical form a *difference in kind* between their interaction with nature and our own.

This *difference in kind* is why I insist on applying the word 'rational' to Baroque *kammern* (something like how Westerhoff redefined 'objective' above). By doing so, I am attempting to address a problematic issue latent in contemporary discussions of history: 'rational' has come, almost unavoidably, to be associated with its Kantian definition (reasoning based on some grasp of *a priori* truths, detached and impartial from historic knowledge), remaining thereby blind to the cohesion and structure of other analytical systems. As a result, epistemologies not seeking *a priori* ends are either not seen at all, or (as a contemporary corrective) simply excluded from deploying the word 'rational' to describe their workings.

The *difference-in-kind* model is an attempt to recover both the word 'rational' and the vision of other systems. Two reasons for wanting to do so suggest themselves. 1) 'Rational' is the language of the Enlightenment, a language inherited and deployed by contemporary scholarship, and a language that (almost regardless of ultimate intent) lends or retracts intellectual credence. Adopting Enlightenment language, though with transformed definitions, is one step toward broadening habitual judgments about foreign ordering systems. 2) Recognition that system building was both present before the Enlightenment and that it is an agent of its own diversity. S*ystem building*, being likewise an Enlightenment construction, is thus to be expanded in scope to pre-Enlightenment epistemic processes, proving malleable in a way Kant and Hegel rejected. Indeed, as a *force* for multiplicity, writing 'rational Baroque systems' demands a cognitive juggle for contemporaries, meant to question our assumptions about the primacy of our vision of nature. Both of these reasons presume that Enlightenment ideas are not *in themselves* (as they claim to be) compendiums or perfections of all historical knowledge. Enlightenment natural history is broadly transformational and deeply insightful; it is not absolutely complete. This is a theme I return to in each of the next two sections of the essay.

From the countless *kammern* likely in existence during the Baroque era, few are as comprehensively preserved as Albertus Seba's (1665–1736). Seba's book is tremendously useful to this essay, for, in his introduction, he speaks about his involvement with the organization and production of each folio plate. That is, the representational choice for each specimen on each page is ultimately creditable to Seba himself. Having such a direct hand accountable for the structure of all four volumes lends credibility to the claim that these books (though half were printed after his death) are representative of his conceptions toward nature and the natural history work he was doing.

A successful apothecary in Amsterdam, Seba was a businessman, utilizing the Dutch ports to conduct an extensive overseas trade in medications and natural history specimens. Culturally, Seba availed himself of all that Amsterdam could offer; the portrait printed in the cover of the *Thesaurus* depicts him in the then-customary attire of a European scholar. And there was much to enjoy in Seba's Amsterdam; his was the golden age of the Low Countries. Freed from Spanish rule the Netherlands became a central hub of the Republic of Letters, a meeting place for European scholars and political exiles. Dutch overseas trade routes spanned much of the known world, carrying aboard not only raw materials but exotic animals and plants. A collector

with the income, voracity, and desire of Seba had no difficulty securing the broadest range of natural specimens available.[12]

Seba commissioned the *Thesaurus* (a catalogue of his second collection; he sold his first to Czar Peter the Great in 1717) in 1731, a venture that took three decades and four folio volumes to complete (vol. I-1734, vol. II-1735, vol. III-1758, vol. IV-1765). Noting the criticism by some fellow naturalists of the first two volumes Irmgard Müsch writes, 'Seba was a collector in the tradition of descriptive natural history, which was far removed from analytic approaches.'[13] Chiefly, the critics objected to the organization of the specimens on each folio page, noting that they 'were not arranged according to the latest classificatory system.'[14] Such criticism is crucially important, marking a turning point in European natural history, an end to the Baroque approach to nature as a grand assemblage and witness to an early moment of the Enlightenment and its obsession with systematizing. Indeed, Seba's first two volumes were published near-simultaneously with the first edition of Linnaeus's *Systema Naturae*. As I speak to in the next section, Linnaeus's system seeks a very different approach to nature than Seba's *Thesaurus*. Gone are the signs and symbols, the analogies and assemblages; in their place are orderly names and anatomical resemblances.

As an example of late Baroque natural history the *Thesaurus* is unsurpassed. Two features consistent throughout the four volumes are the focus of this small case study: the idealization of individual specimens in each drawing and the arrangement of various species on the folio page. These two characteristics of the *Thesaurus* are, I argue, the artistic outcome of Baroque theology. A single page from a selected volume will exemplify each feature which I describe and relate to the above discussion.

The idealization of species in artistic representation is one of the many ways Baroque natural historians conveyed the value and truth of the signs they sought in nature. As an example, Tabula II of Volume IV is a full folio page of six adult butterfly species (and one wasp), their caterpillars, and their chrysalis's.[15] (Butterflies: bath white, green-veined white, specled [sic] wood, orange tip, rock grayling, large white; Ichneumon wasp. The wasp is represented by a single adult, likely female.) The page is divided symmetrically, the centerline defined by six rungs of horizontal caterpillars and vertical chrysalis's (except the bottom-most rung, under which the caterpillar is balanced by a parallel wasp and chrysalis). Each caterpillar is oriented head left, slightly arched in its front half, two hind-most grasping legs clearly visible. Down the left-hand column are the adult butterflies portrayed from their underside: wings nicely spread apart, six legs folded into neat V's, antennae straight out, proboscis extended and curled just at the tip. The right-hand column depicts the butterflies from the top: wings spread apart, antennae and proboscis extended (again with little end-roll), front two legs visible and reaching straight outward. The wings for each specimen in both side columns are full and without tatters. The coloring for all three columns is uniformly bright and distinct displaying no evidence of fading.

For anyone who has ever worked on mounting butterflies (Lepidoptera, in the Linnaean system), creating a page like this (say in a glass-topped drawer) is almost impossible. Not only do the scales that hold a wing's color rub off at the slightest touch (and fade with light and time) but finding a chrysalis in such good form is rare outside captive breeding programs. (There is no evidence that Seba reared butterflies in his apothecary's shop.) Likewise, caterpillars then as now are preserved in vials of alcohol, which fades their color and cause them to curl or warp.

Obviously, Baroque-era naturalists knew these facts as well as we do. Something else, then, is being enacted on the page. Lorraine Daston and Peter Galison write, 'the earliest naturalists had sworn by selection and perfection: select the most typical or even archetypal skeleton, plant, or other object under study, then perfect that exemplar so that the image can truly stand for the

class, can truly represent it.'[16] This type of artistry is an exercise in minute observation and careful decision-making, both acts requiring thorough training and a comprehensive epistemology. Each detail on the page matters for the manifestation of the symbol in the material world, and to the truth of the symbol for conveying something about the divine. But rarely is any one particular object in nature the ideal of itself; few are the times when life manifests its own perfection. Yet depicting even the most minor inconsistency impacts the efficacy of the symbol to act in the world. This tension of perfection and existence is integral to Baroque dynamism – to what Dupré above described as *Being* and *form*. The artist, with careful detail, must understand his cultural expectation and the use to which his image will be put. This folio page, one of many hundreds, is the embodiment of part of a particular theological program, one wherein nature acts as a symbol of meaning greater than its own mere presence.

The second feature of the *Thesaurus* is an example of the other half of that program: the interaction of the perfected symbols across space – here artistically rendered as the arrangement of multiple species per folio page. Turning to Volume I, Tabula XXXVIII, we see a double-folio spread of two mammal, three bird, and two plant species.[17] (Mammals: Brown four-eyed opossum, three-banded armadillo; birds: black-capped Lory; king bird of paradise; the third bird and two plant species are not identified.) At the center of the page are the two types of mammals. The female opossum sits perched on its tale, three babies scrambling into the pouch, right arm half extended, eyes and ears alert, whiskers sharp. Facing it, perhaps interacting (threatening, investigating?) is one of two armadillos, its body fully extended, mouth slightly agape, ears back, hardened skin tense but beautiful. The other armadillo is rolled into a tight protective ball just ahead of its fellow; the perspective does not allow for us to know if it is behind the scene by some distance or right there in it. Over the mammals flies the king bird of paradise, majestic and gorgeous with outstretched wings, feet back, beak forward, long tassels billowing a whole additional body-length behind. Beneath those tassels sits the unknown bird, perched on a branch of an unidentified plant. It is in classic pose, head high, wings folded back, ignoring or ignorant of the commotion happening on the rest of the page. The scene is completed by the black-capped Lori perched high in the right-hand corner, feet grasping a branch of the second nameless plant, head and eyes clearly watching the mammalian scene unfold below. Instead of resting against its sides the Lori's wings are held a little out, as if it were preparing to adjust its position, or steady itself, or fly. Its tale is extended far out for balance.

Unlike the butterfly spread, this page is tremendously dynamic, an early forerunner of Audubon, nothing near to an exact depiction of Seba's collection. (Again, there is no evidence that Seba kept a menagerie of living creatures.) Instead of drawing the stuffed birds and taxidermy mammals that visitors would have encountered in the collection, Seba had his artists fictitiously recreate living behaviors – even though it is likely none of his artists had ever been to the places where these animals originated, and probably the animals themselves came to Seba already dead.[18] Rainer Willmann and Jes Rust, two of the scientific contributors to the Taschen reprint, describe the animal assemblages this way: 'Strange as it may seem to modern scientists, aesthetic considerations play an important role throughout the work. But they also lend the *Thesaurus* its particular attractiveness, not least its compositional variety. For artistic reasons alone, relations that do not exist in nature were drawn between plants and animals.'[19] I have hoped to argue in this essay so far that Willmann and Rust's is an incorrect (or at least only partial) characterization of Seba's book. The theological backdrop *allowed* for these aesthetic choices, but not because the aesthetics was understood then as we see it now (*viz*., as *mere* beauty without function, as *mere* form without substance). Instead, the aesthetic expectations allowed – encourage even – the intermingling of signs and symbols, because nature was not

comprehended as something in need of standard systematization. In the Baroque, nature provided its own 'objective' (i.e., external) meaning. Together, through the collector's bewildering assortment of objects, nature and the scholar created symbols revealing myriad micro-ordering systems, followed signs discoverable only by means of the jumbled assemblage.

In the next section, the world of natural history transforms dramatically. With Linnaeus's taxonomy, natural history ceases to function based on an individual scholar's discovery of symbols. Instead, one system of naming and of species relationships takes dominance, reorienting the view of naturalists and of society's relationship to nature.

THE NEW LINNAEAN WORLD

Though often overlooked in broader discussions of the eighteenth century, in the very same years that the urge to systematize was gripping philosophy and religion it was fundamentally reorganizing natural history as well. It is this process of unified systematization that supplies much of the terminology, methods, and expectations of natural history as we have come to understand it. Clark's description of Baroque libraries quoted above makes plain why eighteenth century *philosophes* sought to bring a universal order to these giant storehouses of fascinating jumble. Enlightenment thinkers were loath to contemplate such a messy web of connections and forces, and they did everything in their power to eradicate them.[20] The reforms they implemented led to the end of the *Wunderkammern* altogether, going so far as to physically divide their treasures, distributing them to collections specifically associated with one or another of the new disciplines and sub-fields.[21] In physically dismantling the world that had come before, eighteenth century naturalists went a good way towards securing the dominance of their ideas in the centuries to follow.

The man rightly credited with bringing a new universal order to the Baroque hullabaloo of natural history is Carl Linnaeus (Carl von Linné in Swedish; Carolus Linnaeus in Latin [1707–1778]), a botanist who lived in the small university town of Uppsala in east-central Sweden, a short ride north of Stockholm. In 1735, Linnaeus published the first edition of his book *Systema Naturae*, expounding what is called a binomial system of taxonomic nomenclature. Linnaeus's insight was to give every animal and plant species (and every mineral, though that division has not survived to the present) a unique name composed of two Latin words. In his system, the first word refers to the species' *genus* (a larger grouping of commonly related species) and the second word refers to the species' distinguishing name itself (often a descriptive attribute). Each two-word phrase constitutes a unique unit. Out of this base, Linnaeus developed successive sets of ever-wider classifications, ultimately dividing the world into three kingdoms: Animal, Plant, and Mineral.

It would be wrong to claim unanimous acceptance of Linnaean taxonomy immediately upon publication. The eighteenth century was one of myriad competing systems and assuming in hindsight the success of the one developed by an obscure, pedantic naturalist living in Scandinavia suggests poor scholarship. But it is not my task here to discuss *why* Linnaeus above all others proved successful. Suffice to say, he was. By the tenth edition of *Systema Naturae* (1758–9, two volumes), much of intellectual Europe was talking about Linnaeus's system.[22] And by the early nineteenth century, it was *de rigueur* for young naturalists at Europe's universities to receive an education in Linnaean nomenclature and to assume it the only system worth being taught.[23] In the seventy-one years of Linnaeus's life, European natural history transformed from a field without obvious taxonomic cohesion or unified objectives to one exhibiting the full palate of 'modern' characteristics. Indeed, by 1800 natural history was recognizably the discipline that fifty-nine years later gave rise to *The Origin of Species*.

From the earliest moments of Linnaeus's international acceptance (after the first edition of *Systema Naturae*, 1735), we can begin to trace a slow but inexorable decline in alternate forms of natural history systematics. The late German-American biologist Ernst Mayr wrote, 'Linnaeus's work . . . resulted in such an emphasis on classifying and name-giving that it . . . led to a near obliteration of all other aspects of natural history.'[24] It is true, Mayr notes, that not every naturalist was excited about this turn in the discipline, and he gives name to their fears: decline in the study of living animals; decline in embryology and physiology; widespread confusion over the multiple naming and miss-naming of species. But despite the misgivings of many, Mayr's books (especially his most famous, *Systematics and the Origin of Species* [1942]) are, like all natural history today, directly heir to the Linnaean revolution, structured around species-level organization and predicated on nomenclatural clarity as the basis of future knowledge.

As great minds are always to be, Linnaeus existed in two worlds: the one in which he was educated and through which he encountered nature; and the one he created and helped proliferate. The bitter irony of Linnaeus's accomplishment is that the work one has to do now to have an insight like his, is precisely the work he helped usher into anachronism. Natural history, historically so heavily reliant on a certain type of magisterial observation, and so demanding of a capacity and willingness to see the most intricate details and organic connections, becomes altered in the Linnaean system to a cataloging of additional data points. The type of folio pages found in Seba's *Thesaurus* are made impossible in post-Linnaean natural history – at least in books with pretensions to the advancement of natural knowledge. Whereas Linnaeus consulted Seba's *Thesaurus* for his *Systema Naturae*,[25] post-Linnaean scholars have no use for Seba's masterpiece. The mysteries or insights it might still have to reveal lie dormant for natural historians.

In essence, much of post-Linnaean thinking about the ordering of nature fails to remember that *systematization* is itself something that embodies diversity. Michel Foucault interprets Linnaean systematics as one that ensnares nature in an entanglement of words. For Foucault, Linnaean taxonomy takes from nature precisely the tension between being and becoming, between chaos and order, between individuality and assemblage. It rewrites all those relationships, solidifying and thus atrophying nature's intrinsically mysterious delightfulness. 'Things and words are very strictly interwoven: nature is posited only through the grid of denominations, and – though without such names it would remain mute and invisible – it glimmers far off beyond them, continuously present on the far side of this grid, which nevertheless presents it to our knowledge and renders it visible only when wholly spanned by language.'[26] For Foucault, words are the snare in which our minds become entrapped: once entered, a world of words is exceedingly difficult to escape. Seba, too, wrote an introduction and notes to his *Thesaurus*. But ultimately the signs were to be found only in the objects and the drawings of the objects. The glimmer of nature remains present still in the pages of his book. Not so after Linnaeus.

Still, so fascinating in Foucault's analysis is that nature remains a place accessible, only just not through the grid (his term for Linnaean taxonomy). Nature is neither obscured nor destroyed by Linnaeus; he simply redirects our gaze. I shall be less negative than Foucault, saying that the grid's purpose is paramount in one sphere of natural history. Linnaeus and his followers give us the mechanism through which contemporary biology can exist, the instrument by which Darwin and genetics can both come into being. In other words, it *creates* things as well as categorizes them. That it turns all our heads, that the grid shields us from seeing something else, feels to me less the intrinsic flaw of Linnaeus himself than of a certain Enlightenment proclivity: the obscuring of things which came before. Much of the reason for doing so is a commentary on the continued power of theology – or on the *philosophes* fear of it.

One must be careful not to blame Linnaeus for the anti-theological turn of the (predominantly French) Enlightenment. The world into which Linnaeus was born was (even in natural history) a theologically exciting place. The reformation was not two centuries old, and natural theology and physico-theology were much-discussed concepts. Wolf Lepenies cautions against assuming too much familiarity by Linnaeus of the larger European philosophical conversation of his period.[27] Linnaeus read only Latin and Swedish, and travelled but once, during his university days, to Holland. And though Linnaeus wrote a detailed book on his theological ideas late in life, *Nemesis Divina*, I am not particularly inclined to make connections between his beliefs in 'divine compensation' or 'acts of revenge' and his work in nomenclature.

Rather, it is the Lutheranism in which he was raised and to which he adhered all his life that I believe reflects most accurately the theological contours of his nomenclatural system. In fact, we can re-interpret Foucault's analysis as that of a 'Protestantization' of natural history. This turn of phrase is not particularly new or noteworthy, but it does begin to explain why the view of nature after Linnaeus is so radically different than Seba's. Peter Harrison notes:

> The emergence of 'proper' [Linnaean] natural history, however, was not simply the result of stripping away unwanted and extraneous symbolic elements, leaving a core of pure and unadulterated science. Rather a new conception of the world, itself premised on a particular meaning of texts, was to drive a wedge between words and things, restricting the allocation of meaning to the former. Only then was a genuine science of nature . . . gradually able to occupy the territory vacated by the [*Wunderkammern*], ordering the objects of nature according to new systematizing principles. The new conception of the order of nature was made possible . . . by the collapse of the allegorical interpretation of texts, for a denial of the legitimacy of allegory is in essence a denial of the capacity of things to act as signs. The demise of allegory, in turn, was due largely to the efforts of Protestant reformers.[28]

Linnaeus, like Seba, idealized species. But he did so to get at the most accurate identification of individual specimens across geographies, not because of a belief in their significance as signs or allegories. As Harrison argues, the 'wedge' that ultimately divided description and object came from an overriding belief in the authority of the text, on a notion of the superiority of words to achieve true knowledge – an epistemological turn stemming from the Protestant Reformation. Just as religious tradition would come to be questioned against the word of Biblical scripture, so too were invisible signs and symbols eliminated from natural history in favor of written description. In Harrison's telling, the 'denial of the legitimacy of allegory' arose from the same impulse as that of ending the practice of non-Biblically ordained traditions in churches. What could not be read was not divinely ordained.

This shedding of the trappings of history reflects in the Linnaean system worry over excess and jumble. Linnaeus's search for a single characteristic truth through which he could unite all species in a common system (e.g., pollen and stamen lengths in plants) bears striking resemblance to the search for an historic Biblical text representing the ultimate Revelation.[29] 'Linnaeus's appeal to the Almighty suggests [that] eighteenth-century attempts to overcome nature's profligate variability were often buttressed by an Enlightenment version of natural theology that characteristically praised the regularity of God's laws as more worthy of admiration than [a *Wunderkammer*-like assemblage].'[30] In the eyes of the *philosophes* and Linnaean-inspired naturalists, the excesses of the history of natural history – like those they decried in the Catholic Church – revealed nothing but waste and decadence. The transition from Baroque to Enlightenment natural history is therefore one of changes to the scholar's very expectation of what can be found in nature. It is literally about what *can* be seen and what it is *legitimate* to

see. The Linnaean revolution is thusly about how the truth of natural knowledge finds stability in the accuracy of the written word and its widespread acceptance.

The Victorian natural history museum is Linnaeus's cultural remnant: rows of glass cases neatly labeled, variety atop variety, room upon room; glorified through order and stability. I argue in the final section that the result of this systematic change in natural history has often blinded thinkers to the diversity of forms of human ordering and seeing. The following pages are a case for the joint reading of the *Wunderkammern* and Linnaeus, wherein I hope to find a way of writing religion-science history using *ordering* and *seeing* as its core, rather than God. I urge that the irrepressible charm and 'rational' peculiarity of the *Wunderkammern* should act as spur for renewed interests in the strangeness of nature.

SEEING AND ORDERING TODAY

> I am convinced now that our life then really was imbued with a magic unknown in other families. From conversations with my father, from daydreams in his absence, from the neighborhood of thousands of books full of drawings of animals, from the precious shimmer of the collections, from the maps, from the heraldry of nature and the cabbalism of Latin names, life took on a kind of bewitching lightness that made me feel as if my own travels were about to begin.
>
> – Vladimir Nabokov, *The Gift*[31]

No one must ever say that Linnaeus did not give the world a powerful tool for knowledge creation. Linnaeus drew us a map and its legend, such that we might begin to carefully organize nature's bewildering variety. Linnaeus made vast collections manageable and comprehensible, dependent not on the mind of a single brilliant scholar but on reproducible, teachable principles. The grandeur of the nineteenth century natural history museum with its millions of specimens and innumerable rooms is nothing to scoff at. It bewilders and glorifies, humbles and rejuvenates. Linnaeus is why Nabokov can speak of the cabbalism of Latin names – and more, why *we* can understand Nabokov when he speaks of the cabbalism of Latin names.

But Linnaeus did not give us everything; and to make it seem as though he did is to be almost slanderous to the name of the great man himself. Linnaeus encountered a world full of pathways and created a broad new one. I am not advocating the elimination of Linnaeus: my many drawers of pinned beetles would turn all into disarray if that were to occur; my months reorganizing cabinets in the dark back rooms of the American Museum of Natural History in New York would be for naught. We cannot return to past times as solvents for present problems: 'Cultural changes, such as the one that gave birth to the modern age, have a definitive and irreversible impact that transforms the very essence of reality. Not merely our thinking about the real changes: reality itself changes as we think about it differently. History carries an ontic significance that excludes any reversal of the present.'[32] But I have been searching for another way to see nature, one that falls outside the system I use to neatly categorize insects. Nabokov's description above could as easily be of a *Wunderkammer* as of the narrator's father's early twentieth-century study. Why need there be so stark a separation? Baroque *kammern* provide a view of the world before the radical epistemological changes wrought by Linnaeus and the Enlightenment. They offer a window on a moment in history prior to our particular form of natural knowledge. This essay has not been concerned with the question of whether Linnaeus was inevitable: everything and nothing is inevitable. What I have asked here instead is that, in finding a moment that differs substantively from ours, can we be forced to take another look at our own presumptions about the theological system

through which we see nature? Can this renewed questioning speak intelligently to religion-science scholarship?

As many thinkers have said, much of the science-religion debate is actually a misunderstanding. In looking back at Baroque *Wunderkammern* I believe that we can attempt to parse an epistemology that both validates Linnaean taxonomy *and* allows pre-Enlightenment minds to find voice in our contemporary conversation. Bruno Latour writes about exactly this point: 'My idea . . . is to move the reader from one opposition between science and religion, to another one between two types of *objectivity*. The first, traditional, fight had pitted science – defined as the grasp of the visible, the near, the close, the impersonal, the knowable – against religion, which is supposed to deal with the far, the vague, the mysterious, the personal, the uncertain, and the unknowable.'[33] As the above essay tries to show, this first, traditional opposition is incorrect (as Latour knows) when looking at 'scientific' change between the Baroque and the Enlightenment. Neither the *kammern* nor Linnaeus were more interested in the visible or near than in the far and vague. They simply had different questions and came at the solution from different angles and for different reasons.

To speak as though the *kammern* and Linnaeus fulfill the same role in natural history is what Latour calls a 'category mistake.' In describing the two systems, and in linking them to their respective theological milieus, I have attempted to show that they are fundamentally about very different things. Nature in the Baroque is not about unified truth claims, and nature in Enlightenment Protestantism is not about signs and moral allegories. One is not a replacement for the other – each is its own conversation, its own society. Each contains within itself the motivating force of its continued relevance. The 'category mistake' is in arguing that nature is so finite that the *Wunderkammern* and Linnaeus are even looking at the same nature at all. Intellectual finitude is a necessity for humanity, Paul Feyerabend argues; it is not an inherent category in the world.[34] Natural history is not a zero-sum game.

Latour continues: 'To this [traditional] opposition . . . I want to substitute another opposition between [(1)] the long and mediated referential chains of science – that lead to the distant and the absent – and [(2)] the search for the representation of the close and present in religion.'[35] This opposition is precisely what I have been demonstrating in the above essay: the *Wunderkammern* are about depictions of present relationships among objects in nature; Linnaeus is about 'referential chains' and a unitary future taxonomy. However, where I have diverged from Latour is in labeling one or the other as religion or science. Both are religion and both are science. The purpose of connecting theology and order with how we *see* nature is to make blatant the absurdity of all modern dichotomies. What we see is Linnaean. What Linnaeus saw was text. Does that not mean that we see text, too? Foucault certainly thought so. Latour is more circumspect, subtler, arguing that we are still drawn to both object and sign, but that our modern obsession is with speaking about what we see only as text. We are capable of seeing sign and symbol; we are bewitched by the truth of the Word.

In the end, I find myself in the same place as Latour, wanting to speak about religion and science without continued reliance on the presence (or non-presence) of a god. This essay is my argument for using *seeing* and *order* as a research methodology, for using *being* and *becoming*, for using form and object. There is no rejection of theology, no rejection of God. But by modeling new religion-science scholarship on *seeing* I believe scholars can be allowed a circularity of thought, a continual revision and narrowing within the writing itself.

My argument for a reinterpretation and reapplication of the word 'rational' plays a crucial role in this transition of religion-science scholarship. I believe it gives us access to a pre-Linnaean epistemology *through the very word* with which our own world came into being. It is not so much a re-definition of 'rational' as a revival of a dormant part of the original definition.

It places the word back into play after too long standing comfortably in right field – always necessary but rarely engaged. 'Rational' is a reflection of a society's intellectual commitments, of its expectations and aspirations. It is about a unique sort of experience of seeing, and about what is sought in that vision.

In the Baroque, the 'rational' was about a unique kind of becoming, a formation of connections, analogies, patterns, and forces. It was a time when the 'quest for form continues to dominate artistic creation, and it amplifies Renaissance techniques more than it rejects them. Yet the ideal of form has shifted from simple harmony to dramatic tension . . . The developmental quality of Baroque art symbolizes an expanding world permanently in a state of being created and refusing to be confined within established forms.'[36] We see this quest for form in the rigor and individuality with which specimens were displayed in the *kammern*. Each was one, a unit, and also something that outside its context could be – had to be – contemplated. There was an embrace of tension, of the assemblage, of a *refusing to be confined within physical forms*. *Wunderkammern* capture a moment when the subject was not singular, when collectors did not yet have a pre-existing idea of what objects are or what makes them important, or of where they *should be rightly put* in relation to one another, nature, God, and the collector himself.

Not, of course, that I think future religion-science books should look like Seba's. That would be silly. But perhaps just a little more similar? We can *overfill* our pages, be enchanted by everything, and thereby *see* more of the connections at play in the world of actions. Is it foolish to say that by looking into the past we can catch glimpses of the future? Dupré doesn't think so: 'While anxiously seeking a new wholeness we must nevertheless carefully protect the fragments of meaning that we possess, knowing that they may be the bricks of a future synthesis.'[37] Obviously a major task of the current scholarship is to place the object back into motion, to remove it from being simply *kept* and *explained* to being again *interactive* and *full* – by which I mean still a part of the world, not something beyond the grid but effusively with it. Religion-science is a false dichotomy. Nature is too rich for us not to try and see a little more of her.

Notes

1 New York: Taschen, 2001.

2 Archduke Ferdinand II; Dimpfel of Regensburg; Cardinal Albani; Albertus Seba; Francesco I de' Medici; Olaus Worms; Sir Ashton Lever.

3 *Collecting and Display* (London: Conran Octopus, 1998), 10–13; also Isabel Yaya, 'Wonders of America,' *Journal of the History of Collections* 20 (2008): 173–188.

4 Yaya, 'Wonders,' 175; Henning Graf Reventlow, *The Authority of the Bible and the Rise of the Modern World*, trans. John Bowden (Philadelphia: Fortress Press, 1985), 413.

5 Louis Dupré, *Passage to Modernity* (New Haven: Yale University Press, 1993), 5. Ibid.

6 Jan C. Westerhoff, 'A World of Signs,' *Journal of the History of Ideas* 62 (Oct., 2001): 633–650. Ibid., 633–4.

7 Ibid., 639.

8 Dupré, *Passage*, 237. Emphasis added.

9 Westerhoff, 'Signs,' 641.

10 William Clark, *Academic Charisma and the Origins of the Research University* (Chicago: University of Chicago Press, 2006), 303.

11 L. D. Reynolds and N. G. Wilson, *Scribes and Scholars* (New York: Oxford University Press, 1991); and Joseph M. Levine, *Between the Ancients and the Moderns* (New Haven: Yale University Press, 1999).

12 Rainer Willmann and Jes Rust, 'The Zoology and Botany in Albertus Seba's *Thesaurus*' in Albertus Seba, *Cabinet of Natural Curiosities* (New York: Taschen, 2001), 32.

13 Irmgard Müsch, 'Albertus Seba's Collection of Natural Specimens and its Pictorial Inventory' in Seba, *Cabinet*, 24.

14 Ibid., 24.

15 Ibid., 439.
16 *Objectivity* (New York: Zone Books, 2007), 35.
17 Seba, *Cabinet*, 82–3.
18 Willmann and Rust, 'Zoology and Botany,' 30.
19 Ibid., 30.
20 Daston and Galison, *Objectivity*, 67.
21 M. Boeseman, 'The Vicissitudes and Dispersal of Albertus Seba's Zoological Specimens,' *Zoologische Mededelingen* 44 (Jan., 1970): 177–206.
22 David Elliston Allen, *Books and Naturalists* (London: Collins, 2010); Gunner Erikkson, 'The Botanical Success of Linnaeus' in *Linnaeus*, ed. Gunnar Broberg (Stockholm: Almqvist & Wiksell International, 1980), 57–66; and Wilfrid Blunt, *The Complete Naturalist* (New York: Viking Press, 1971).
23 Janet Browne, *Charles Darwin: Voyaging* (New York: Alfred A. Knopf, 1995), 65, 131.
24 Ernst Mayr, *The Growth of Biological Thought* (Cambridge: Belknap Press, 1982), 173.
25 Willmann and Rust, 'Zoology and Botany,' 28.
26 Ibid., 160.
27 Wolf Lepenies, 'Linnaeus's *Nemesis divina* and the Concept of Divine Retaliation,' *Isis* 73 (Mar., 1982): 11–27.
28 Peter Harrison, *The Bible, Protestantism, and the Rise of Natural Science* (Cambridge: Cambridge University Press, 1998), 4.
29 Jonathan Sheehan, *The Enlightenment Bible* (Princeton: Princeton University Press, 2005).
30 Daston and Galison, *Objectivity*, 68.
31 (New York: Vintage, 1991 [1963]), 115.
32 Dupré, *Passage*, 6.
33 Bruno Latour, *On The Modern Cult of the Factish Gods* (Durham: Duke University Press, 2010), 112–13. Emphasis added.
34 Paul Feyeraband, *The Conquest of Abundance*, ed. Bert Terpstra (Chicago: University of Chicago Press, 1999), 3–4.
35 Latour, *Modern Cult*, 113.
36 Dupré, *Passage*, 238–9.
37 Ibid., 253.