

## Major's Life and Setting

This chapter sets the stage of Major's travels across the disciplines by describing his background, education, and local setting. The new University of Kiel founded in 1665, to which Major was recruited as the first chair of medicine and where he spent his entire career until his death in 1693, began as a cutting-edge institution whose daring intellectual positions were intended to augment the duke of Holstein-Gottorf Christian Albrecht's reputation and claims to the region. Christian Albrecht was among the many German princes who valorized the usefulness of knowledge. These princes invested in infrastructures for the scholarly investigation of their territories.<sup>1</sup> However, Christian Albrecht's tottering fortunes quickly left faculty members to their own devices. This not only allowed scholars to create space for research removed from the demands of a continually present patron. It also required them to become agile managers of their own careers who could quickly pivot from one patron and setting to the next. They became showmen, cultivating new audiences both within and beyond the academy and captivating them with thrilling manipulations of knowledge.

### 2.1 Major's Early Life and Education

Johann Daniel Major was born to Maria Strofius (1594–1650) and Elias Major (1587–1669) in Breslau (today Wrocław in Poland) in 1634.<sup>2</sup> In 1631, his father had become rector of the Elizabeth Gymnasium, which Major attended. Major's childhood in the thriving cultural center of Breslau introduced him to

<sup>1</sup> Alix Cooper, *Inventing the Indigenous: Local Knowledge and Natural History in Early Modern Europe* (Cambridge: Cambridge University Press, 2007).

<sup>2</sup> This account of Major's career is based on W. Rudolph Reinbacher, *Leben, Arbeit und Umwelt des Arztes: Johann Daniel Major (1634–1693), Eine Biographie aus dem 17. Jahrhundert, mit neuen Erkenntnissen* (Linsengericht: Kroeber, 1998), and on Wilhelm Ulrich Waldschmidt, *Memoria Majoriana* (Frankfurt: Froberg, 1705). I refer to Breslau through its current Polish name, Wrocław, when used as a place of publication in citations.

several of his lifelong interests, such as music, vernacular German poetry, collecting, and the study of local antiquities.<sup>3</sup> The Elizabeth Gymnasium library was endowed with a rich collection of books, manuscripts, coins, art, natural objects, and other rarities, such as dug-up urns from so-called pagan burial sites. In 1699, these polymathic collections would be celebrated in a Latin school play in which the main figure, *Curiosus* (the curious one), explored the collections of the Elizabeth Gymnasium. The “curious one” discussed the collections in conversation with a range of interlocutors, including a historian, a philologist, a miner, a sailor, and a natural philosopher.<sup>4</sup> During Major’s life, Breslau would become an important node of activity for the Academy of the Curious about Nature, founded in 1652 in Schweinfurt. Breslau municipal physician Philipp Jacob Sachs von Lewenheimb (1627–71, hereafter Sachs), would found the academy’s journal in 1670, and after his death in 1671, fellow Breslau physicians Heinrich Volgnad (1634–84) and Johann Jaenisch (1636–1707), would edit it. By 1680, ten Breslauers had been elected to the academy.

At the age of twenty, Major matriculated at the University of Wittenberg, studying with Johann Sperling, Conrad Victor Schneider, and Marcus Banzer and defending theses on the lungs and on tears in 1655 and 1656.<sup>5</sup> He continued for further study at the University of Leipzig with Johann Michaelis and in Padua, where he matriculated in 1659. The surgeons Pietro de Marchetti and Antonio Molinetti had a particularly large impact on his training there. Major’s son-in-law, Wilhelm Ulrich Waldschmidt (1669–1731), recalled in his memorial biography of Major that Paduan professor Carlo Offredi introduced Major at this time to his love of antiquities.<sup>6</sup>

Major also sought out circles of collectors and connoisseurs in nearby Venice. There Senator Giovan Francesco Loredano, a prolific author and member of the *Accademia degli Incogniti*, offered him not only access to his own collections but also a letter of introduction that Major could use to gain access to the collections of others. Loredano, a poet, operettist, satirist, and writer of fantasy, may have been one source of Major’s interest in such genres. Showcasing his *sprezzatura*, Major published a collection of epigrams dedicated to Loredano and in praise of Venice in 1660 that he supposedly dashed

<sup>3</sup> For example, the composer Heinrich Albert dedicated *Arien* (Leipzig: Cellarius, 1657) to Esias Major, Elias Major, and Johann Daniel Major. Major’s brother, Elias, dedicated a collection of poetry, *Schediasmata Germanica* (Öls: Seyffert, 1657) to Esias Major and Johann Daniel Major.

<sup>4</sup> Gottlob Kranz, *Memorabilia bibliothecae Elisabethanae Wratislaviensis* (Wrocław: Steck, 1699).

<sup>5</sup> Reinbacher also mentions a third defense in 1656 over which Banzer presided. Reinbacher, *Major*, 18.

<sup>6</sup> Waldschmidt, *Memoria Majoriana*, 12.

off while traveling by boat from Venice to Padua.<sup>7</sup> Writing while en route would become a trademark of Major's scholarly style.

Following his studies in Italy, Major then journeyed to Vienna and home to Breslau, before moving to Wittenberg to begin practicing medicine and to marry Maria Dorothea Sennert, the daughter of Wittenberg professor Andreas Sennert and granddaughter of renowned medical authority Daniel Sennert, in 1661. His wife died in childbirth in 1662 and their newborn daughter died shortly thereafter. In 1663, Major moved to Hamburg to work as a municipal pest physician. His career took a sudden swing for the better when his friend from Breslau, Sachs, worked to establish his reputation through a printed correspondence and nominated him to the Academy of the Curious about Nature. Major was elected in 1664. While in Hamburg, Major began publishing on what would become one of his most prized discoveries, infusions into the blood, and he defended this discovery on an international scale through correspondence with Henry Oldenburg, secretary to the Royal Society.

In 1665, at the age of thirty-one, Major was recruited as founding chair of medicine (responsible for theoretical medicine, botany, and *chymia*) in the new Christian Albrecht University of Kiel. That year, he also married Margaretha Elisabeth Pincier, the daughter of Hermann Pincier (1598–1668) of Lübeck and the niece of Paul Langermann, a Hamburg materialist (dealer in wholesale *materia medica*) and a famed collector.<sup>8</sup> Hermann Pincier was a canon of the Lübeck cathedral and an advisor to the Gottorf duke as well as of the prince-bishopric of Bremen.<sup>9</sup> Major and Margaretha Pincier had several children, one of whom, Margaretha Dorothea Major, later married Major's successor in Kiel, Wilhelm Ulrich Waldschmidt, the son of a Marburg professor, Johann Jacob Waldschmidt, who held the first chair of experimental philosophy in Europe.<sup>10</sup> None of Major's children appears to have continued his interests. One son, Detlev Johann Major, studied law at Kiel and became a local politician.<sup>11</sup>

<sup>7</sup> I have not seen an extant copy, but Major's *Lauri Folia Veneta* was published in Padua by Paolo Frambotto in 1660, according to Giovan Francesco Loredano, "Indice de' Letterati, che con le Stampe hanno nominato l'Auttore," in *Opere* (Venice: Guerigli, 1661), [\*8r].

<sup>8</sup> Reinbacher, *Major*, 22.

<sup>9</sup> Oliver Auge, "Diener der Fürsten? Die Lübecker Domherren zwischen 1585 und 1803," in Oliver Auge and Anke Scharrenberg (eds.), *Die Diener der Fürstbischöfe: Der Eutin Hof im 17. und 18. Jahrhundert* (Kiel: Wachholtz, 2023), 73–90, 78.

<sup>10</sup> Sabine Schlegelmilch, "The Scientific Revolution in Marburg," in Meelis Friedenthal, Hanspeter Marti, and Robert Seidel (eds.), *Early Modern Disputations and Dissertations in an Interdisciplinary and European Context* (Leiden: Brill, 2020), 288–311, 306.

<sup>11</sup> Detlev Johann Major (*respondens*) and Elias August Stryk (*praeses*), *Dissertatio juridica de proclamatione et banno homicidae fugitivi – vulgò Baan-recht* (Kiel: Reumann, 1692).

Major was not a family man. Major and his father Elias exchanged frequent, formal Latin letters on learned topics. Andreas Sennert also corresponded with Major often, long after the death of his daughter and usually in Latin.<sup>12</sup> Major's second wife, Margaretha Elisabeth Pincier, wrote four letters to him before marriage and two letters afterwards (when she stayed in Lübeck with her mother briefly after the death of her father in 1668).<sup>13</sup>

Major hardly ever mentions his family; when he does, it is to complain about how his household and financial worries distracted him from his scholarly pursuits. In order to support his family, Major maintained a wide medical practice alongside his meager professorial salary. This medical practice constantly called him away from his experimental interests, as he complained to a colleague, Professor Georg Caspar Kirchmaier at Wittenberg, in 1680

How often have my eyes teared up and my heart itself nearly burst asunder in impatience, when I consider how miserably trapped I am in doing those daily labors and writing those frivolous prescriptions that a servant of an apothecary could write, and probably even more correctly. Meanwhile Mechanics (o, my mechanics!), Pyrotechnics, Hydraulics, Optics, Pneumatics, Stathmics, Architectonics, etc. suffer my neglect.<sup>14</sup>

Major describes himself as so busy that he barely had a moment to himself to think and write. Far from the bespectacled polyhistor tied to his study, Major wrote while wandering fields and forests as an escape from the demands of teaching, of his medical practice, and of his family.

For this has been the plan of my studies for a long time now: since at home not even a moment of time is available that I might devote to a gratifying meditation, I am only free to indulge in my little speculations while wandering through the fields and the woods. I write upon those [portable] writing-tables with the shaking hand of a moving body, despite heat, wind, or cold; unless I happen upon a fellow traveler on the road, often the attendant of some noble, who frequently disturbs me all the way to his lord's estate and annoys me with useless chatter.<sup>15</sup>

<sup>12</sup> Elias Major to Johann Daniel Major, in Johann Daniel Major, Correspondence, Kiel University Library, MS S H 406, F, 1–10. Andreas Sennert to Johann Daniel Major, Correspondence, Kiel University Library, MS S H 406, F, 12–57.

<sup>13</sup> Margaretha Elisabeth Pincier to Johann Daniel Major, in Johann Daniel Major, Correspondence, Kiel University Library, MS S H 406, F, 136–7, 138–9, 140–1, 142–3; and after marriage, 144–5 and 146–7.

<sup>14</sup> Johann Daniel Major to Georg Caspar Kirchmaier, March 31, 1680, in Georg Caspar Kirchmaier, *Epistolae clarissimorum virorum ad Georg Casp. Kirchmaierum* (Wittenberg: Ludwig, 1703), 37.

<sup>15</sup> *Ibid.*, 33. Whether Major in fact used a wax-covered tablet, as his term “pugillaribus” suggests, or a notebook of erasable paper more to be expected in his period, is unclear. Peter Stallybrass, Roger Chartier, J. Franklin Mowery, and Heather Wolfe, “Hamlet’s

He also complained publicly in printed works about the demands that his family members placed upon him. His need to support them through his medical practice dragged him away from the “enjoyable labors of experimental study” and forced him instead to travel to see patients.<sup>16</sup>

There was a silver lining to all these trips. Major made it his practice to use the time he spent traveling to see patients to think and write. As he rode through the region, he began to study it more and more in depth. Over time, what he called his “travelling notes” (*Annotationes . . . itinerarias*) grew in size to be a respectable scholarly output. Thinking and writing on the move changed the nature of his scholarship. It was too challenging to balance large folio volumes on the back of a horse or on the pommel of a saddle while one rode through all sorts of stormy weather, he complained. So, he left his books at home, with no other authorities to consult but his own mind and what he was seeing. This manner of working on the move, “far from books and under the open sky, demanded freer and more daring flashes of genius” (*ingenii impetus*).<sup>17</sup>

Over decades of visiting patients throughout the region, Major penned scores of creative short works. He also studied everything he could about the landscape he traversed. He eventually reshaped his “travelling notes” into his last great project, a total history of the local Cimbric peninsula beginning with its prehistoric settlement by humans. By the 1690s, he transformed this practice of traveling scholarship into a dedicated research journey specifically designed to complete his great “Cimbric Work.” He never did finish this work, as he died in 1693 while treating the Queen of Sweden, Ulrika Eleonora (1656–93). His casket was lost at sea; eighteen other people also lost their lives.<sup>18</sup>

## 2.2 Divided Loyalties and Scholarly Independence

The strategic peninsula of Jutland or Cimbria, stretching from the northernmost part of Germany into the northern Atlantic Ocean, was sliced into innumerable tiny, complex administrative regions, where power was shared and shifted often between Danes and Germans. It was split into the duchies of Schleswig, of Holstein, and of Saxe-Lauenburg; the Lutheran bishopric of Lübeck; and the free Imperial cities of Lübeck and Hamburg. The duchies of

Tables and the Technologies of Writing in Renaissance England,” *Shakespeare Quarterly* 55:4 (2004): 379–419.

<sup>16</sup> Johann Daniel Major, *De inventis a se thermis artificialibus succinatis* (Kiel: Reumann, 1680), [C3r–v].

<sup>17</sup> *Ibid.*, [C4r].

<sup>18</sup> Asmus Bremer, *Chronicon Kiliense tragicum-curiosum, 1432–1717*, ed. Moritz Stern (Kiel: Fiencke, 1916), 352.

Schleswig and Holstein were held jointly by both the duke of Holstein-Glückstadt, that is, the king of Denmark, and the duke of Holstein-Gottorf. War in this region remained constant. Friedrich III, duke of Holstein-Gottorf (1597–1659), sought an alliance with Sweden by marrying his daughter Hedwig Eleonora (1636–1715) to King Charles X Gustav. Duke Friedrich died while besieged by Denmark in 1659. With the backing of Sweden, he had secured descent of the duchy to his son Christian Albrecht free of vassalage to Denmark; however, Denmark did not accept this claim. The new duke, Christian Albrecht (1641–95), attempted to broker peace by marrying, in 1667, Princess Friederike Amalie of Denmark (1649–1704). Friederike Amalie's younger sister, Ulrika Eleonora, would later marry Charles XI of Sweden in 1675. Christian Albrecht's domains would be invaded by his father-in-law and the duke would spend the years 1675–89 under house arrest in Hamburg until the signing of the Treaty of Altona. This war was not just regional. As Sweden and Denmark joined the European rush to global colonialism in Asia, Africa, and the Americas, Sweden and Denmark came into conflict overseas, most notably on the Gold Coast of Africa.<sup>19</sup>

Ongoing violence made Kiel a deadly place, with quite a few soldiers involved in stabbings, duels, and shootings, sometimes of students. On one April day in 1680, seven hundred sailors marched through town from Hamburg, sent to serve the enemy fleet in Copenhagen. When some of them mutinied, they were shot and buried in Kiel.<sup>20</sup>

In this setting, scholars could not envision a comfortable career of a court savant sheltered by a single patron. They regularly sought patronage on multiple sides of this war zone. The physician Caspar Danckwerth (1607–72) dedicated his 1652 *New Description of the Two Duchies of Schleswig and Holstein* to both Duke Friedrich III of Holstein-Gottorf and to King Friedrich III of Denmark (1609–70).<sup>21</sup> Both Friedrichs appeared on the title page of Danckwerth's work, along with six figures illustrating the different ancient Germanic and Slavic peoples who purportedly made up the population of the region, a Cimbrian, a Jute, an Angel, a Saxon, a Frisian, and a Wend. This open relationship with competing political powers continued with the founding of the university. As Bernd Roling has observed, "As at almost no other university in Germany, the professors of the Gottorf university operated

<sup>19</sup> Magdalena Naum and Jonas M. Nordin, "Introduction: Situating Scandinavian Colonialism," in Magdalena Naum and Jonas Nordin (eds.), *Scandinavian Colonialism and the Rise of Modernity: Small Time Agents in a Global Arena* (New York: Springer, 2013), 3–16, 8.

<sup>20</sup> Bremer, *Chronicon*, 338.

<sup>21</sup> Caspar Danckwerth, *Neue Landesbeschreibung der Zwey Hertzogthümer Schleswich und Holstein* (Husum: Petersen, 1652).

within the difficult overlap of Danish and Swedish interests, without surrendering entirely to one side or the other.”<sup>22</sup>

In the 1660s, Major was casting about for a patron. He dedicated his 1664 work on intravenous injections to a counselor of Sweden resident in Hamburg as well as to a patrician of Nürnberg.<sup>23</sup> In 1665, Major dedicated a work on a “monstrous plant” in the Gottorf garden to the court chancellor Johann Adolph Kielman von Kielmansegg.<sup>24</sup> He dedicated the first public human anatomy he performed at Kiel to Duke Christian Albrecht, as well as a 1668 discussion of the American aloe blooming at the Gottorf court to Duchess Friederike Amalie. That year, Duchess Marie Elisabeth of Saxony (1610–84), a major collector and the mother of Christian Albrecht, gave Major a live coat from “Virginia,” which he raised in his house.<sup>25</sup>

Major dedicated the 1670 edition of his vernacular account of an ideal polity of learning, *Voyage to a New World*, to von Kielmansegg's two sons, the Gottorf counselors, Hans Heinrich (1626–86) and Friedrich Christian Kielman von Kielmannsegg (1639–1714). An appendix at the end detailed the experiments with a camera obscura and anatomies of the eye he performed in the castle at Eutin for the duke's brother, August Friedrich von Schleswig-Holstein-Gottorf (1646–1705), the bishop of Lübeck. His 1670 edition of the curriculum of an experimental seminar he offered at Kiel noted how his students were performing the same experiments that he had displayed before the bishop at Eutin the year prior.<sup>26</sup>

Major described these experiments and demonstrations at Eutin again in his dedication to August Friedrich of his 1675 study of Fabio Colonna's work on ancient purple.<sup>27</sup> The Eutin court offered Major a sanctuary during violent times and an audience for experimentation. It included among its courtiers Christian Cassius (1609–76), director of the chancellery in Eutin, who also served Christian Albrecht as a Gottorf court counselor.<sup>28</sup> In 1666, Major dedicated a new edition of his volume of poetry praising Venice, the city

<sup>22</sup> Bernd Roling, “Johann Ludwig Hannemann (1640–1724) and the Defense of Paracelsism in Kiel,” in Pietro Daniel Omodeo and Volkhard Wels (eds.), *Natural Knowledge and Aristotelianism at Early Modern Protestant Universities* (Wiesbaden: Harrassowitz, 2019), 271–98, 276.

<sup>23</sup> Johann Daniel Major, *Prodromus inventae a se chirurgiae infusoriae* (Leipzig: Wittigau, 1664).

<sup>24</sup> Johann Daniel Major, *De planta monstrosa* (Schleswig: Holwein, 1665).

<sup>25</sup> Johann Daniel Major, *Memoriale Anatomico-Miscellaneum* (Kiel: Reumann, 1669), [D].

<sup>26</sup> Johann Daniel Major, *Collegium medico-curiousum* (Kiel: Reumann, 1670), Observatio #3.

<sup>27</sup> Fabio Colonna, *De purpura*, ed. J. D. Major (Kiel: Reumann, 1675), [\*3v–\*4r].

<sup>28</sup> Anke Scharrenberg, “Christian Cassius (1609–1676). Dichter, ‘Netzwerker,’ Kanzleidirektor – eine Karriere am Eutiner Hof des 17. Jahrhunderts,” in Oliver Auge and Anke Scharrenberg (eds.), *Die Diener der Fürstbischöfe: Der Eutiner Hof im 17. und 18. Jahrhundert* (Kiel: Wachholtz, 2023), 111–35.

whose art was famous for its use of color, to Cassius, whom Major described not only as his great patron but also as a connoisseur and collector, “endowed with consummate experience in the most select things.”<sup>29</sup> Johann Möller, aka Moller (1661–1725), in his reference work on the learned of the region, detailed at length Cassius’ many travels and learned connections. According to Cassius’ eulogizer, if “everyone whom he inspired in their studies gathered together in one place, it would found a new Cassian Academy.”<sup>30</sup>

Christian Cassius’ brother was the Hamburg physician Andreas Cassius II (1605–73), who developed a form of red glass by suspending salts of gold and tin in the glass, now known as Purple of Cassius. Andreas Cassius had lengthy chemical experience, defending an iatrochemical dissertation at Leipzig in 1629 and collaborating on experiments with Joachim Jungius in Hamburg in the 1650s; Cassius would serve as the executor of Jungius’s will.<sup>31</sup> Like Major, Cassius studied color change as part of a much wider scientific interest in the nature of color, the way it changed due to the interactions of acids and bases, and what this meant for understanding of blood circulation.<sup>32</sup> Andreas Cassius’ son, Andreas Cassius III (1645–1700), defended a dissertation presided over by Major at Kiel in 1666.<sup>33</sup> He also dedicated a 1685 work on gold to the duke, where he described his father’s process for the Purple of Cassius.<sup>34</sup> Such were the interests of the figures before whom Major performed his color change experiments at Eutin.

All the while, Major still sought alternative patrons across enemy lines. He dedicated a 1667 work in which he responded to doubts about his medical invention of intravenous injections to Brandenburg elector Friedrich Wilhelm, another military enemy of Gottorf and Sweden. He dedicated a 1667 collection of his medical inventions to Burchard von Ahlefeld, the regional counselor of the King of Denmark, a “great patron” of his who, alongside many other local prominent figures, had attended his public human dissection at the university.<sup>35</sup>

<sup>29</sup> Johann Daniel Major, *Hadria gloriosa* (Kiel: Reumann, 1666). “Consummatâ rerum selectissimarum peritiâ imbutum.”

<sup>30</sup> Johann Möller, *Cimbria literata*, vol. 1 (Copenhagen: Orphanage, 1744) 88–9. Johann Wilhelm Petersen, *Memorio ... Christiano Cassio* (Lübeck: Schmalhertz, 1676), unpaginated.

<sup>31</sup> Hans Kangro, *Joachim Jungius’ Experimenten und Gedanken zur Begründung der Chemie als Wissenschaft* (Wiesbaden: Steiner, 1968), 67.

<sup>32</sup> Andreas Cassius, *De triumviratu intestinali cum suis effervescentiis, repetita disputatio* (Hamburg: Placidius, 1669).

<sup>33</sup> Andreas Cassius (*respondens*) and Johann Daniel Major (*praeses*), *De febre artificiali* (Kiel: Reumann, 1666).

<sup>34</sup> Karl Jansen, “Cassius, Christian,” *Allgemeine Deutsche Biographie*, vol. 4 (Leipzig: Duncker & Humblot, 1876), 62; Friedrich Cogel, *Melpomene Cassiana, Praefica* (Lübeck: Schmalhertz, 1677). Andreas Cassius, *De ... auro* (Hamburg: Wolff, 1685).

<sup>35</sup> Johann Daniel Major, *Deliciae hybernae, sive tria nova inventa medica* (Kiel: Reumann, 1667).

Like Major, the von Ahlefeld family often switched between service to the Gottorf duke and the Danish king. Major's relationships with this family were manifold and enduring. In 1679 Major named Burchard von Ahlefeld an "exquisite patron of experimental philosophy" and described how von Ahlefeld used burning mirrors in his garden, not to destroy hostile ships as Archimedes had, but to force refractory exotic plants to submit to him [presumably by increasing the heat of the garden].<sup>36</sup> Major performed a demonstration of his newly invented art of blood infusions before Detlev von Ahlefeld, who had sent him a small hibernating mammal.<sup>37</sup> In his research notes, Major described Detlev as a "learned nobleman" who had "diligently" written a study of ghosts in German but never published the manuscript.<sup>38</sup> In Kiel, Major resided in a house owned by Cay von Ahlefeld. Several members of the von Ahlefeld family studied at Kiel, and Benedict von Ahlefeld was one of Major's lodgers.<sup>39</sup> In 1670, Major thanked Danish Major-General Claus von Ahlefeld (1614–74, who had married a natural daughter of Christian IV of Denmark), a major figure in the Dano-Swedish War, for a gift of barnacles from Norway. Major called him "his patron" and noted that besides his martial glories, Ahlefeld was also a connoisseur of select works of art and nature.<sup>40</sup>

Most of all, Major interacted with Friedrich von Ahlefeld (1623–86), who had become Danish governor (*Statthalter*) of the region, and, after 1676, Danish chancellor. Major noted in one of his several dedications to Ahlefeld how his experimental study had been "carried out thus far miserably under the yoke of war, although surviving death and always remaining in the hope of less rocky times."<sup>41</sup> He sought asylum with von Ahlefeld and was granted a quiet nook in von Ahlefeld's well-equipped library. There he realized that von Ahlefeld was among the brightest lights of Denmark, akin to Bacon and Boyle in England. Joachim von Ahlefeld (1646–1717) served first Denmark, the Holstein-Gottorf, then Denmark again.<sup>42</sup> In 1690, Major would praise him

<sup>36</sup> Johann Daniel Major, *Consideratio ferri radiantis . . . & incidenter quaedam de thermis, novo artificio parandis* (Schleswig: Holwein, 1679), [A2].

<sup>37</sup> Major, *Memoriale*.

<sup>38</sup> Johann Daniel Major, *Adversaria Cimbrica*, #288.

<sup>39</sup> Reinbacher, *Major*, 34; Johannes Reinke, *Der älteste Botanische Garten Kiels: Urkundlich Darstellung der Begründung eines Universitäts-Instituts im siebzehnten Jahrhundert* (Kiel: University of Kiel, 1912), 11. See Franz Gundlach, ed., *Das Album der Christian-Albrechts-Universität zu Kiel 1665–1865* (Kiel: Lipsius & Tischer, 1915), 10, 15, 45.

<sup>40</sup> Major, *Collegium*.

<sup>41</sup> Johann Daniel Major, *Genius errans, sive de ingeniorum in scientiis abusu dissertatio* (Kiel: Reumann, 1677). "Miserè hucusque sub jugum Belli acto, & tantum non lethaliter anhelanti, spe comitioris Temporis."

<sup>42</sup> Hermann Kellenbenz, "Ahlefeldt, Joachim von," *Neue Deutsche Biographie*, vol. 1 (Berlin: Duncker & Humblot, 1953), 109–10.

as a patron of his and note that his living chameleon, whose body was given to Major to dissect upon its death, was only the second such animal that had ever visited the region (the first was the Gottorf chameleon of 1626).<sup>43</sup>

The extensive research that Major did over several decades on the history of the Cimbric peninsula required not only the patronage of Duke Christian Albrecht, who ordered keepers of archives to open their volumes to him, but a wide network of collectors who might send him objects and information and local landowners who might permit excavations on their property and allow Major to keep his finds for the purposes of research. This included not only the Ahlefeld family, but many others in the region such as the Rantzau and von Thienen families, who were all densely networked by intermarriage. Major traveled around the region, treating many members of these families in his medical practice. For example, Dorothea Øllegaard Rantzau (née Blome, ca. 1625–95), wrote to Major desperately from this branch's seat at Putloss a week before her husband's death.<sup>44</sup> Over the course of thirty years Major used "over a thousand medical trips," paid for by his patients, as a means to gather research notes about the entire peninsula.

In 1675, both Christian Albrecht's duchy and the bishopric were invaded by Denmark. The Gottorf duke was forced by Denmark to retire to Hamburg for fourteen years, and the chancellor Kielmansegg and his three sons, Major's former patrons, were taken as prisoners to Copenhagen, where the chancellor died four months later.<sup>45</sup> The Kielmansegg sons naturalized in Denmark, marrying into the Ahlefeld family and into the family of Conrad, count von Reventlow, a Danish courtier. They served the Danish court the rest of their lives.<sup>46</sup> For the 1683 edition of his *Voyage to a New World*, Major selected count von Reventlow as his dedicatee. He also benefited from other Danish patronage. He thanked one Detlev Lütghen, the prefect of "Frederik's Bastion," a rampart formerly ringing Copenhagen, for giving him a previously unknown caterpillar.<sup>47</sup> Major also praised the learning of the Danish court. He noted how Frederik the III of Denmark (1609–70) ordered the digging of many giants' bones that were still kept in Copenhagen as a rarity, which proved the Danish king's "enlightened understanding, exceptional prudence, and

<sup>43</sup> Johann Daniel Major, *Ad collegium anatomicum, de oculo humano, chamaeleontis, noctuae, ac aliorum animalium* (Kiel: Reumann, 1690), unpaginated.

<sup>44</sup> Dorothea Øllegaard Rantzau to Johann Daniel Major, October 6, 1673, Kiel University Library, MS S H 406, F.

<sup>45</sup> Carsten Erich Carstens, "Kielmanseck, Johann Adolph Kielmann von," in *Allgemeine Deutsche Biographie*, vol. 15 (Leipzig: Duncker & Humblot, 1882), 719–20.

<sup>46</sup> Eduard Georg Ludwig William Howe von Kielmansegg and Erich Friedrich Christian Ludwig von Kielmansegg, *Familien-Chronik der Herren, Freiherren und Grafen von Kielmansegg* (Leipzig: Brockhaus, 1872), 105.

<sup>47</sup> Major, *Collegium*, unpaginated.

experience in many noble sciences and arts that he loved.”<sup>48</sup> In his 1670 medical experimental course, he offered a list of the four greatest patrons of experimental learning ever – one was the Danish king.<sup>49</sup> When Major traveled to Copenhagen in 1693, as he recorded in his travel account, the king allowed him to visit the Royal Danish *Kunstkammer* as freely as he wished, which was not permitted to others.<sup>50</sup> Across enemy lines, Major enjoyed excellent relationships with Danish scholars.<sup>51</sup> The respect was mutual.<sup>52</sup>

In 1680, at a political low point for the Gottorf duke, Major would be invited to join the medical faculty in Copenhagen, an invitation he declined. He did have his eye on Leopold I's Vienna (although that city would also suffer an invasion by Ottoman troops in 1683), which perhaps explains the title he gave to his planned *magnum opus*, the *Leopoldine Theater of Nature*. Ultimately, he remained at Kiel until his death in 1693. His loyalty was rewarded in 1683, when he was at last appointed as the physician of Christian Albrecht, at the time in exile and under house arrest in Hamburg.<sup>53</sup> Nevertheless, Major refused to accept a court position at Gottorf. As Major wrote to a friend, he turned down opportunities for a court career in both Copenhagen and Gottorf, to the amazement of many. His candor and strong desire for liberty (*“libertatis inexpugnabili desiderio”*), as well as his inability to navigate a political setting, had kept him from court employment.<sup>54</sup>

### 2.3 State-Building and Regional Knowledge Infrastructures

Major strove for intellectual independence. In many ways, the military situation of the region required this, as he continually relied upon patronage from multiple sides of armed conflicts. Yet, at the same time that he attempted to disentangle knowledge from power, he also benefited from the ways that regional heads of state competed through their epistemic infrastructures such as libraries, collections, gardens, and universities. Cutting-edge political theory of the late sixteenth and early seventeenth centuries encouraged the development of collecting and knowledge management practices. A previous Danish governor (*Statthalter*) of the region, Heinrich Rantzau (1526–99), had overseen the *Methodus Apodemica* of Albrecht Mejer (1528–1603), which became

<sup>48</sup> Johann Daniel Major, *Bevölckertes Cimbrien* (Plön: Schmied, 1692), 57.

<sup>49</sup> Major, *Collegium*, unpaginated.

<sup>50</sup> Karin Unsicker, *Weltliche Barockprosa in Schleswig-Holstein* (Neumünster: Wachholtz, 1974), 110.

<sup>51</sup> Johann Daniel Major, *Unvorgreiffliches Bedencken von Kunst- und Naturalien-Kammern insgemein* (Kiel: Reumann, 1674), [D1r]. Major, *Collegium*, Specimen 4.

<sup>52</sup> Thomas Bartholin, “Ad D. Jo. Dan. Majorem, in nova Academia Chiloniensi Profess. & Sponsum,” in *Carmina* (Copenhagen: Paulli, 1666), 60.

<sup>53</sup> Reinke, *Der älteste Botanische Garten Kiels*, 11.

<sup>54</sup> Major to Kirchmaier, March 31, 1680, *Epistolae*, 35–6.

a classic work for learned or methodical travel, training travelers in the collecting of empirical information by following a preordained set of commonplaces.<sup>55</sup> Johann von Wowern (1574–1612) of Hamburg, who published an early and influential work on polymathy in 1603, became the councilor of Duke Johann Adolph of Holstein-Gottorf (1575–1616) and the governor of Gottorf Castle.<sup>56</sup> The political theorist, Hermann Lather, in a 1618 work dedicated to the next duke, Friedrich III, discussed the political utility of investing in a *Kunstkammer*, even when it contained apparently useless things.<sup>57</sup> Friedrich III, who ruled from 1616 and was one of the noble founders of the learned poetical society, the *Frunchtbringende Gesellschaft*, followed Lather's advice, patronizing many works of learning as demonstrations of statecraft.<sup>58</sup>

Economic advice of the period "reason of state" also encouraged competing princes to promote urbanism, settlement, industry, investment, and global trade.<sup>59</sup> Competing with Glückstadt ("Happy Town"), the town founded in Holstein in 1616 by Christian IV of Denmark (1577–1648), Duke Friedrich III founded his own ideal town, Friedrichstadt, in 1620, to which he lured settlers of many religions with the promise of freedom of religion. Glückstadt and Friedrichstadt were among the earliest of the forty "refugee-cities" that competing heads of state would found, mostly in the Holy Roman Empire.<sup>60</sup> Altona, controlled by Denmark from 1640, also became internationally known as a religious refuge, although it remained technically Lutheran. Competing with neighboring Hamburg in granting rights of settlement to religious minorities, Altona allowed Ashkenazi Jews to settle there by 1612, while

<sup>55</sup> Justin Stagl, *A History of Curiosity: The Theory of Travel, 1500–1800* (Chur: Harwood Academic Publishers, 1995), 128.

<sup>56</sup> Erich Carsten Carstens, "Wowern, Johann von," *Allgemeine Deutsche Biographie*, vol. 44 (1898), 220; Johann von Wowern, *De polymathia tractatio* (Hamburg: Froben, 1603). On von Wowern and Morhof, Hole Rößler, "Utopie der Bildung. Der Entwurf einer 'Polymathia experimentalis' in Johann Daniel Majors *See-Farth nach der Neuen Welt/ ohne Schiff und Segel* (1670)," in Flemming Schock (ed.), *Polyhistorismus und Buntschriftstellerei: Populäre Wissensformen und Wissenskultur in der Frühen Neuzeit* (Berlin: De Gruyter, 2012), 665.

<sup>57</sup> Hermann Lather, *De censu* (Frankfurt: Jennis, 1618), 973–97.

<sup>58</sup> On Gottorf, see the four-volume *Gottorf im Glanz des Barock: Kunst und Kultur am Schleswiger Hof, 1544–1713* (Schleswig: Schleswig-Holsteinisches Landesmuseum, 1997), consisting of vol. I: Heinz Spielmann and Jan Drees, eds., *Die Herzöge und Ihre Sammlungen*; vol. II: Mogens Bencard, Jorgen Hein, Bente Gundestrup, and Jan Drees, *Die Gottorfer Kunstammer*; vol. III: Heinz Spielmann, Jan Drees, Birgit Doering and Uta Kuhl, eds. *Schleswig-Holsteinisches Landesmuseum Renaissance und Barock*; and vol. IV: Felix Lühning, *Der Gottorfer Globus und das Globushaus im 'Neuen Werck.'*

<sup>59</sup> Vera Keller, *Knowledge and the Public Interest* (Cambridge: Cambridge University Press, 2015).

<sup>60</sup> Benjamin Kaplan, "The Legal Rights of Religious Refugees in the 'Refugee-Cities' of Early Modern Germany," *Journal of Refugee Studies* 32:1 (2019), 86–105.

Sephardi Jews settled in Hamburg. Mennonites, Labadists, Catholics, and other non-Lutherans were also attracted to Altona.<sup>61</sup>

Regional rulers also competed on a global stage. Christian IV granted a patent for a joint-stock company to trade to Asia in 1616, which succeeded in founding a trading post at Tranquebar in Ceylon in 1620 (which would remain under Danish control until 1845).<sup>62</sup> Duke Friedrich sent a series of diplomatic envoys, first to Muscovy in 1634–5 and then to the court of Shah Safi (1611–42) in Persia in 1635–9, in order to establish a silk road he hoped would reach from Asia to Friedrichstadt.<sup>63</sup> The Gottorf court savant, librarian and curator, Adam Olearius (1603–71), published many works advertising the voyage, winning an international readership through translations into Dutch, Italian, French, and English. Olearius translated Sa'di's Persian *Gulistan* into German with the help of Hakverdi (Hakk-wirdi), a legate from the Shah who came to Gottorf with his son in 1638 and remained there with a brief stint aiding Dutch scholars in the Netherlands in the 1640s, until his death in 1650. His son, baptized as "Johann Georg" at the age of 29 in 1647, was knowledgeable in the art of gunnery, having gained experience in Dresden, Gottorf, and Copenhagen. He became the chief gunner of Gottorf.<sup>64</sup>

In 1651, Duke Friedrich acquired one of the famed collections of Bernard Paludanus (1550–1633), making it the basis of his own collection and entrusting it to the care of Olearius. The duke's collection was global in scope, with a special emphasis upon Persia, Muscovy, and the far North, such as Greenland. Rather than works of European painting and sculpture, it specialized in global *naturalia* and human artifacts, as well as in humans themselves. Via Paludanus' collection, Gottorf held a mummy from the West Indies (which Olearius suggested might be from Chile).<sup>65</sup> Three living Greenland women, Cabelou, Gunelle, and Sigjo, were sent from Copenhagen to Gottorf in the late 1650s. Olearius included their portraits in his catalog of the collection.<sup>66</sup>

<sup>61</sup> Joachim Whaley, *Religious Toleration and Social Change in Hamburg, 1529–1819* (Cambridge: Cambridge University Press, 2002).

<sup>62</sup> Aniruddha Ray, "Mughal-Danish Relations during the 17th and Early 18th Century Bengal," in *Proceedings of the Indian History Congress, 58th Session, Bangalore* (Aligarh: Indian History Congress, 1998), 285–94.

<sup>63</sup> Vera Keller and Leigh Penman, "From the Archives of Scientific Diplomacy: Science and the Shared Interests of Samuel Hartlib's London and Frederick Clodius' Gottorf," *Isis* 106:1 (2015), 17–42, 28.

<sup>64</sup> Sa'di, *Persianischer Rosenthal*, trans. Adam Olearius (1st ed., 1654; 2nd ed., 1660); Möller, *Cimbria literata*, vol. 2, 268–9; Johannes von Schröder, *Geschichte und Beschreibung der Stadt* (Schleswig: self-published, 1827), 344.

<sup>65</sup> Adam Olearius, *Gottorfische Kunst-Kammer* (Schleswig: Holwein, 1666), 78.

<sup>66</sup> Peter J. P. Whitehead, "Earliest Extant Painting of Greenlanders," in Christian F. Feest (ed.), *Indians and Europe: An Interdisciplinary Collection of Essays* (Aachen: Alano, 1989), 141–60, 144.

The political and military significance of the collection was immediately apparent upon entering the Gottorf *Kunstkammer*. According to Olearius' catalog, the first object one saw was a massive jawbone from a whale whose body had been 62 feet long. The whale was found in the year 1659, the year that peace had been declared between Sweden and Denmark, and thus it was known as the Fish of Peace.<sup>67</sup> The collection also held a less sanguine omen; two swordfish found in 1643, shortly before Sweden launched an attack upon Holstein and Denmark (the Torstenson War).<sup>68</sup> Another object, not cataloged by Olearius but described by the Swedish traveler Nils Rubenius in 1662, embodied the inescapable violent conflict of the region: four entangled antlers representing the kings of Sweden and Denmark and the mutual destruction toward which their ceaseless fighting would lead. As visitors to Gottorf were told, in the middle of a war of Sweden against Denmark, a hunter surprised two stags, who so entangled their threatening antlers within each other that they could not be disentangled, so that they remained entrapped. One of the stags died, and the other was so weakened by dragging around the dead body of its opponent that it easily fell into the hands of the hunter.<sup>69</sup>

War shaped the collection not only in its content but also in its organization. Packed and moved for safekeeping, only to be unpacked and repacked again, the collection was made mobile by war. Perhaps this was why, as Major noted, the Gottorf collection had been rearranged more than three times by 1670.<sup>70</sup> In 1676, the librarian Marquard Gude sent a flurry of letters to the Gottorf duke about how he was attempting to preserve the court collection in the face of an invasion. Six Danish companies of two hundred men had entered the town of Schleswig outside Gottorf. He had packed items item up in wooden chests, each containing an inventory of their contents to send away. However, he hesitated to send off the most expensive manuscripts, many of which contained paintings. The *Kunstkammer* too was composed mostly of old and fragile natural specimens that would suffer horrible damage if they were transported overland.<sup>71</sup> The Gottorf *Kunstkammer*, a collection of major economic value, was preyed upon by Danish forces.<sup>72</sup> Hauled piecemeal to

<sup>67</sup> Olearius, *Gottorfische Kunst-Kammer* (1666), 1.

<sup>68</sup> *Ibid.*, 2.

<sup>69</sup> Jan Drees, "Die 'Gottorfische Kunst-Kammer': Anmerkungung zur ihrer geschichte nach historischen textzeugnissen," in Heinz Spielmann and Jan Drees (eds.), *Gottorf im Glanz des Barock: Kunst und Kultur am schleswiger Hof, 1544–1713*, 4 vols., vol. 1 (Schleswig: Schleswig-Holsteinisches Landesmuseum, 1997), 18.

<sup>70</sup> Johann Daniel Major, *See-Farth nach der Neuen Welt ohne Schiff und Segel* (Hamburg: Wolff, 1683), 102. "Numehro zum dritt-oder mehrenmahl eine neue Disposition erfordert."

<sup>71</sup> LAS 7, 203. Marquard Gude to Christian Albrecht, June 8, 1676, and October 9, 1676.

<sup>72</sup> Jørgen Hein, "Learning versus Status? Kunstskammer or Schatzkammer?," *Journal of the History of Collections*, 14:2 (2002), 177–92, 188.

Copenhagen between 1710 and 1720, the remainder was delivered en masse to Copenhagen in 1721, where it remains today.<sup>73</sup>

In the preface to his 1666 catalog of the Gottorf collections, Adam Olearius alluded delicately to the competing collections in the area and their intersections with the battlefield. The region afforded two neighboring potentates who were singular connoisseurs (*Liebhaber*) both of natural rarities and artifice, namely, King Friedrich III of Denmark to the north in Copenhagen and Elector Friedrich Wilhelm of Brandenburg to the south in Berlin. Both of them had visited and praised the Gottorf collection, and both had endowed it with notable gifts. The Danish king had also recently arranged a chamber of art and rarities in Copenhagen, which was growing larger on a daily basis. The elector of Brandenburg had also assembled a celebrated collection.<sup>74</sup>

What Olearius did not note in his catalog, but did in a history of Holstein, was that the elector's visit to the collection occurred during a military campaign. Friedrich Wilhelm and his officers occupied Gottorf castle for four days, taking in the collections and the library at their leisure. The elector was able to see only half the collection because part of it had been moved to a safer location. Nevertheless he admired it, remarking that he would have wished to have had the chance to speak with its owner, because he was such an "art-loving Lord," in peaceful circumstances. Before his troops departed, the elector enriched the collection "with some art pieces he happened to have on him, and others that he had sent later."<sup>75</sup> This bizarre exchange of niceties and collectibles in the middle of a military occupation illustrates the degree to which the collection was enmeshed in territorial aggression.

Friedrich also highlighted his global ambitions through a moving planetarium, the Gottorf Globe, that was set outside in magnificent gardens. A rotating circular room, the globe could fit twelve people, who could thus, as it were, climb into the heavens and observe the stars move, up close and personally. A pendant Copernican sphere was held indoors.<sup>76</sup> He also founded a cutting-edge chymical laboratory. Duke Adolf I of Gottorf (1526–86) had earlier established the glass industry in Holstein by recruiting the glassmaker Franz Kunckel in 1575. His son, Jürgen Kunckel, supplied the Gottorf laboratory with its specialized glassware. Jürgen's son, Johann Kunckel (1630–1703),

<sup>73</sup> Mogens Bencard, "Eine private fürstliche Kunstkammer: Rosenborg 1718/Gottorf 1694," in A. Grote (ed.), *Macrocosmos in Microcosmo: Die Welt in der Stube zur Geschichte des Sammelns 1450 bis 1800* (Wiesbaden: Verlag für Sozialwissenschaften, 1994), 339–48, 345.

<sup>74</sup> Olearius, *Gottorffische Kunst-Kammer* (1666), [B3r].

<sup>75</sup> Adam Olearius, *Kurtzer Begriff einer Holsteinischen Chronic* (Schleswig: Holwein, 1663), 380.

<sup>76</sup> Karen Asmussen-Stratmann, "Barocke Gartenkunst auf Gottorf," in Rainer Hering (ed.), *Die Ordnung der Natur: Vorträge zu historischen Gärten und Parks in Schleswig-Holstein* (Hamburg: Hamburg University Press, 2009), 13–36, 23.

who grew up in this exciting laboratory atmosphere, became one of Europe's premier experimenters with novel forms of glass. Kunckel himself supplied Duke Christian Albrecht with 60 *Reichsthaler* worth of glass in 1665.<sup>77</sup>

Duke Friedrich III patronized several impressive scientific works, such as editions of alchemical works and the "Gottorfer Codex," a magnificent botanical manuscript now in Copenhagen.<sup>78</sup> In 1651, Samuel Hartlib in London approvingly noted (as he was informed by his son-in-law and Gottorf political agent, Friedrich Clodius) how the Gottorf duke hired two individuals to make "daily Indices Materiaram on all the Bookes of his library."<sup>79</sup> The need to index the contents of the library's books on a daily basis indicated the size and rapid growth of the collection. The manuscripts of the Gottorf library included works in Arabic and Chinese, as well as letters in "Muscovite" and Persian sent to Duke Friedrich.<sup>80</sup> It became a hotbed of state-of-the-art librarianship, under the care of successive librarians, Olearius, Marquard Gude (1635–89), and Johann Nicolas Pechlin (1644–1706).

Court dances and ballets were another form of cultural expression that intersected at the time with martial exercises of the noble body. Reflecting the court collections, they staged costumed figures from throughout time and around the world such as "an ancient Franconian man" and contemporary Greenlanders.<sup>81</sup> Olearius composed a dance of "Oriental women from various nations" in one of his court ballets.<sup>82</sup> For a masquerade celebrating the birthday of Duke Christian Albrecht in 1669, Kiel University professor Daniel Georg Morhof staged global ancients: warring Romans, Cimbrians, Amazonians, and "various others from around the world with their slaves."<sup>83</sup>

<sup>77</sup> Hans-Joachim Kruse, "Johann Kunckel – der bedeutendste Plöner?" *Jahrbuch für Heimatkunde in Kreis Plön* 42 (2012), 89–150.

<sup>78</sup> Jan Drees, "'Virtutis gloria merces': Herzog Friedrich III. von Schleswig-Holstein-Gottorf (1597–1659) und sein Streben nach Ruhm und Anerkennung durch die Förderung der Wissenschaften und der Künste," in Dietrich Rot (ed.), *Die Blumenbücher des Hans Simon Holtzbecker und Hamburgs Lustgärten* (Keltern-Weiler: Goecke & Evers, 2003), 89–114; Keller and Penman, "From the Archives of Scientific Diplomacy," 29.

<sup>79</sup> Hartlib Papers Online, HP 28/2/19A.

<sup>80</sup> Kiel Cod. MS. SH 410A, Johann Nicolas Pechlin, *librorum mss. bibliothecae Gottorpiensis Catalogus*, unpaginated, urn:nbn:de:gbv:8:2-1019519.

<sup>81</sup> Mara Wade, "Ballet, *Kunstkammer*, and the Education of Princess Hedwig Eleonora at the Gottorf Court," in Kristoffer Neville and Lisa Skogh (eds.), *Queen Hedwig Eleonora and the Arts: Court Culture in Seventeenth-Century Northern Europe* (London: Routledge, 2017), 159–78, 163, 168.

<sup>82</sup> Winfried Richter, *Die Gottorfer Hofmusik: Studie zur Musikkultur eines absolutistischen Hofstaates im 17. Jahrhundert*. PhD thesis, Kiel University (1985), 248.

<sup>83</sup> *Ibid.*, 247. "Wie auch unterschiedliche andere/ aus allen Ländern/ mit ihren Sklaven." For the shared interests of Morhof and Major in ancient Cimbria, see Dieter Lohmeier, "Das gotische Evangelium und die cimbrischen Heiden. Daniel Georg Morhof, Johann Daniel Major und der Gotizismus," *Lychnos* (1977–8), 54–70.

In addition to the resources of the Gottorf court, the region was home to the collection of the bibliophilic court chancellor, Johann Adolph Kielman von Kielmansegg (1612–76), further expanded by his son, Friedrich Christian, to 50,000 volumes.<sup>84</sup> The journalist Eberhard Werner Happel (1647–90) opined that no library anywhere could boast as great a quantity of the newest and rarest authors as the Kielmansegg collection.<sup>85</sup> Kielmansegg was an author himself, having written several printed and manuscript works celebrating the duchy and its political supremacy.<sup>86</sup> Daniel Georg Morhof celebrated Kielmansegg in fifteen poems, and Major dedicated several works to him (as well as to his sons). Many other impressive libraries graced the region, although several of them, such as those belonging to the noble families of Rantzau and Ahlefeld (whose collection Major had often used), were consumed by wartime conflagrations.<sup>87</sup> Ducal, noble, clerical, and professorial libraries were integrated into the Kiel University library, which was frequently cataloged, and, under the librarianship of Daniel Georg Morhof, made numerous purchases.<sup>88</sup> As in other libraries of the period, the university library boasted not just books but also objects, such as globes and mathematical instruments, and a book-wheel, handy for keeping several volumes open for reference at a time.<sup>89</sup>

The city libraries of Lübeck and nearby Hamburg also offered well-stocked shelves. Hamburg's library, which held a significant collection of natural specimens and instruments in addition to books, was curated by David Schellhammer (ca. 1629–93), Major's frequent correspondent on museal issues. Hamburg possessed the most private libraries of any European city in the seventeenth and early eighteenth centuries.<sup>90</sup> It is thus not surprising that

<sup>84</sup> von Kielmansegg, *Familien-Chronik* (1872), 110; Friedrich Christian von Kielmansegg, *Bibliotheca Kielmans-Eggiana*, 4 vols. (Hamburg: Trausold, 1718–21).

<sup>85</sup> Eberhard Werner Happel, "Die Holsteinischen Bibliotheken," in *Relationes curiosae* (Hamburg: Wiering, 1685), 332.

<sup>86</sup> von Kielmansegg, *Familien-Chronik der Herren . . . von Kielmansegg*, 88–9.

<sup>87</sup> Arnold Tode, *Declamatio historica de bibliothecis Chersonensi Cimbricae publicis*, unpaginated. urn:nbn:de:gbv:8:2-979790.

<sup>88</sup> E.g., Kiel Cod. MS. Sh. 408D, *Index Universalis Bibliothecae Academicae Kiloniensis, ex decem diversis Bibliothecis Bordsesholmensi, Templi Divi Nicolai, Crameriana, Clauseniana, Gottorpiensi, Crusiana, Utinensi, Kiloniensi, Clausenheimiana et Hannemanniana congestæ*, urn:nbn:de:gbv:8:2-1854783; Kiel Cod. MS. SH. 408b, *Librorum Academiae Kiloniensis sumtibus comparatorum Index alphabeticus d. 13. oct. 1691*, urn:nbn:de:gbv:8:2-1573270.

<sup>89</sup> Henning Ratjen, *Zur Geschichte der Kieler Universitätsbibliothek* (Kiel: Mohr, 1862); Sebastian Kortholt, *de Bibliotheca academiae Kiloniensis* (Kiel: Reuther, 1705); Tode, *Declamatio historica*, Kiel Cod. ms. SH 409.

<sup>90</sup> On the chancellor's library, Jonathan Israel, *Radical Enlightenment: Philosophy and the Making of Modernity 1650–1750* (Oxford: Oxford University Press, 2001), 139. On the Gottorf court library, Paul Nelles, "Historia Literaria and Morhof: Private Teaching and Professorial Libraries at the University of Kiel," in Françoise Waquet (ed.), *Mapping the World of Learning: The Polyhistor of Daniel Georg Morhof* (Wiesbaden: Harrassowitz,

the region gave rise to authoritative studies on excerpting, indexing, and other forms of knowledge management by Morhof, Vincent Placcius, and others.

## 2.4 The Founding of the University of Kiel

The area's massive collections were touted as resources for the university. A nearly 700-page celebration of the duchy's efforts in patronizing learning served as the inaugural text for the university, highlighting the Gottorf sphere, court library, ducal coin collection, and *Kunstkammer*. It was composed by an international adventurer and political agent, a Dalmatian-born baron who worked for various polities across Europe, including the king of Sweden.<sup>91</sup>

Both this account and others advertise the Gottorf collections, accessible by boat from Kiel, as a resource for the university. The population of Kiel was minuscule. However, the investments that Gottorf dukes had made in international diplomacy, laboratory investigations, botany, mechanical invention, and collecting made it a far more culturally rich region than we might assume. An innovative curriculum that made use of these collections attracted students from all over.

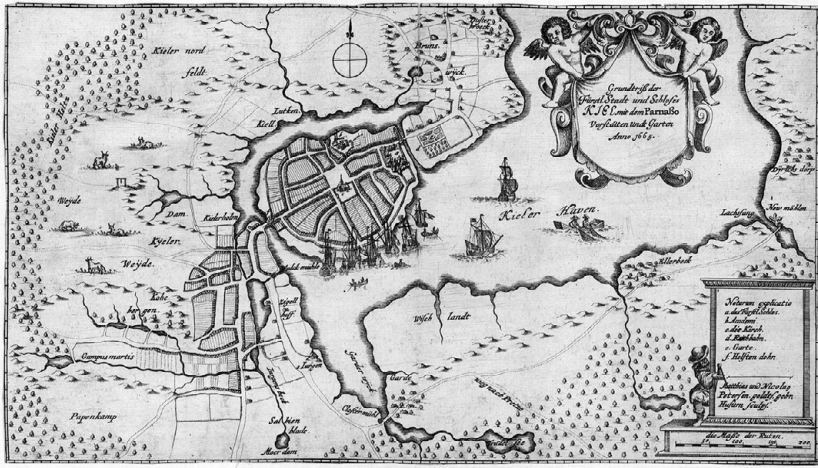
In his publication on the American aloe that bloomed in the garden of the Gottorf castle in 1668, Major also described the resources at Gottorf, such as the castle library, laboratory, chamber of art and armaments ("Kunst-und Rust-Kammer"), and a garden that was not just a "Theater of Nature" but a "residence of Nature, Art, and all the graces."<sup>92</sup> Caeso Gramm, Major's colleague on the medical faculty at Kiel, likewise celebrated these collections in his *New Parnassus of Holstein*.<sup>93</sup> Kiel mathematics professor, Samuel Reyher (1635–1714), dilated at length on the Gottorf court in a series of accounts of princely lovers of mathematics. Reyher praised the library, the *Kunstkammer* (which held concave mirrors, a magic lantern, and a model of an Italian theater), and the garden. The garden's pleasurehouse, the Amalienburg, built for Duchess Friederike Amalie, contained a camera obscura, telescopes, microscopes, and beautifully turned objects. Christian Albrecht, Reyher hastened to add, did not spend all of his time in turning, like some princely ivory turners. Rather, the duke continually practiced the arts of war, both during wartime and in peace. Reyher listed all the disciplines to which these mathematical holdings at Gottorf pertained: Civil architecture,

2000), 31–56. On Hamburg's resources, Martin Mulsow, *Knowledge Lost* (Princeton, NJ: Princeton University Press, 2022); Paul Raabe, ed. *Öffentliche und private Bibliotheken im 17. und 18. Jahrhundert: Raritätenkammern, Forschungsinstrumente oder Bildungsstätten?* (Bremen: Jacobi, 1977).

<sup>91</sup> Alexander Julius Torquatus, *Christiana-Albertinae inauguratio* (1666), 25–8.

<sup>92</sup> Johann Daniel Major, *Amerikanische . . . Aloe* (Schleswig: Holwein, 1668), 16–17.

<sup>93</sup> Caeso Gramm, *Novus Holsatiae Parnassus* (Schleswig: Holwein, 1665).



**Figure 2.1** Map of Kiel. Caeso Gramm, *Chilonium novus Holsatiae parnassus* (Schleswig: Holwein, 1665). Royal Danish Library, DA 40:1-308 4.

catoptrics, dioptrics, scenography, garden architecture, hydraulics, optics, curious mechanics, defensive military architecture, offensive military architecture, and tactics.<sup>94</sup>

The Gottorf court afforded global collections and viewpoints that might be unexpected in a town as tiny as Kiel was (Figure 2.1). Thus, for instance, Reyher incorporated a discussion and depiction of Greenland canoes in analyzing the dimensions of Noah's ark.<sup>95</sup> When Reyher shifted to take up the chair of natural law in 1692, he not only taught German and Roman law but also "Turkish, Persian, Chinese, and African law."<sup>96</sup> Major often makes reference to items in the Gottorf collection, as do his students.<sup>97</sup> The Gottorf keeper of collections, Adam Olearius advised Major on attaining his position at Kiel. Olearius often asked Major to communicate with his father-in-law, Hermann Pincier of Lübeck, over the purchase of books for the Gottorf library,

<sup>94</sup> Detlev Broctorf (*respondens*) and Samuel Reyher (*praeses*), *De rege mathematico* (Kiel: Reumann, 1670), [D2].

<sup>95</sup> Samuel Reyher, *Mathesis Mosaica* (Kiel: Reumann, 1679), 45–6.

<sup>96</sup> Mikkel Munthe Jensen, "Teaching Natural Law at the University of Kiel: The History of an Academic Discipline, 1665–1773," *History of Universities* 35:2 (2022), 106–42, 126.

<sup>97</sup> E.g. Jacob van Melle, *Historia urnae sepulchralis Sarmatica anno 1674 repertae* (Jena: Krebs, 1679), who describes his examination of ancient German burial urns in the Gottorf *Kunstammer* while a student at Kiel.

as well as with his colleagues at Kiel such as Daniel Georg Morhof.<sup>98</sup> Major called Adam Olearius' catalog of the Gottorf collection "unusually learned."<sup>99</sup>

From his teaching at Kiel through his collection, discussed in Chapter 9, Major would develop his distinctive approach to museology based on a series of studies of global curation practices. In doing so, he situated the relationship between knowledge and the globe differently than did the court. For the Gottorf dukes, microcosmic collections, including the celebrated Gottorf Globe, symbolized their princely territorial ambitions. It was very apparent how such collections entangled with power and with conflict. The globe itself would be born away to Russia by Tsar Peter the Great, where it remains today; a reconstruction has been installed in Gottorf.<sup>100</sup> By establishing his own collection for his teaching, rather than making use of the ducal collections, Major created a space that separated knowledge production from power. Amid the "unpleasant din of wars" raging outside, within his collections, Major and his students played a much more pleasant wargame through experiments researching the shifting *taxis* of various groupings of salts, which sometimes attacked one another with loud explosions and at others, bonded together in peace treaties.<sup>101</sup> Kiel students came from all sides of the regional conflict. In 1680, botany professor Johann Nicolas Pechlin even praised how battle offered students opportunities for hands-on learning, as in the case of Caspar March, Jr., who spent two years treating the soldiers of Gottorf's enemy, the elector of Brandenburg, "and by means of much and varied treatment, tested and proved his studies."<sup>102</sup>

Despite the active warfare, students flocked to Kiel from both German-speaking lands and Sweden, Denmark, and Norway, as well as from further places such as Scotland, Hungary, France, and Lwów.<sup>103</sup> Some stopped at Kiel during farflung academic travels, a practice that increased intellectual communication between universities. A handful of those who studied at Kiel were more diverse than we might assume. According to the biobibliographer Johann Möller, Henrica Maria Schellhammer (1684–1720), the daughter of Kiel University professor Günther Christoph Schellhammer and the learned Maria Sophia Conring (1614–1719), was "educated at Jena and at Kiel," although she did not formally inscribe as a student.<sup>104</sup> In his autobiographical

<sup>98</sup> Adam Olearius to Johann Daniel Major, May 30, 1665, Kiel, Cod. S.H. 406f, 148.

<sup>99</sup> Johann Daniel Major, *See-Farth nach der Neuen Welt ohne Schiff und Segel* (Kiel: Reumann, 1670).

<sup>100</sup> <https://gottorfer-globus.de/en/the-gottorf-globe>.

<sup>101</sup> Hermann de Lengerken (*respondens*) and Johann Daniel Major (*praeses*), *De aerumnis gigantum in negotio sanitatis* (Kiel: Reumann, 1676), [H2].

<sup>102</sup> Johann Nicolas Pechlin, *Theses de affectibus soporosis* (Kiel: Reumann, 1680), [A3v].

<sup>103</sup> E.g. the Scottish Alexander Cunningham, the Hungarian Marcus Strorigel, the Russian Johannes Gontkowsky, and the French Francois Lehoux. Gundlach, *Das Album*, 5, 15, 17.

<sup>104</sup> Möller, *Cimbria literata*, vol. II (1744), 778. "Jenae vero & Kilonii educata, ac linguis literisque imbuta."

novel, Eberhard Werner Happel (who inscribed as a student at Kiel in August 1673) described a fellow student, an American born in Chile and brought by the Spaniards to North Africa. He converted to Judaism in Fez, where he studied medicine. After his Moroccan patron's death he continued on to France and Germany, practicing his art, until at last he was baptized at Kiel where he studied medicine and the art of artillery at the expense of the Gottorf duke. He spoke Latin, French, Italian, Spanish, and the "Slave or Francken-Speech" of North Africa. In Latin, he liked to pun cleverly, "*Chili sum natus, Kilii sum renatus*" (I was born in Chile and reborn in Kiel).<sup>105</sup> One would assume this was a fiction of Happel's were it not confirmed by an entry in the album of students in June 1673 of an American student named after the local Duke Christian Albrecht ("*Christianus Albertus Kielius Americanus*"), with a note that he had registered for his studies for free.<sup>106</sup>

As a new institution, Kiel aimed to make a name for itself by offering an innovative curriculum offering the latest and most controversial views and novel forms of learning (Figure 2.2). Kiel's chair in the law of nature and nations was "the first of its kind in a faculty of law."<sup>107</sup> At his first academic event, the professor of philosophy Michael Watson presided over a dissertation on the trending topic of antediluvian history.<sup>108</sup> Theology professor Christian Kortholt chose a dissertation on Greco-Roman paganism, Islam, and Judaism. This advised students to consult a particularly wide array of modern Hebrew authors, whose texts they could access by studying Hebrew with Professor Matthias Wasmuth.<sup>109</sup> To celebrate his appointment as professor of ethics at Kiel, Adam Tribbechow published a polemical work, *On the Scholastic Doctors and the Science of Divine and Human Things Corrupted by Them*, dedicated to Duke Christian Albrecht. This work, republished in 1719, would inform wider views of the "scholastics," including those of Jakob Thomasius, Pierre Bayle, and others.<sup>110</sup> Once Tribbechow arrived in Kiel, he presided over a dissertation on *The Moral Philosophy of the*

<sup>105</sup> Eberhard Werner Happel, *Der Teutsche Carl* (Ulm: Wagner, 1690), 205.

<sup>106</sup> Gundlach, ed., *Das Album*, 14. "Kielius" here might refer both to Kiel as has place of baptism and to Chile as the place of his birth.

<sup>107</sup> Jensen, "Teaching," 115.

<sup>108</sup> Laurentius Aroselius (*respondens*) and Michael Watson (*praeses*), *De historia ante diluviana* (Kiel: Reumann, 1665).

<sup>109</sup> Cosmas Elrod (*respondens*) and Christian Kortholt (*praeses*), *De religione ethnica, Muhammedana, et judaica* (Kiel: Reumann, 1665).

<sup>110</sup> Adam Tribbechow, *De doctoribus scholasticis et corrupta per eos divinarum humanarumque rerum scientia* (Giessen: Wellstein, 1665). For example, Martinus Busse (*respondens*) and Jacob Thomasius (*praeses*), *De doctoribus scholasticis latinis* (Leipzig: Coler, 1676), [A2r]; Stefan Lorenz, "Die Darstellung der mittelalterlichen Philosophie in Bayles *Dictionnaire historique et critique*: Beobachtungen zu Voraussetzungen, Quellen und Besonderheiten," *Aufklärung*, 16 (2004), 95–110, 106.



Figure 2.2 Kiel University professors. Caeso Gramm, *Chilonium novus Holsatiae parnassus* (Schleswig: Holwein, 1665). Royal Danish Library, DA 40:1-308 4.

*Barbarians, Particularly of the East.* This recuperated the identity of the barbarian against Greek prejudice; Tribbechow announced that he also hoped to publish more on the moral philosophy of the barbarians of the North and the South.<sup>111</sup> Daniel Georg Morhof trained students in cutting-edge criticism that set an international standard.<sup>112</sup> Samuel Reyher taught all manner of mathematics, engineering, optics, and astronomical observation. In December 1667, Reyher and Major would collaborate on a month of public programming related to optics. As Major performed public anatomies of the eye of an ox, a sheep, a mole, an owl, and a fish and displayed a human eye with its muscles, trochlea, and nerves, which he had dried and affixed to a board, Reyher brought out his array of optical devices and performed experiments relating to the anatomies; they both published their own invitations to the public.<sup>113</sup>

<sup>111</sup> Georg Meyer (*respondens*) and Adam Tribbechow (*praeses*), *De philosophia morum inter barbaros praecipue orientales* (Kiel: Reumann, 1666).

<sup>112</sup> Nelles, "Historia Literaria."

<sup>113</sup> Johann Daniel Major, *Ad oculi declarationem anatomicam curiosos* (Kiel: Reumann, 1667). Samuel Reyher, *Ad oculi demonstrationem opticam curiosos* (Kiel: Reumann, 1667).

Major was recruited to be the first chair of medicine after making a name for himself through his contentious invention of intravenous injections and his research on the touchy question of the nature of fossils. As discussed in Chapter 8, he may have been the first in Europe to offer a regular academic course in the experimental study of nature beginning in the late 1660s.<sup>114</sup> In 1671, Major wrote to Duke Christian Albrecht to suggest that he might be granted an additional position, perhaps as a professor of “experimental studies” (*studii experimentalis*).<sup>115</sup> Had the duke agreed, this would have been the first professorship of experimental natural philosophy in Europe. The duke did not, but when Major’s son-in-law became professor of experimental natural philosophy at Kiel upon Major’s death in 1693, it was still one of the first professorships of its kind in Europe.

## 2.5 Self-Censorship, Radical Ideas, and Naturalism

Although many faculty at Kiel offered innovative curricula, they did not run afoul of political or religious authorities due to their radical ideas. In *Enlightenment Underground*, Martin Mulsow has traced the story of an invisible Enlightenment beginning in the late seventeenth century, as scholars self-censored in print but circulated radical ideas in manuscript.<sup>116</sup> Major practiced some self-censorship, although as the vast majority of Major’s manuscripts have not survived, it is impossible to gauge to what extent he did so. In one case, when his friend Sebastian Scheffer pointed out that his incidental discussion of church history in one of his works might land him in hot water, Major acted quickly to locate and destroy the already published copies and to republish a self-censored version.<sup>117</sup>

Major had other techniques for protecting himself from censure. He distinguished his area of interest sharply from theology. His investigations centered on “human knowledge.”<sup>118</sup> He was most interested in “many select,

<sup>114</sup> Wiesenfeldt identified Sturm’s experimental seminar as the first in Europe, yet Major’s predated Sturm’s. Gerhard Wiesenfeldt, *Leerer Raum in Minervas Haus: Experimentelle Naturlehre an der Universität Leiden, 1675–1715* (Amsterdam: Royal Netherlands Academy of Arts and Sciences, 2002), 66 and 333.

<sup>115</sup> Reinke, *Der älteste Botanische Garten Kiels*, 38.

<sup>116</sup> Martin Mulsow, *Enlightenment Underground: Radical Germany, 1680–1720* (Charlottesville: University of Virginia Press, 2015).

<sup>117</sup> Johann Daniel Major to Sebastian Scheffer, May 10, 1685, Universitätsbibliothek Erlangen-Nürnberg, H62/TREWBR MAJOR\_JOHANN\_DANIEL. <http://nbn-resolving.org/urn:nbn:de:bvb:29-bv043949673-1>.

<sup>118</sup> Johann Daniel Major, *Chirurgia infusoria* (Kiel: Reumann, 1667), 179–80. Major, *See-Farth*, 125–26.

mathematico-technical parts of secular polymathy.”<sup>119</sup> It was within this realm of the “Encyclopaedia of Secular Science”<sup>120</sup> that scholars were most at liberty to philosophize.<sup>121</sup> Even in print, it is not always easily visible when Major takes a radical or new position due to another strategy he employed. He uses commonplace metaphors or concepts in a novel way that undercuts their older meaning, but which makes it difficult to ascertain such departures at first glance. And then, there were some topics where his positions become a little vague.

The very controversial topic of the relationship between mind and matter, and what it implied for the authority of theology over natural philosophy, was one arena in which we can see all three of these strategies in play. The subject on which this centered was “spirits.” Galen had established a system of natural, vital, and animal spirits, but René Descartes and Thomas Willis fundamentally transformed the meaning and function of these spirits, as discussed further in Chapter 8. This was a controversial topic. Descartes dualistically divided between the incorporeal mind and the corporeal body, whose apparent forms of cognition such as sense could be attributed entirely to corporeal spirits. Willis’ studies of the brain countered several of Descartes’ views and offered a system that could attribute even more cognition to the material brain rather than the incorporeal mind.

Major, whose based his ideas on both Descartes and Willis, often refers to the brain in ways that we might expect would apply more to the mind. He attributes many ideas (including those of Descartes, who believed he was able to separate his thinking from his body), to the interactions of material corpuscles with the unique textures of brains. These differed for every individual, with profound implications for the reliability of abstract thinking; it was pointless to sit alone in a room, as Descartes claimed to do, and merely think of a philosophical system. Those abstract ideas were not separated from materiality, but fundamentally shaped by materiality. As a result, all thought had to begin with the anatomical study of the human and an understanding of how that anatomy shaped the knowledge that humans produced. Major would develop a view of the encyclopedia of all knowledge based on this approach, which he named “experimental anthroposophy,” as discussed in Chapter 5.

Major even seems to suggest support for naturalism, a form of deism that replaced revealed religion with the study of nature. This was a prominent topic at Kiel. In 1683, Kiel professor of theology Christoph Franck presided over a dissertation by Johann Dieckmann, an employee of the Swedes in Stade, on naturalism as a belief system as it might be understood from the manuscript

<sup>119</sup> Major, *Genius errans* (1677), [\*1r].

<sup>120</sup> Major, *Genius errans* (1677), [H4r]. “In tota Encyclopaediâ Secularis Scientiae.”

<sup>121</sup> *Ibid.*, [Y3v].

*Colloquium of the Seven about the Secrets of the Sublime*.<sup>122</sup> This dialogue between seven sages, each of a different religion, unfolded in a universal collection of nature called a pantotheca. The collection physically embodied their harmony despite their very divergent views, including those of a “naturalist” who rejected any divine revelation. Only six square feet large, the pantotheca was divided into six square cabinets, each subdivided 36 times, storing 1,296 little containers. The normative public museum that Major would open in 1688, discussed in Chapter 9, recalls many features of the pantotheca, including its small size, physical arrangement, contents, and the character of conversation that the collections were designed to inspire.

As it was possible to read the *Colloquium* in support of religious equality in “a powerfully subversive way,” it became “one of the most frequently copied manuscripts circulating in the ‘radical Enlightenment.’”<sup>123</sup> In 1684, Major characterized Dieckmann as a great polymath and his friend and patron, and at the end of his life, he would note that he had seen a manuscript of the *Colloquium* in Copenhagen.<sup>124</sup> In his work of 1683, Dieckmann described how he had diligently searched for the manuscript and at last located two parts of it in a French translation collected by Queen Christina of Sweden, a copy of which he brought to Germany. Daniel Georg Morhof, who had supplied a liminary poem to Dieckmann’s 1683 publication, thanked Dieckmann for giving him the manuscript to read. Morhof also cited at length from it in his *Polyhistor*, which was closely based on his lectures to students, especially concerning the arrangement of the pantotheca. It reminded Morhof of several other collections, including Vincent Placcius’ excerpt cabinet in Hamburg, discussed in Chapter 4.<sup>125</sup> Dieckmann’s dissertation was republished in 1700, the same year that a history of naturalism by Kiel Professor Adam Tribbechow was published posthumously.<sup>126</sup>

The commonplace way to address the relationship between revealed religion and nature was via the two books of God: nature and scripture. This was ordinarily deployed to support a form of natural theology; studying nature should correlate with and give insight to the divine word. Major deployed this commonplace in a way that reversed the hierarchy between nature and scripture and also shifted the aim. The goal was not knowledge of the divine, but knowledge of nature. Humans possessed two means for investigating

<sup>122</sup> Johann Dieckmann (*respondens*) and Christopher Franck (*praeses*), *De abditis rerum sublimium arcanis, Schediasma Inaugurale* (Kiel: Reumann, 1683).

<sup>123</sup> Noel Malcolm, “Jean Bodin and the Authorship of the ‘Colloquium Heptaplomeres,’” *Journal of the Warburg and Courtauld Institutes* 69 (2006): 95–150.

<sup>124</sup> Johann Daniel Major, *Roma in nummis augustalibus germanizans* (Kiel: Richel, 1684), 30. NKS 365, 103.

<sup>125</sup> Daniel Georg Morhof, *Polyhistor* (Lübeck: Böckmann, 1688), 72–3, 159–60.

<sup>126</sup> Adam Tribbechow, *Historia Naturalismi* (Jena: Krebs, 1700).

natural things (“zur Erforschung natürlicher Dinge”): the word of God and the Light of Nature.<sup>127</sup> Major defined the “Light of Nature,” as a “healthy reason based on experience” (“auf Erfahrung gegründete gesunde Vernunft”).<sup>128</sup> Major sharply limited the Bible as an authority in studying nature. As he wrote, “it is well known that the main aim of the Holy Spirit in the Bible is not to teach a complete natural philosophy, but with heavenly and divine teaching, to call humans to salvation.” To some degree, scripture pointed out some aspects of nature to notice.<sup>129</sup> Meanwhile, the experience of natural and artificial things through the five senses stimulated followers of philosophy with “a sweet itching” that they could not resist.<sup>130</sup>

By contrast with this limited ability of the Bible to inform natural knowledge, Major endows the light of nature with great agency to lead humans into a divine path. In his learned fantasy, *Voyage to a New World*, Major characterized the “Light of Nature” as illuminating a “Philosophical way to Heaven” available even to those who had not received the divine revelation. They could read the “ABC” of nature, putting together words and syllables until they had interpreted many pages of the “Book of the entire visible World” without the aid of Aristotle nor his commentators.<sup>131</sup> This made the residents of his intellectual Utopia, the Cosmosophs, appear to be “terrestrial gods.”

## 2.6 Building the University Infrastructure

The university occupied the grounds of the old Franciscan cloisters. It lacked purpose-built academic spaces such as an anatomical theater and associated collections and laboratories or a botanical garden. Such amenities served as attractions as universities competed for foreign students.<sup>132</sup> As Gerhard Wiesenfeldt has argued, the “introduction of the experimental study of nature should be understood . . . not only as a new natural philosophical orientation, but also as a reform of academic education.”<sup>133</sup> Leiden enjoyed a botanical garden and an anatomical theater with a collection of curiosities, especially under the direction of the fervent collector, professor of anatomy, Otto

<sup>127</sup> Ibid.

<sup>128</sup> Major, *Unvorgreifliches Bedencken*, [B].

<sup>129</sup> Ibid.

<sup>130</sup> Ibid.

<sup>131</sup> Major, *See-Farth* (1683), 140.

<sup>132</sup> A. Mariss, “Kunst- und Naturalienkammern in Professorenhaushalten: Polyvalente Wissensräume an der Schnittstelle zwischen Gelehrsamkeit und Geselligkeit,” in E. Dolezel, R. Godel, A. Pečar, and H. Zaunstöck (eds.), *Ordnen-Vernetzen-Vermitteln: Kunst- und Naturalienkammern der Frühen Neuzeit als Lehr- und Lernorte* (Stuttgart: Nationale Akademie der Wissenschaften, 2018), 205–32.

<sup>133</sup> Wiesenfeldt, *Leerer Raum*, 99.

Heurnius (1577–1652).<sup>134</sup> Major's Danish colleagues also enjoyed a new Anatomical House, with its associated collections.<sup>135</sup> Of course, it was difficult to compete with Padua and its amenities.

To study anatomy as elegantly as possible, wrote the envious Major, it was most necessary “to have a commodious Anatomical house divided into distinct locked chambers (conclavibus).” Otherwise, it was impossible to pursue anatomy in a way that might satisfy the “curious and increasingly judgmental condition of this experimental century, because along with determination and ingenuity, it requires an apt place [*locum commodum*], expenses, leisure, material fit for experiment, a lack of family cares and any other plunderers of time, and many other things.”<sup>136</sup> He wished he could enjoy the facilities available to Heinrich Meibom, Jr. (1638–1700) at the University of Helmstedt's new Anatomical House; however, even Meibom had to perform most of his experiments at home, lacking a university laboratory.<sup>137</sup>

Major began to teach out of his own collection in the late 1660s and later transformed this teaching collection into a normative public museum, the Museum Cimbricum, which opened in 1688. This became a resource for both the public and the university. As Major's son-in-law, Wilhelm Ulrich Waldschmidt, said in his eulogy delivered to an academic audience at Kiel in 1694, “You know how many times you have looked around that theater of things for curious contemplation, his *Kunstkammer* and *Museum Cimbricum*, which he has for many years been engaged in developing, sparing no effort nor expense.”<sup>138</sup> Waldschmidt claimed that Major's museum, so admired by visitors, brought glory to the university. It was indeed admired by visitors, such as the medical student Caspar Bartholin the younger.<sup>139</sup> However, this collection was assembled at Major's own expense.

In establishing the university's botanical garden, Major was also largely on his own. As he complained, he and his students and lodgers worked for days at a time for twelve or fourteen hours at a stretch, demolishing the old ramparts

<sup>134</sup> Thijs Huisman, *The Finger of God: Anatomical Practice in 17th Century Leiden*. Unpublished doctoral thesis, Leiden University (2009), 48.

<sup>135</sup> Thomas Bartholin, *Domus anatomica* (Copenhagen: Haubold, 1662).

<sup>136</sup> Johann Ludwig Schmidt (*respondens*) and Johann Daniel Major (*praeses*), *De amaurosi vel gutta serena* (Kiel: Reumann, 1673), unpaginated.

<sup>137</sup> Heinrich Meibom, *Programma . . . ad anatomen corporis foeminini in novo theatro primam* (Helmstedt: Müller, 1673); Ute Frietsch, “Making University Fields for Chymistry: A Case Study of Helmstedt University,” *Ambix* 68:2–3, (2021), 273–301, 294–5.

<sup>138</sup> Wilhelm Ulrich Waldschmidt, *Memoria Majoriana, Miscellanea curiosa* Appendix, Dec. 3, An. 5/6 (1697/8), 185–206, 203.

<sup>139</sup> Georg Wolfgang Wedel, *Propempticum inaugurale de medicamine faciei* (Jena: Krebs, 1695), 7–8.

of the ducal summer castle and moving earth.<sup>140</sup> In a lengthy 1674 account he wrote for his successor as director of the garden, Professor Pechlin, Major complained about how the garden lacked a chamber where the professor and student could meet during bad weather and where botanical works might be stored alongside tools and seeds.<sup>141</sup> Major discussed at length the garden's personnel and his own expenses. He often traded knowledge for garden materials. For example, he gave an expensive copy of Robert Hooke's *Micrographia* to the gardener at Husum in exchange for plants.<sup>142</sup> He also privately instructed Georg Martin Tatter, the son of the Gottorf head gardener, Michael Gabriel Tatter, in the art of medicine for a year. In exchange, all he got was a set of twelve painted heraldic arms to hang about the garden; they were painted so poorly, "against all optical rules" ("*wider alle optische Raison*"), that he had to have them repainted at his own cost.<sup>143</sup>

In 1669, the university received an external review in a "visitation" headed by Gottorf court chancellor, Kielman von Kielmansegg. The reviewers issued a resolution suggesting to the Gottorf duke that, just as the medical faculty were being assisted in finding necessary places for a garden and for anatomy, a suitable place should be found for Professor Reyher's "*specula*" or optical collections, as well as space for exercises in engineering fortifications.<sup>144</sup> Soon thereafter, Reyher imagined the physical infrastructures he would love to see in a pedagogical edifice in a Latin dissertation, *On the Mathematical Kingdom*, over which he presided in 1670. Such a structure would be particularly useful in the education of princes.

Both Francis Bacon's *New Atlantis* and Johann Daniel Major's fantasy *Voyage to a New World* (discussed in Chapter 3) inspired *On the Mathematical Kingdom*.<sup>145</sup> Reyher particularly admired how Major had so elegantly sketched the aerial Kingdom of the Cosmosophs and all the disciplines in the form of a palace, divided in various chambers. He imagined a "mathematical kingdom" as an edifice for teaching without books, containing chambers of twenty-seven different mathematical disciplines, from algebra to steganography, each brimming with instruments and objects. For example, the pyrotechnic chamber would be divided into four parts. In one corner were demonstrations of ways of igniting a fire. In another were furnaces for foundries, cooking, hatching eggs, and heating rooms. Military equipment like bombs could be found in the third and the fourth, handily near all sorts of instruments and materials for extinguishing fires. Pneumatics, or the study of

<sup>140</sup> Reinke, *Der älteste Botanische Garten Kiels*, 44.

<sup>141</sup> *Ibid.*, 51.

<sup>142</sup> *Ibid.*, 70.

<sup>143</sup> *Ibid.*, 73.

<sup>144</sup> Henning Ratjen, *Chronik der Universität zu Kiel* (Kiel: Mohr, 1857), 24.

<sup>145</sup> Broctorf and Reyher, *De rege mathematico*.

air, held many kinds of instruments from aeolipiles, thermometers, baroscopes, glass tears, artificial wings, speaking statues, simulacra of animals that could produce sounds, to mirrors, telescopes, microscopes, prisms, etc. Reyher directed the reader to his recent publication, *On Air*, where he discussed thirty-seven instruments.<sup>146</sup> The room of tactics would contain toy soldiers that could be equipped with tiny exploding bombs, like the troop of silver soldiers the King of France had commissioned a few years before from Nürnberg craftsmen and given to the Dauphin.<sup>147</sup>

Nothing that Reyher imagined would be built at university expense, although Reyher, like Major, used his own collection for teaching. Then as now, laboratory sciences required a very significant financial investment. Were they worth it? In 1668, alchemist and commercial advisor Johann Joachim Becher argued for the political and economic benefits of a collection-based education; it would serve as a “noble magnet” to attract talents into the territory. It would not, Becher claimed, cost more than a typical court ballet, but it would suffice to restore a declining university or a gymnasium back to “the most flourishing state” (“*in den besten Flor*”).<sup>148</sup> Major's colleague at Kiel, Daniel Georg Morhof, concurred with Becher's advice. If a prince were to found such a collection, Morhof predicted (in Kiel seminar lectures from the 1670s that were published in 1688), it would attract such a large number of students that it would easily pay for itself. Moreover, it would entice a large number of curious individuals to visit it and to enrich the theater with their donations, so that the entire universe of things would be able to be seen beneath one roof. Craftsmen might also be tempted to visit and participate if the collection were well endowed with the mechanical arts. This collection could then become, as Becher had promised, a center for learning many arts.<sup>149</sup> In 1674, University of Leiden professor Burchard de Volder (1643–1709) succeeded in gaining both a theater for experiments (in addition to the anatomy theater Leiden already possessed) and the ability to offer instruction there in experimental natural philosophy (*physica experimentalis*) by persuading the University of Leiden curators that it would attract “many students from other academies and schools.”<sup>150</sup>

Due to the regional warfare in which it was enmeshed, the University of Kiel not only failed to develop these academic collections but lost many of the regional private collections upon which it relied. When Johann Christian

<sup>146</sup> Samuel Reyher, *De aere* (Kiel: Reumann, 1669), [A4v–B2r].

<sup>147</sup> Broctorf and Reyher, *De rege mathematico*, [E–E3v].

<sup>148</sup> Johann Joachim Becher, *Methodus Didactica* (Munich: Maria Magdalena Schellin, 1668), 50–2.

<sup>149</sup> Morhof, *Polyhistor* (1688), 345.

<sup>150</sup> Cited from the proceedings of the University Curators in Andrea Strazzoni, *Burchard de Volder and the Age of the Scientific Revolution* (Cham: Springer, 2019), 38.

Fabricius (1745–1808) was forced to move from Copenhagen to the University of Kiel, which was then integrated into the Danish-Norwegian state, he vociferously objected at teaching in a backwater institution. Many collections were destroyed by war or redistributed to Copenhagen or St. Petersburg, and Fabricius' attempt to offer a collection-based education at Kiel in the 1780s was stymied by the continuing lack of a university collection.<sup>151</sup> The glory days of Gottorf were gone.<sup>152</sup>

## 2.7 Conclusion

"In worldly affairs," maintained Major, "there is a right to philosophize freely."<sup>153</sup> The ideal of the liberty of thought, although later associated with Spinoza, is an ancient one.<sup>154</sup> Major's war-torn region however, lent particular urgency to the creation of some buffering between knowledge and power. Knowledge and power were tightly interwoven by warring principalities. Universities, collections and laboratories showcased the prince as the rightful steward of the land, but when those princes went to war, knowledge did too. If scholars could not disentangle knowledge from power, then, like the dead deer whose horns were preserved in the Gottorf collection, they would perish together.

The view from Major's war-torn region offers a different story from that of the court savant in the emerging absolutist state to which we are more accustomed. It also queries accounts of the research university that see the state as the main driver in its development. As Chapter 3 explores, Major and his contemporaries developed academic practices designed to minimize prejudice and to question human authority. They did not craft these practices by bureaucratic fiat. Yet, practices and concepts of what made good research remained in place even when scholars did indeed try to turn disciplines toward more utilitarian ends. The buffer that had been constructed between knowledge and authority produced better knowledge, which in turn, could be more useful.

As Dominik Hünigler has described, in the late eighteenth century, Johann Christian Fabricius worked to develop a political education at Kiel that would

<sup>151</sup> Dominik Hünigler, "What Is a Useful University? Knowledge Economies and Higher Education in Late Eighteenth-Century Denmark and Central Europe," *Notes and Records of the Royal Society of London* 72:2 (2018), 173–94.

<sup>152</sup> Jörg Hacker, *Vom Kuriositätenkabinett zum wissenschaftlichen Museum: die Entwicklung der zoologischen Sammlungen der Kieler Universität von 1665 bis 1868* (Kiel: Goecke and Evers, 1984), 5.

<sup>153</sup> Major, *Genius errans*, [Y3v]. "Liberté fas est, de Rebus Mundanis philosophari."

<sup>154</sup> Ian Maclean, "The 'Sceptical Crisis' Reconsidered: Galen, Rational Medicine and the *Libertas Philosophandi*," *Early Science and Medicine* 11:3 (2006), 247–74.

be directly useful to the state. To achieve this, he demanded the freedom (*Freyheit*) to express views openly on political issues. Candor was integral to usefulness. Educated men would be useful to the state only if they were able to judge affairs impartially.<sup>155</sup>

<sup>155</sup> Hünninger, "What Is a Useful University?," 180.

