Material Reckoning: Worldmaking in the Early Modern Cabinet of Curiosities

Introduction

A room so full of things that they appear to compress space and time appears on a two-page, fold-out print from the mid-seventeenth century (Fig. 1). The viewer’s perspective is from a slightly elevated position just inside the room: if she is not careful, she will fall into the print in the manner of the protagonists of C. S. Lewis’s *Voyage of the Dawn Treader*. Near the back of the room, bows, arrows and two scabbards – technologies with which people hunt living things – stand near an array of reptiles and a prepared skin of perhaps an anaconda, thus highlighting the entangled nature of things fashioned into new shapes via varying levels of human intervention.

While forms alike nestle against one another in the case of the somewhat prickly-looking horns and antlers along the left-hand wall, and marine life – turtle-shells, sawfish saws, alligator-type reptiles, and penguins – takes up the upper right-hand wall, less apparent is the rationale for the shared rooftop dwelling of pelican, deep-sea pescatarian horrors, polar bear skin and canoe. The room thus appears, at once, carefully organized and overwhelmingly chaotic. Things we might deem to be made by people and those made by nature jostle together, their interleaved display mirroring the fuzziness of such notions as natural and artificial, plant and animal.

The print in Fig. 1 adorns the catalog of an iconic, room-sized example of a type of European princely and scholarly collection called a cabinet of curiosities, *Wunderkammer*, or *studiolo*. This *Wunderkammer* was assembled by Ole Worm, professor at the University of Copenhagen, teacher of Greek and Latin, and founder of Nordic archeology.¹ The viewer of the

print is beset, just as visitors to Worm’s physical cabinet probably were, by a sense of compression: in a single glance or turn on the spot, one travels through space and time through things. How was a viewer supposed to reckon with such collections and their objects, catalogues, representations, and displays – in other words to think through, with, and about them and why they mattered?

Since the late fifteenth century, overseas artifacts from hitherto unknown parts of the world had found their way into European cabinets of curiosities. Here they were catalogued, analyzed, and displayed alongside everything from ancient Roman jewellery to blowfish. In cabinets, viewers encountered, in the same sweep of the gaze, contemporary folk arts, ingenious machines, distant antiquities, ancient relics, and natural specimens. Cabinets thus prompted viewers to compare the works and natural bounty of different parts of the world and moments in time. In doing so, cabinets also invented objects, as this chapter will show.

Much of the existing scholarship on collecting concentrates on one of three broad types of corpus: the case study of a particular collector, collection, or document; the exploration of a particular type of object or medium across a number of collections; or object histories that trace the global histories of an object, or of objects from a particular region. Another fragmentation is by national tradition. A rich literature has continued to focus on individual collections, nations, or empires. There is no single field of the history of collections (although the Journal for the

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2 As Krzysztof Pomian put it, cabinets miniaturized the world so that it could be taken in at a glance.
*History of Collections* is an invaluable anchor); but the study of collections feeds larger questions in numerous fields.

Current scholarship on early modern collecting is vast but is also fragmented in multiple ways. Oliver Impey and Arthur MacGregor’s edited volume on early modern European museums pointed out the richness of the potential archive for the study of early collections.⁵ Scholars who write about objects and collections range from curators to archaeologists, art historians, literary scholars, historians, historians of science, and anthropologists. Art historical literature, for example, has tended to ask questions about consumption and exchange. Historians of science have explored cabinets as spaces in which natural history was practised and shaped as a discipline. In the mid-1990s, two influential works on collecting brought cabinets to the attention of art historians and historians of science. Paula Findlen’s *Possessing Nature: Museums, Collecting, and Scientific Culture in Early Modern Italy* showed how Italian cabinets functioned within the social networks and practices of natural history. Horst Bredekamp’s *The Lure of Antiquity and the Cult of the Machine* argued that cabinets were spaces for the integrated study of works on the continuum from nature’s art to human art – art in the broadest sense of techniques and physical things, living and otherwise.⁶

Less common are works that place, at their core, questions that seek to apply cabinets questions that transcend collecting.⁷ Scholars working on cultural encounters, ethnohistory,

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objects in motion, and natural history have been, opening up new methods and questions for reaching a fuller understanding the impact of overseas worlds on Europe.8

This chapter analyzes catalogs and visual representations of a selection of northern European cabinets in order to reveal how cabinets, their representations, and the visual effects they engendered brought objects – physical things and their limits, significances, and relation to other things – into being. In doing so, it also offers clues to the ways in which the experience of encountering things from around the world in the compressed space of a cabinet, its catalog, or its visual representations differed from other sorts of encounters, and the extent to which thinking with objects in the compressive space of a cabinet allowed readers and viewers to make the world up anew.

Fleshwitnessing: cabinets as spaces of compression

Cabinets served a variety of purposes, from demonstrating the wealth, power, and taste of the collector, to functioning as theaters of memory for scholars and for those who made their living from a knowledge of material things, from apothecaries to painters.9 The meanings of objects viewed in situ vary with how they are displayed, who is looking at them or using them, and the other things in the viewer’s field of vision. In his Inscriptiones (the earliest known European manual on organizing a museum), Samuel Quiccheberg, librarian to Duke Albrecht V of Bavaria, observed that one purpose for Wunderkammern was the comparative observation of

8 These works include Mariana de Campos Françozo, De Olinda a Holanda: O gabinete de curiosidades de Nassau (Campinas, Brazil: Editora da Unicamp, 2014); Daniela Bleichmar and Meredith Martin eds, Objects in Motion in the Early Modern World (Chichester: Wiley-Blackwell, 2016).
ingenuity. Inspired by collections he had seen, particularly those in the Italian peninsula, Quiccheberg envisioned the museum as part of a purpose-built complex for making practical knowledge useful for governing a territory: workshops for printing, metal-casting, and wood-turning; a mint, a pharmacy, and an alchemical laboratory.

The title-page gives a sense of Renaissance categories for material that might be deemed cabinet-worthy, and why:

Inscriptions or titles of the most ample theatre that houses exemplary objects and exceptional images of the entire world: so that one could rightly call it a repository of artificial and marvelous things, and of every rare treasure, precious object, construction, and picture. It is recommended that these things be brought together so that by their frequent viewing and handling one might quickly, easily, and confidently be able to acquire a unique knowledge and admirable understanding of things.

Here, Quiccheberg invoke ‘viewing and handling’ as techniques for the garnering of knowledge of material things. Large, heterogenous scholarly cabinets that juxtaposed ancient and recent artifacts and natural objects from disparate parts of the world enabled viewers who had not traveled to claim a different kind of authority from that of travelers. I call this the authority of fleshwitnessing: of encountering in material form objects that did not, in the world beyond the cabinet, appear together in any single place, objects whose existence could not be disputed in the

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10 Samuel Quiccheberg, *Inscriptiones vel tituli theatri amplissimi, complectentis rerum universitatis singulas materias et imagines eximias* (Munich, 1565). The *Inscriptiones* illuminates the motivations, organization, and rationale for a large collection.

11 The idea of a pedagogical museum complex survives today in, e.g., the Smithsonian museums in DC.
same way as an eyewitness’s claims about their adventures. Rather like world maps from the sixteenth and seventeenth centuries and casta paintings from the eighteenth century, such cabinets provided viewers with a tangible encyclopedia of things with which to think comparatively about the peoples of the world and of their entanglements with nature. However, cabinets departed from projects of encyclopedic representation in allowing their viewers to experience, in a compressed space, great distance, space, time, and culture via physical things, and not merely via representations (although images and descriptions also circulated).

Royal and aristocratic households and ecclesiastial houses in medieval Europe had long possessed collections of relics and ceremonial things. With the capture of Constantinople by the Ottoman Turks in 1453, greater quantities of things from the eastern Mediterranean flowed west and north. Sixteenth-century princely collections, however, assembled in the wake of oceanic voyages, set new precedents for the scale and scope of collections assembled for secular and investigative motivations. Early exemplars include the collections assembled by the Medici...

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in Florence and by Emperor Rudolph (1576-1612) in Prague and Vienna, the Schloss Ambras collection (near Innsbruck, now in Austria) of Archduke Ferdinand of Tyrol, and the Munich Kunstkammer of Duke Albrecht V of Bavaria. Scholars, medical practitioners, and wealthy burgers would soon begin to assemble equally renowned collections, and were also often responsible for inventorying or cataloguing princely cabinets. During the early modern period, cabinets – be they physical pieces of cabinetwork or suites of rooms – proliferated from Iberia to Scandinavia.

Large early modern cabinet catalogs reflected an increasing encyclopedism and a diversifying range of textual and visual genres for organizing rapidly expanding quantities of information in an era in which, as Ann Blair has shown us, there was ‘too much to know’. Nevertheless, these catalogs stand apart from the geographically specific ways in which many predominantly textual genres, such as geographies, travel accounts, tended to organize information about distant parts of the world. Furthermore, while visual and diagrammatic sources such as world maps, and costume books were undergirded by a sense of place, and prints and paintings of the continents or ‘parts’ of the world had been circulating since the 1580s, cabinets and their catalogs appeared to experiment with every organizing principle except geography – or, at least, to organize the main branches of a collection by many other features before turning to geography.  

Catalogical encounters and material reckoning:

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17 [List all cabinets checked, and how many don’t use geography as first-order – or any order – organizing principle.]
Cabinets both as physical spaces, and through their pictorial and textual records in the form of prints, paintings, catalogs, and inventories, constituted knowledge through processes of compression: they brought into visual or physical proximity things that did not naturally appear together in the world. The process of inventoring required the observer to distill sensory observations into enough information to identify the object sufficiently from the rest of the objects in the collection. Such sources have typically been examined in order to establish what was collected when, where, and by whom, but these documents also reveal the difficulties observers faced when describing unfamiliar items and materials, and the assumptions implicit in their classificatory systems. For example, an eighteenth-century inventory of ‘Japanese and Indian curiosities’ from the British Library’s Sloane manuscripts reveals, through its meticulous emendations via insertions and crossings-out, that the scribe struggled with terminology, tacking uncertainly between ‘burning glasses’ and ‘specula’, and the distinction between describing something as skillfully, finely or artfully made.

Printed catalogs, moreover, were even more compressive than cabinets in the flesh, as it were, enabling compilers to get around the physical constraints of objects’ shapes and sizes and to organize things in any number of juxtapositions. In so doing, cabinets invited viewers to think about the relations between things that appeared together, and thus made claims about objects.

These processes of compression created a productive tension between existing knowledge and expectations, on the one hand, and new objects and the questions generated by observing

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18 This could lead to quite generic entries, such as ‘gloves’, or references to unfungible individual objects, like ‘Powhatant’s cloak’.
19 Note especially Russo, Alessandra. ‘Cortés’s Objects and the Idea of New Spain: Inventories as Spatial Narratives’, Journal of the History of Collections 23:2 (2011), 229–52. [How does this chapter intervene with Russo’s findings? Do I want to add a longer section on an inventory (e.g. the Sloane one here), discuss Russo there, and then move to the Tradescant example in a separate subsection?]
20 British Library, Ms Sloane 4019, f. 54r-55v.
them alongside other objects, on the other. In the preface to the 1656 catalogue of the Tradescant collection, John Tradescant the Younger observed that he hoped his viewers would see the catalog and collection as tools for investigating ingenuity by means of studying rare and unusual inventions comparatively, be they wondrous plants and animals or costumes and mechanical devices.21 John Tradescant the Elder and his son John (the Younger), naturalists, and travelers, had assembled one of the earliest English cabinets of curiosities. It would later form the kernel of the Ashmolean Museum in Oxford. Prying open some of Tradescant’s classificatory choices – what things he placed in easy comparative reach of what, for example – reveals how encountering a collection through its catalog – catalogical encounters, if you will – informed ideas about the use and nature of objects in the minds of readers and viewers in different ways from encountering them in their places of origin.22

Tradescant the Younger’s catalog offered a structured encountering of things via fourteen sections to which were appended two sections, numbered 15 and 16, on the Tradescant garden. Early sections have relatively straightforward briefs: birds, four-footed beasts, fish, ‘shell-creatures’, ‘insects, terrestrial’, ‘minerals, and those of neare nature with them’. Slowly, however, this structure breaks down over the course of the title-page. The longer titles signal somewhat opaque categories that require glossing:

7. Outlandish Fruits from both the Indies, with Seeds, Gummes, Roots, Woods, and divers Ingredients Medicinall, and for the Art of Dying.

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22 Objects or substances adapted by people might of course contain elements from multiple places of origin.
8. Mechanicks, choice pieces in Carvings, Turnings, Paintings.

9. Other variety of Rarities.

10. Warlike Instruments, European, Indian, &c.


12. Utensils, and Householdstuffe.

13. Numismata, Coynes antient and modern, both gold, silver, and copper, Hebrew, Greeke, Roman both Imperiall and Consular.

14. Medalls, gold, silver, copper, and lead.

Tradescant’s selection of objects in each section offers clues to his ontology of things. Morphology or shape was a frequent organizing principle, and it informed the subsection on ‘egges’. While ‘egges’ appears within the section on birds, it includes exemplars from a cassowary, crocodiles, ‘estridges’ (ostriches), ‘divers sorts of Egges from Turkie: one given for a Dragons egge’, and ‘easter Egges of the Patriarchs of Jerusalem’. These juxtapositions nudge the viewer into a quandary of material reckoning: what is an egg? Is it helpful to think of them as part of a bird? What then does one do with other ‘egges’, and why? How different is one egg from another? If they never hatch, is there any difference between a bird’s egg and an Easter egg in a scholar’s collection? Could one tell whether an egg came from a dragon if it never hatched? What might you pay for an egg if you did not know what it was? While such questions may seem whimsical, the uncertain space between physical form and future potential made and lost fortunes in the case of another sort of object of promise, the tulip bulb.

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24 For tulips, see Anne Goldgar, *Tulipmania: Money, Honor and Knowledge in the Dutch Golden Age* (Chicago, IL University of Chicago Press, 2007). [Think also about the etymology of to reckon, and its cognates. Any sign of this terminology in the sources?]
The morphological similarity between eggs that hatch into living things and Easter eggs fashioned by people has an analogue in the subsection on beaks: the beak of the ‘Aracari of Brazil’ and of the ‘Guara of Marahoon Brasil’ are said to be ‘like a Turkes sword’ and ‘a Poland sword’ respectively.\textsuperscript{25} This arrangement may have mirrored the visual arrangement of things in the physical museum. Such observations invite the viewer to compare not only human and divine handiwork, but also distant places with those closer to home.\textsuperscript{26}

Tradescant’s catalog sections offer only occasional distinctions between European and overseas objects (the ‘outlandish’ fruits of both the Indies and the ‘Warlike instruments, European, Indian, &c.’).\textsuperscript{27} Even in these cases, morphology – fruits, or weapons – precedes place of origin. Geographical divisions, which would become the norm in collections in later centuries, are largely absent. This interspersing of Europe and overseas worlds was common in early modern European cabinets.\textsuperscript{28} Sections 7 and 10 bring together the geographically distant but conceptually linked East and West Indies in the early modern metageographical concept of ‘the Indies’. The term could apply to lands found by sailing, from Europe, west across the Atlantic as well as those found by sailing south and east around Africa. There is no necessary division between the two; geographers have always organized landmasses into regions, empires, continents, and other named physical bodies, but their boundaries are not inherent in nature, nor fixed in recorded human history or in geological time.\textsuperscript{29} Indeed, for the Spanish Crown, the

\textsuperscript{25} Ibid., p. 2.
\textsuperscript{26} [Add eggs of other cabinets did the same in prints. Find out what we know about the arrangement from visitors’ comments, where known!]
\textsuperscript{27} Another example of a cabinet in which geography played a limited structuring role is Olaus Worm’s cabinet. For example, The section on artifacts made from wood juxtaposes objects from regions that include Denmark, Greenland, Brazil, and Persia.
\textsuperscript{28} See, e.g., the cabinets of Worm, and of the Royal Society.
Indies denoted a coherent geopolitical region that stretched from the Caribbean to the Philippines.30

Tradescant divides the ‘materialls’ portion of the catalog into subsections called Naturall and Artificialls. The ‘artificialls’ are organized in ways that appear strange to the twenty-first century viewer, and give rise to material encounters that were rather different from those we might have in today’s museums, which separate artificial objects made by people from things that are (sometimes only seemingly or conventionally) natural, and that separate objects by geography and culture.31 Chapter VII, ‘Mechanick artificiall Works in Carvings, Turnings, Sowings and Paintings’ classes together artifacts from Turkey, ancient Rome, and Amazonia, and spleen stones, thus interleaving things that we might anachronistically separate into human-made and natural artifacts. A bird (presumably stuffed) ‘sitting on a pearch naturall’ appears near things that were not shaped by human intervention – ‘Divers sorts of Ambers, with Flyes/Spiders naturall’, and ‘Divers sorts of Corall, one with mosse in it’ – and objects made by people out of inanimate natural substances like coral and crystal.32 By placing these objects together, Tradescant’s catalog suggests to the reader that the divine and human work that made the stuffed bird a analogous to that of god and nature trapping insects in amber, or in the entangled relationship between coral and moss. Such arrangements, I would argue, challenge the notion of art as something exclusively made by people, erasing the distinction between ‘art’ (in the narrow


31 Look at contemporary accounts of the cabinet! To what extent was the catalogue a guide to the organizational schema that people would see walking around the physical space?

32 Tradescant, Musaeum Tradescantianum, p. 36.
sense of representational works made by people) and the work of nature, as well casting doubt over later distinctions ‘ethnographic’ objects and European artifacts.\textsuperscript{33} Cabinets – like their descendants, museums – were thus epistemic installations: arrangements that made particular arguments through what they included and their juxtapositions with other things.

In order to see what was at stake in some of the decisions that collectors and cataloguers made, we might turn to the \textit{Musaeum Tradescantium}’s section VIII, ‘Varieties of Rarities’ (Fig. 2).\textsuperscript{34} This includes ‘A bundle of tobacco, Amazonian’ alongside such items as a conjurer’s rattle and an idol of Osiris. Among indigenous peoples in the Americas, tobacco had a wide array of medical, narcotic, religious, and ritual uses and preparations.\textsuperscript{35} In Tradescant, by contrast, tobacco doesn’t appear in the section on ‘exotic fruits’, or on ingredients, medicinall’. By placing tobacco under \textit{rarities}, Tradescant created a distinct, interpretative context for tobacco: he emphasized the plant’s strangeness rather than its medical uses among indigenous peoples of the Americas. Tradescant’s choice of where to install tobacco also underplayed the technological dimension of tobacco, an agricultural product of conscious human labour and technique – it’s not in the ‘mechanick artificiall works’ section, for example.\textsuperscript{36} Instead, the placement of tobacco alongside ritual artifacts from both the contemporary Americas and ancient Egypt opens up a third interpretation: tobacco as a diabolical substance of idolatry. The earliest interpretation of tobacco among Spanish commentators who observed indigenous tobacco use in ceremonial settings, was indeed the charge of diabolism. Tradescant’s decision to place Amazonian tobacco

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\textsuperscript{33} For nature as artist in the early modern period, see Claudia Swan, Rebecca Zorach.
\textsuperscript{34} Tradescant, \textit{Museum Tradescantianum}, p. 42.
\textsuperscript{36} For agricultural plants as indigenous technologies, see Norton, ‘Subaltern Technologies’.
\end{flushleft}
amongst the ‘rarities’ of idolatry suggest his access to similar textual sources that mediated his classificatory scheme.  

What does reading Tradescant’s catalog tell us about how compiling and reading catalogs shaped European ideas about things? Cabinet catalogs were textual spaces of compression and invention. Choices about how to structure a catalog brought objects into being: a catalog comprised a lasting set of visual and ontological decisions about things, decisions that were themselves encapsulated in an object (the catalog). Opening out the space of a catalog and reading the conjunctions they made illuminates how cataloging objects – particularly those from distant places, objects that had only recently been placed within European interpretative frameworks – prompted collectors and naturalists to delineate anew the very parameters of those objects, of their powers, and why they mattered.

World-making: visual representations of cabinets and the invention of objects

Not only did physical objects prompt distinct kinds of intellectual work during their cataloguing but they also provided opportunities (and created limitations) during the making of visual images. Images of cabinets draw attention to the formal qualities of objects: shape, size, texture, components, and sometimes their colour. Moreover, viewers do not apprehend individual objects in isolation; rather, they read them in relation to other things in their field of vision, just as they do with words on the page of a catalog. While prints, drawings, and paintings may have idealized cabinets and had their own agendas, they were also ways in which people

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37 Norton, Sacred Gifts, Profane Pleasures, p. [add]. For the shifting fortunes of artifacts identified as idols between the early modern period and the nineteenth century, see Miruna Achim, From Idols to Antiquity: Forging the National Museum of Mexico (Lincoln, NB: University of Nebraska Press, 2017). [Add egs for food and tobacco?]

viewed artifacts via visual images. Visual images also constituted a visual compressive space – one might say a visual semantic field – in which objects emerged as artifacts in tension with those around them.

In the late seventeenth century, Father Claude Du Molinet, canon and librarian of the abbey of Sainte-Geneviève in the Latin quarter in Paris, assembled a curiosity cabinet in the abbey’s library complex. The Bibliothèque Ste.-Geneviève, now one of the most popular student libraries in the city survives, along with 36 overseas artifacts and 21 arrows that remain there in an antechamber off the Manuscripts and Rare Books reading room. In 1692 Du Molinet published a catalogue of the cabinet’s classical antiquities, coins and medals, and natural specimens, and a series of engravings. Several engravings in Molinet’s catalog show how overseas artifacts may have been displayed: alongside European artifacts, ancient antiquities, furniture, and natural history specimens.

Claude du Molinet’s cabinet was arranged to offer pleasing symmetries. Nevertheless, it was not inevitable that a particular form of artifact would be in a particular place. In one engraving, portraits of six French monarchs are at the top, including the present king Louis XIV (Fig. 3). European antiquities appear above the fireplace, creating, with the portraits, a subtly hierarchical arrangement, of civilizations, and of artworks. The large central canvas depicts a balcony holding cabinet-worthy items – a print, a carpet, a vase, and a nut or shell – thus representing metonymically the cabinet as a repository of local, exotic, antique and natural artifacts.

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40 I am inspired here by Roland Greene, *Five Words: Critical Semantics in the Age of Shakespeare and Cervantes* (Chicago, 2013).
42 Engravings 4-7, at the start of the volume, depict the cabinet.
artifacts. The next rung of objects comprises still lifes and antique statuary and vases on the mantlepiece. Dominating the centre of the print is a fireplace displaying weaponry, other human-made artifacts, and natural history specimens, the majority from beyond Europe. A votive tripod, described in the catalogue as an ancient Delphic exemplar, stands at the centre. Despite a certain amount of separation between European and extra-European artifacts, the viewer encounters them all within a single space and arrangement.

Morphological encounters

Perhaps the most challenging epistemic work that collections helped their users to perform was the investigation of the relationship between different types of things. Cabinet catalogs might contain illustrations of the cabinet as a whole as well as plates devoted to particular types of thing, thus facilitating the parsing out of fine distinctions between things. Thus, specimens that stick out for the modern viewer prompt us to ask why the collector chose to make this conjunction: there may have been no disjunction in their eyes.

The second part of Du Molinet’s catalogue, which covers natural history, pays particular attention to nature’s singularities, through which one might improve one’s comprehension of the order of nature: there are sections on ‘the most singular animals’ and ‘the most curious fish

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43 The artifacts arranged symmetrically on mantlepiece, dynamically alternating in terms of height and width.
44 [add refs to lit and to mss as needed]
45 See, e.g., Olearius, *Gottorffische Kunst-Kammer*. The catalogue of the *Gottorffische Kunst-kammer* by Adam Olearius, sometime secretary to the ambassador sent by Frederick III Duke of Holstein-Gottorp to Shah Abbas of Persia, is one example. Here, individual plates are dedicated to, for example, shells (Tab. XXIX-XXXIII).
46 (‘les animaux les plus singuliers’)

EM things, Oct 27 2019
and serpents’, for example. The section opens with a plate on ‘The rarest birds’ (Fig. 4).

Typical cabinet catalogs might lead one to expect all the specimens on this page to be birds. Yet one of the eleven specimens is a ‘boeuf volant’ – literally a flying steer. We learn about the beetle’s appearance and habits from the accompanying text: ‘one finds in Brazil certain insects which bear a certain resemblance to our French stag beetles’… But you need to think with the plate to imagine why Du Molinet might have included this creature in the bird section. The engraving appears before the text – before even the title of the section. It thus invites the viewer to perform a morphological comparison of all these creatures before being told what they are. By including the boeuf volant on the bird-plate, the engraver draws attention to two features the beetle shares with many birds: the capacity for flight and a long and pointy mouth.

And yet the beetle is not entirely naturalized in this plate. Nine birds are depicted against a ground line, evoking a sense of an earthly creature in its habitat. The exception is the bird of paradise (bird I), which inhabits an abstract – and blank – setting. This bird posed a morphological challenge, for, as Du Molinet explains, it spent so much of its time in the air that many believed that it never landed, and that it even lacked legs altogether. The beetle, similarly, appears to float, contextless, in mid-air, in the centre of the print: four birds above it, four below, and one on either side. Viewers may well have recalled one of the Renaissance explanations of monsters – category-breakers – as nature’s jokes, intended to delight the viewer,

47 (‘les poissons et les serpens les plus curieux’); ‘foreign plants and fruits’ (‘les plantes et les fruits étrangers’), (a human figurine, Mandragora or a mandrake), ‘the most impressive shells (‘les coquilles les plus considerables’)
48 (‘Les oiseaux les plus rares’)
50 [Add Janice Neri’s work; Marisa Bass’s 2019 book on Hoefnagel; Brian Ogilvie]
and to suppress a giggle at the thought of the *boeuf volant* as a bird gone wrong.\textsuperscript{52} Molinet may have owned just the one beetle, but he could have chosen to place it elsewhere, yet did not.\textsuperscript{53} The compressive space of the print prompts viewers to contemplate the ontology of living things in unexpected ways.\textsuperscript{54}

While Tradescant’s catalog prioritized use and morphology, Ole Worm’s primary organizing principle was physical substances and their relationship to living beings. His catalog is divided into four books, broadly organized thus: minerals and metals; plants; animals; and *artificialia*. The first section of Lib. I has no general title; the second section is on stones (‘De Lapidibus’); the third on metals (‘De Metallis’). The second book encompasses rare plant matter (‘De Vegetabilibus rarioribus’). Lib. III covers animals, and the fourth, *artificialia* (‘De Artificiosis’). Human-made artifacts (Lib. IV) comprise an amalgam of objects from around the world. Danish artifacts are also included here. The fourth book is arranged into chapters according to the materials from which the *artificialia* are composed. Thus, for Worm, the morphology of even human-made artifacts was undergirded by nature’s handiwork: the materials themselves.

**Unsettling the human; or, what’s art got to do with it?**

Long before Alexander van Humboldt, humans were embedded in nature in European thought. The argument that human artifice was merely a type of natural artifice was prevalent in

\textsuperscript{52} Note, for example, German animal names like Waschbär or racoon(literally wash-bear) and Meerschweinchen or guinea pig(sea piggy). Embedded in the semantics is a sense that exotic animals that can only be explained as familiar animals with prosthetics and deformities. See Paula Findlen ‘Jokes of Nature and Jokes of Knowledge: The Playfulness of Scientific Discourse in Early Modern Europe’, *Renaissance Quarterly* 43:2 (1990), 292-331.

\textsuperscript{53} [Look up Bass’s new Hoefnagel book]

\textsuperscript{54} [Can we talk of a history of visual semantics through how location of change over time? Refer to Roland Greene, *Five Words*.]
a variety of texts.\footnote{add eg} A hugely popular French example was \textit{predicateur du roy} René François’ \textit{Essay des merveilles de nature, et des plus nobles artifices} (Rouen, 1622). The work went into numerous editions even within a single year, including a tenth which was ‘revised, corrected and expanded, in numerous places, and notably with a chapter on coins’.\footnote{René François’ \textit{Essay des merveilles de nature, et des plus nobles artifices} (Rouen, 1622): ‘reueuë, corrigée & augmentée, en plusieurs endroits, & notamment d’vn chapitre des monnoyes. The Houghton Library copy includes annotations on the title-page.} François’ order of things posited a smaller distance between human civilizations in time, as well as that between humans and rest of nature, than is common today. Werewolves (within a section on wolves) and the phoenix appear here, as does the French king, whom François denotes a Gallic Hercules, a tradition that may be traced at least as far as the reign of François I.\footnote{Michael Wintroub, \textit{A Savage Mirror: Power, Identity and Knowledge in Early Modern France} (Stanford, CA: Stanford University Press, 2006). [add chapter].} François brought various industrious animals – like bees – and unusual substances – ambergris – into discussions of artisanal practices. The chapter on ‘les merveilles des metaux, et des mines cachées dans le ventre de la terre’ combines the notion of marvel, a natural substance, a metaphor that saw the earth as a living thing – ventre de la terre – and human ingenuity.

François’s catalog includes painting in a section on how to speak ‘des beaux tableaux’, as well as discussions of sculpture, embroidery (\textit{broderie}), cabinet-making (\textit{les armoires}), paper, glass, pigments for silk, wool, the essentials of medicine and pharmacy (‘\textit{les devoirs de medecine, pharmacie}’) and \textit{merveilles des mathematices}. This artisanal handbook’s blending of what later centuries would see as ‘natural’ and ‘artificial’ products speaks to the wider early modern currency of art and technical expertise as attributes that are not restricted to humanity.

The Peruvian creole naturalist Pedro Francisco Davila, who wrote a catalog for his Paris cabinet, might additionally have drawn our attention to how human and animal bodies both produced
bézoards and other calculs (stones and other hard objects), as another blurred space between humans and animals.\textsuperscript{58} By bringing together nature’s marvels and the finest that humankind could fashion, works like this reduced the boundary between human and nature.

**Material reckoning: indigenous knowledges and histories**

Collecting and encountering things in cabinets connected even those who had never traveled to networks spanning oceans and to indigenous artifacts, labor, and expertise.\textsuperscript{59} European cabinets were spaces of material reckoning in which indigenous artisans and artifacts inflected European knowledge despite the unequal power relationship between many peoples of regions outside Europe in relation to European invaders, traders, and colonists. Collections were a conduit through which indigenous knowledge and artifacts from distant regions could influence European identities, classifications of things into the ever-problematic categories of ‘natural’ and ‘artificial’, and, by the late eighteenth century, the intertwined development of aesthetics and anthropology.\textsuperscript{60} While European and overseas artifacts fell into separate disciplines as these fields changed in the nineteenth century, the seventeenth-century scholar Ole Worm not only assembled a cabinet containing both European and overseas things, which he described in a several-hundred-page treatise, but also wrote treatises on Danish runes and runestones.\textsuperscript{61}

Furthermore, encounters with distant things informed things made at home. Such things included: Meissen porcelain inspired by Chinese porcelain; Chinese teapots and maps containing iconographies derived from European prints; Mexican biombos (folding screens) adapted from

\textsuperscript{58} Pedro Francisco Davila, *Catalogue systematique et raisonné de la nature et de l’art* (Paris, 1767).
\textsuperscript{60} For a history of pre-modern notions of aesthetics, see Kristeller, ‘Modern System of the Arts’, in *JHI* 1940. [add more examples]
\textsuperscript{61} [add ref]
Japanese exemplars; and designs on Japanese and Indian chintz fabrics.\textsuperscript{62} Tracing histories of and from these cabinets – via surviving texts, images, objects, locales, and archives – tells us something about the impact of early modern encounters with things on European frameworks for understanding nature, culture, and identity.\textsuperscript{63} In this way, cabinets shed light on the global dimensions of the transformation of European empirical knowledge about overseas worlds between the late middle ages and the era of industrialization.\textsuperscript{64}

Tradescant’s encounter with things, and the catalog that came of it, was also shaped by natural history texts embedded with indigenous New World knowledge. These texts are often cited with chapter and page numbers. A text frequently cited by Tradescant and by many other cabinet catalogues was a compendium of Brazil and medicine and natural history compiled by the Saxon naturalist Georg Marcgraf and the Dutch physician-naturalist Willem Piso. The combined text is often called the \textit{Historia Naturalis Brasiliae} or Natural History of Brazil (1648). The \textit{Historia} brought together knowledge about the natural world, languages, and geography of Brazil as understood and experienced by indigenous peoples as well as by enslaved Africans, synthesizing it into a corpus that became part of the Western scholarly canon. Tradescant gives frequent references to specific books, chapters and pages within the \textit{Historia naturalis Brasiliae}. Visitors to cabinets such as Tradescants might thus buy his catalogue, and study in their own copies of the \textit{Historia} what was known about these specimens. Perhaps Tradescant himself used such texts to identify items sent to him – or to request specific things

\textsuperscript{62} [add ref]
\textsuperscript{63} For the intersection of natural history, antiquarianism, and identity, see Elizabeth Yale, \textit{Sociable Knowledge: Natural History and the Nation in Early Modern Britain} (Philadelphia, PA: University of Pennsylvania Press, 2016).
from collectors by referring to this text.\textsuperscript{65} At such interfaces between things, cabinets, and books, indigenous knowledge shaped European natural history.

Similarly, Olaus Worm learned about these regions via travel accounts, geographies, other cabinet catalogues, and perhaps also directly from travellers and from indigenous visitors. The catalog of authors listed at the start of his cabinet catalog includes several writers who were dependent on indigenous sources, or who had direct access to New World materials, including José de Acosta, Caspar Barlaeus, and Bernardus Paludanus.\textsuperscript{66}

The intellectual backdrop to the making and viewing of cabinets was a literary landscape in which European commentators frequently wrote admiringly about overseas technologies, from East Asian silk to Mexica architecture.\textsuperscript{67} Material ingenuity was something that shaped how viewers thought about the character of peoples.\textsuperscript{68} This is exemplified by the response of the sixteenth-century English cosmographer, translator, and alchemist Richard Eden to material artifacts in the Caribbean. In his copy of Peter Martyr’s \textit{Decadas}, Eden underlined the Latin description of finely worked indigenous objects. In his English translation of Peter Martyr, Eden added the following side-head alongside the text: ‘how can we then caul them beastly or barbarous’?\textsuperscript{69}

\begin{footnotesize}
\begin{itemize}
\item For natural history books as de facto purchase catalogs, see Dániel Margócsy, \textit{Commercial Visions: Science, Trade, and Visual Culture in the Dutch Golden Age} (Chicago, IL: Chicago University Press, 2014).
\item [check what we know about his library, correspondence, etc.]
\item By technologies I mean here both products – such as foodstuffs and clothing – and processes and techniques. For this more capacious and generative definition of technology, see Marcy Norton, \textit{Subaltern Technologies and Early Modernity in the Atlantic World}, Colonial Latin American Review, 26:1 (2017), 18-38.
\item The Johns Hopkins University Library holds Richard Eden’s own annotated copy of Peter Martyr, \textit{Decadas} (Basle, 1533), in which this passage is underlined.
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The broader visual and material landscape within which viewers experienced cabinets was also filled with things that transcended nature and culture, near and far, and old and new. These things included nautilus-shells with gilded silver mounts, which integrated nature and culture and brought the fruits of distant oceans to Europe; and tea, coffee, chocolate, and other substances that Europeans might taste and read about. The late 17th century treatise Traitez nouveaux & curieux du café, du thé et du chocolate includes a print (Fig. 5) depicts a chocolate-maker and his technologies: a chocolate pot and stirrer on the left, and a cup for drinking it; part of a cacao tree and a vanilla pod, appear below it. A delicate study of two Brazilian tortoises (Fig. 6), was produced by painter Albert Eckhout c.1640 for Johan Maurits, governor of the Dutch colony in Brazil; such images preserved a wonder of New World natural history, one highly sought-after for cabinets, for those who could not get their hands on a real one. These examples illuminate some of the many types of transoceanic material encounter possible in early modern Europe – visual, sonic, tactile, gustatory and olfactory landscapes created by seeing, hearing, touching, eating, smoking, smelling, and healing with such technologies as chocolate and tobacco, chilli and maize, featherwork and music. These experiences shaped the assumptions and expectations that viewers brought to cabinets. What distinguished cabinets was that they enabled viewers to practice a form of comparative worldmaking through which new knowledge and categories emerged out of practices of material reckoning.

Catalogues suggested discrete cultural and ontological categories – ‘a Turky carpet’ or ‘a Guinny drum’ are the standard look of short entries. Not were did cataloguers themselves

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70 Philippe Dufour, Traitez nouveaux & curieux du café, du thé et du chocolate. Ouvrage également necessaire aux medecins, & à tous ceux qui aiment leur santé (Lyon, 1685).
71 Worm’s cabinet contained several giant turtle carapaces, which appear along the right-hand wall in the engraving of the room in Fig. 1.
sometime unsure about where something had come from. After contact, indigenous peoples responded to new challenges and their artifacts did not remain unchanged; mestizo, mulatto and creole communities blended European and African, Asian and American and Pacific cultures. In this increasingly fluid ethno-cultural landscape, collections effaced difficult middles, freezing peoples in time and space, much like the categories of noble savage and indigeneity in the late eighteenth and nineteenth centuries. As collections essentialized cultures, they also effaced the longstanding variety within them, be it Moorish influences on Spanish architecture, or changes to Amerindian artifacts post-contact.

Recent scholarship on the history of collections and museums informed by postcolonial studies provides an extra analytical lens through which to think about early modern displays through which viewers encountered things, and about the histories of the display of these artifacts. As Sonya S. Lee has argued, the ways in which things are organized makes implicit claims about sameness: viewers expect things arranged together to have more in common than things that are distant from each other. These structures are as pervasive as they are contingent. The choice of features chosen to represent and therefore to essentialize cultures creates an artificial sense of distance to cultures that have been essentialized differently and positioned elsewhere.

Thus, the choice to organize, say, all ‘Asian' artifacts together, as opposed to all hats from across cultures, implies that the (say) Turkish objects are better to think with when they are

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72 Keating and Markey, ‘Indian Artifacts’. [Follow up Tatiana Seijas’s From Chinos to Indios for the visual semantics of objects]
73 [Think here about Johannes Fabian in Time and the Other and Kubler on “the death of indigenous motifs in Mexico”]
74 See, e.g., [add examples]. For studies of early modern collections in this vein, see – what?!
alongside Balinese objects than Venetian ones, and/or that they have more in common with the former than with the latter. In fact, since the Ottoman and Venetian empires cross-pollinated one another for centuries, attending to Venetian material when studying Ottoman material artifacts helps us to better understand both cultures. Such choices also compress time; regions are typically essentialized by traditional, vernacular artifacts rather than new or international ones. The arts of China in a design or decorative arts museum today are more likely to be represented by Ming or Ching era porcelain rather than by objects made in factories in the same regions today.

As modern museums atomized the private collections they had inherited or appropriated and separated ‘nature wrought’ by indigenous peoples from the ‘art’ and ‘antiquities’ of Europe, they invented the notion of Europe’s uniqueness in possessing history (change over time) and technological development, and traced Europe’s genealogy to antiquity. Technologies of native peoples of, for example, the Americas, in the form of their crops and animals, became detached from notions of techne: plants and animals were considered instead as ‘nature’, thus effacing Amerindians’ capacities for ‘technology’, a term that is typically synonymous with recent Western technology. While medieval and Renaissance collections had exhibited flexible classificatory systems in which things were not routinely divided into human-wrought and nature-wrought things, museums founded in the nineteenth-century, during high imperialism, would do so, and largely continue to work in this vein.

Today, indigenous rights groups and environmentalists challenge the assumption that technology – the capacity to shape nature – automatically improves quality of life, and indicates ‘progress’ or ‘modernity’. These are terms that privilege certain types of technology and social and political organization typically associated with societies of European origin, over others. The
profound transformations of European cultural identity between the Renaissance and the Enlightenment reflect the impact of the material cultures of the wider world on attempts to distinguish between the indigeneity of others and European ‘modernity’.

**Conclusion**

As Carla Nappi notes in this volume, there is no such thing as a transcultural object. Analyzing encounters with things in cabinets sheds light on the parameters of particular types of objects at different places and times. Objects are invented, in the sense that it is only through custom and collaboration that they are recognized and delineated in ways that allowed a community to come to some general agreement about what a thing was. Moreover, new things, or things on the boundaries between types of thing, had to be confronted in the organization of cabinets and their catalogs. In large collections of disparate artifacts, meanings of objects were shaped by choices concerning their placement.

Cabinets, as well as catalogues and prints that document them, created a particular kind of what Mary Louise Pratt called contact zones: they created spaces of compression in which the wider world was brought to Europeans in their studies and palaces.76 Viewers of cabinets became armchair or philosophical travelers who could analyze comparatively objects classed as ‘exotic’ and the relics of Europe’s own classical and prehistoric past.77 Catalogs, representations of collections, and cabinets themselves, were thus prosthetics – artificial substitutes for the practice of travel that amplified the reach of their stay-at-home users, enabling them to practice a comparative anthropology across space and time.

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76 For the notion of contact zones, see Mary Louise Pratt, *Imperial Eyes: Travel Writing and Transculturation* (London: Routledge, 1992). [Add also Fernando Ortiz, *Cuban Counterpoint*, 1940.]

77 Spaces where disparate cultures meet, in contexts of asymmetric power relations.
Cabinets prompted viewers to confront the inherent messiness of the order of nature. And yet they were organized. As each generation or collector re-configured a collection, they left behind traces of how their understanding of material value, aesthetics, and ontology had changed. The invention of new notions of artificial and natural was entangled with the narrowing of the idea of ‘art’ to one in which beauty and conscious human fabrication were central, and both involved the re-invention of ‘nature’ as an object separate from the human. This resulted in the separation of the artifacts of some peoples from those of others; some people’s artifacts were even assembled into collections with things made by nature – witness the display of Native American cultures within natural history museums, occasionally into the present.

Each of the alternatives to a geographical superstructure – objects’ purposes, morphologies, materials – and each space of compression – written catalogue, visual cabinet image, or physical cabinet – created each of the objects within it in relation to the things that surrounded it. What’s at stake for today’s museums is the responsibility that, just as there are no transcultural, transtemporal objects (objects whose parameters remain fixed over time), there is no neutral display paradigm. Nevertheless, this presents opportunities for telling a multiplicity of histories. Instances of compression, ontological disruption, and delight at a world turned upside-down by the shocks of new things show how cabinets and their descendents stimulated material reckonings that were not possible elsewhere.