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on the  
Circulation of Natural Knowledge

edited by

Sven Dupré and Geert Vanpaemel

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LIT

SILENT MESSENGERS

The Circulation  
of Material Objects of Knowledge  
in the Early Modern Low Countries

edited by

Sven Dupré and Christoph Lüthy

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LIT

Cover Image:

A *Wunderkammer* depicted on the frontispiece of Levinus Vincent, *Wondertoneel der natuur*, part 2 (Amsterdam: Valk, 1715).

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## How to Become a Seventeenth-Century Natural Philosopher: The Case of Cornelis Drebbel (1572-1633)

*Vera Keller*

A Dutch engraver, engineer, and alchemist active in London and Prague, Cornelis Drebbel, is known today more as a charismatic inventor than as a natural philosopher.<sup>1</sup> In his own time, however, he gained fame as an artisanal philosopher who claimed to gain knowledge of nature through his own body. Drebbel's vernacular natural philosophy travelled across cultural and linguistic regions in astonishing ways. Most remarkably, academic and Latinate readers responded enthusiastically to Drebbel's texts, even as they transformed those works in important ways. The printed editions of Drebbel's works thus allow us to trace circulation between a culture of artisanality sure enough of its own authority to stake claims to knowledge in print, and an academic culture appreciative enough of artisanality to support those claims through both erudition and elegance.

Drebbel tied his knowledge to a carefully crafted persona. His was a persona which belittled education and authority, which had little respect for disciplinary or social bounds, and which could effortlessly combine disciplines such as alchemy, pneumatics, and mechanics to discover universal natural truths through art. His slim, vernacular texts presented a particular manner of philosophizing and type of philosopher. He prided himself on his ability to transmit his own bodily knowledge to others using things more than words. In constructing his text, Drebbel devised strategies for indicating to his readers how they might arrive at bodily knowledge through the manipulation of matter. He crafted his texts as material carriers transmitting his bodily knowledge to the bodies of his readers. Drebbel hoped to transform his readers into artisanal philosophers themselves, so that all might partake equally in knowledge of nature and of God. The abolishment of the inequities that existed between postlapsarian men would result. For Drebbel,

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<sup>1</sup> The standard reference remains Jaeger, *Cornelis Drebbel en Zijne Tijdgenooten*.

equal interactions produced knowledge, and in turn, the sharing of knowledge could reform human interaction.

Learned readers integrated Drebbel's texts and his persona within the literate networks sustaining sociability in the Republic of Letters. In this process of integration, Drebbel's text and persona were transformed through both text and image in ways that better adapted him to the world of learning. By incorporating Drebbel and his works into their own practices of sociability, learned readers indicated their regard for Drebbel as a source of knowledge. While circulating that knowledge, however, they also tempered its author's aggressive artisanality.

The various editions of Drebbel's work point to how such transformations occurred in the process of circulation. In his major work, *On the Nature of the Elements*, Drebbel had abjured all citations and pointedly opted for a taciturn style. He repeatedly encouraged his readers to grasp natural knowledge with their hands through the use of a contrived demonstration depicted in early vernacular editions. Reclothed for its 1621 Latin edition, *On the Nature of the Elements* appeared with extensive paratexts drawn from the *album amicorum*, or book of friends. These paratexts framed Drebbel's natural philosophy within learned sociability, legitimizing its author as an authority accepted by the literate world. The material carriers in this story – the vernacular text, Latin translation, and *album amicorum* inscription – matter as indicators of different social sites of knowledge production. Following such material carriers allows us to trace movement and transformation between those sites.

Space does not allow an examination of all Drebbelian editions; I will concentrate here upon the early vernacular editions and Latin translations. In particular, the translation edited by the inveterate traveler and Hamburg literary agent Joachim Morsius in 1621 allows us to discover the networks through which Drebbel's work circulated and came to the press. The evidence for such networks does not survive accidentally. Morsius documented his network in excruciating detail. He highlighted such networks in order to embed both himself and a model artisanal philosopher within the Republic of Letters.

### A Crafted Text

Ultimately, four short texts by Drebbel reached the press. His major work, *On the Nature of the Elements*, offered a complete natural philosophy in under six thousand words, from the genesis of the world to the constant motion of the elements through heat, cold, wind, and storms, to how that motion could be employed by man to perfect nature through alchemical processes. Drebbel's investigation of the

universal source of motion in nature motivated his search for a perpetual motion based in the qualities of the elements. His letter dedicating his perpetual motion to King James I and describing both his process of discovery and his manner of writing natural philosophy was first published in a Dutch translation in Drebbel's hometown of Alkmaar in 1607. Morsius published Drebbel's short treatise on the quintessence in Latin in 1621. Finally, in 1630, Morsius' friend Gottfried Hegenitius excerpted, translated, and printed (in a guidebook to the Netherlands) a letter Drebbel had written to his Alkmaar friend Ijsbrandt van Rietwijck. By the end of the eighteenth century, over twenty-five editions of Drebbelian works had appeared, often including all or an assortment of these texts as well as extensive paratexts.

The date of *On the Nature of the Elements* has been debated. Fritz Burckhardt reported having seen a 1604 Dutch edition printed by Gillis Rooman of Haarlem.<sup>2</sup> This edition, which included a dated portrait, no longer survives. A German translation printed in 1608 in Leiden is the earliest extant edition, and the edition I cite here.

There is evidence, however, that a 1604 edition did exist and that, furthermore, it was an edition Drebbel had a hand in producing. Johann Ernst Burggrav, an associate of the academic alchemist Johann Hartmann, published German and Latin translations of *On the Nature of the Elements* in 1628.<sup>3</sup> He described how he had first encountered the work about twenty years previously. Drebbel had written the work in Dutch and had only a few examples printed to send to "good friends and to philosophers." Burggrav thereafter translated it into German, and since that edition had proved so popular, he decided to re-issue the work in 1628.<sup>4</sup> Indeed, the 1608 Leiden translation was printed by Heinrich van Haestens, the same printer who issued Burggrav's own first work in 1610.

The 1604 portrait Burckhardt described does survive, and it was copied closely in the 1608 edition and in the first Dutch edition now extant (1621). The only other image in the 1608 and 1621 editions depicts a contrived demonstration referred to in the text. I argue that Drebbel did indeed have a 1604 edition issued, and that that work was reproduced relatively faithfully in early vernacular edi-

<sup>2</sup> Burckhardt, "Zur Geschichte des Thermometers," 3.

<sup>3</sup> Burggrav termed himself a "domesticus" of Hartmann in the preface to his 1620 edition of Clodius.

<sup>4</sup> Burggrav, preface to *Von der Natur der Elementen* (1628): "bin ich damaln durch einen vertrauweten Freundt dieses Tractats, von der Natur der Elementen, welchen Cornelis Drebbel damaln in Niderteutscher Sprach verfertigt, und etlich wenig Exemplaria für sich drucken lassen, und allein guten Freunden unnd Philosophis mitgetheilt, theilhaftig worden, welches Büchlein ich hernacher in die hochteutsche Sprach ubersetzt, und in Druck damals befördert."

tions. In 1619, Isaac Beeckman recorded reading a Dutch edition. Thus he, like Burggrav, may have encountered one of the exemplars Drebbel circulated only among “good friends and philosophers.”

Such readers would have encountered through both image and text a carefully crafted persona of an artisanal philosopher. As Drebbel wrote in both *On the Nature of the Elements* and his letter on the perpetual motion, he claimed to discover everything he knew about nature with his own hands and without the help of the ancients or of any man.<sup>5</sup> He hoped the reader would not fault him for not “strengthening” his texts with ancient authorities. However, he claimed, he had not read any such works and gave the reader only what he himself had received from nature.

Drebbel presented himself as someone who learned about nature through his hands and who could transfer that knowledge to his readers without the prolixity to which other philosophers fell prey. Contrived demonstrations and analogies with common objects provided a shortcut to knowledge. In chapter four of *On the Nature of the Elements*, he included a contrived demonstration showcasing his new theory of the wind, and referred as an explanation to the figure of this demonstration in the text.<sup>6</sup> Heating an empty retort with its mouth in a vessel of water made air shoot out of the retort and bubble through the water. Then, when the retort cooled, the water rose within the retort far above the level of the surrounding water in the vessel. This demonstrated, according to Drebbel, the way the elements followed a cycle of transmutation from one to the next, rarifying and condensing through heat and cold, and producing such movement in nature as winds, storms, and the cycle of life.

In chapter four, Drebbel also provided other examples from daily life that illustrated similar points. He argued that the elements were not restricted by any

<sup>5</sup> Drebbel, *Von der Natur der Elementen* (1608), hereafter cited as *On the Nature of the Elements*: “Dieses lieber Bruder habe ich von der natur geschriben wie ich solches mit der handt befunden,” and Drebbel, *Wonder-vondt*: “Want verclare door den levendigen Godt, dat noch die schriften van de Ouden, noch eenighen Mensch my de minste hulp hier in ghedaen heeft; maer heb dit alleen ghevonden, door gestadich opmercken, in’t ondersoecken van de Elementen.” Drebbel, *On the Nature of the Elements*, Vorwort: “Du werdest es nicht mit unverstant verachten noch mich verdencken das ich dis mein schreiben mit den alten scribenten nicht beweisze und bekräftige, dan ich, die warheit zu sagen, keinen hieruber gelesen, sondern ich gebe dir solches, wie ich es von der Natur empfangen habe.”

<sup>6</sup> *Ibid.*, chapter four: “Gleich wie wir klarlich sehen, wan wir hangen eine ledige glaserne Retortam, mit dem mundt in ein Fas mit Wasser, unnd unter dem Bauch ein Warm Feuer legen, wie diese Figur auss weiset unnd mitbringet.” Borrelli discusses the importance and development of Drebbel’s theory of the wind in the context of other theories of wind in the period in Borrelli, “The Weather Glass and its Observers.”

proportion in their transmutation from one state to the next but could expand by thousands of times, producing explosions of pneumatic force. This countered what was considered at the time to be the Aristotelian theory of decuple proportions.<sup>7</sup> He gave a roasting apple that gives out wind and the fast wind that shoots out of a hot iron oven when water is dropped upon it as examples.

Yet Drebbel’s example of the retort was special, not only for demonstrating additional phenomena such as the rise of the water back up the retort, but as a contrived demonstration. The example of the retort, singled out for depiction in a figure, was not just an example from daily life. Nor were readers expected to act only as virtual witnesses.<sup>8</sup> Rather, the fact that Drebbel offered advice as to the material to be used in the retort suggests that he thought readers might attempt to test it themselves. He argued that the more the retort was heated, the more it would fill with water upon cooling. Thus a stone retort was better than glass, since at high temperatures the glass would crack, but the level of the risen water could only be observed in a glass retort. Francis Bacon and Robert Boyle would later offer the same advice.<sup>9</sup>

Drebbel’s text and its accompanying figure not only suggested the construction of a special demonstration of his account of the elements, but could also be linked to the very famous machine Drebbel had constructed to illustrate what he considered his discovery of the universal principle of motion – his perpetual motion. Drebbel himself stressed the relationship between his natural philosophy and his machines. In his letter on the perpetual motion, he constantly connected making (*maecken*) to understanding (*verstandt*), knowledge (*kennis*), and science (*wetenschap* or *scientie*). He both discovered his natural philosophy and demonstrated and validated it through working machines.

Drebbel described his quest to discover this motion through a series of unsuccessful machines; at first, he had tackled the nature of water with great zeal, hoping that by bending pipes in strange ways he could make it climb upwards by itself, but it was all in vain. At last, he built his successfully moving device, proving his understanding of the *primum mobile*, which was but one “little twig of the perpetually moving tree grafted upon true knowledge of the elements,” and which allowed everyone to see the truth of his writings. Such knowledge allowed him to

<sup>7</sup> Bacon later attacked the Aristotelian decuple proportions in *Instauratio Magna*, 70-71.

<sup>8</sup> Shapin and Schaffer, *Leviathan and the Air-pump*, 55.

<sup>9</sup> Drebbel, *On the Nature of the Elements*: “dan so fern du das glas sonder brechen gar heiss machen kanst, so wirdt die Retorta, wan sie kalt wirt, mit Wasser erfullet sein, darumb ist eine steinerne Retorta viel bequemer, aber die verfüllung zu sehen, ist eine glaserne viel besser.” Bacon, *Instauratio Magna*, 87-89 and Boyle, *Works*, 303.

build other working machines as well. For instance, by understanding the cause of the wind, he could make an instrument which produced wind, and through his knowledge of the ebb and tide, he could make an ebbing and flowing motion.<sup>10</sup>

His device proved his knowledge since it was based on the nature of the elements rather than upon mechanics. That is, Drebbel did not seek to build a mechanical perpetuum mobile based on dead quantities rather than living qualities and deploying an arrangement of weights and springs to operate against the course of nature. He sought to build a chemical movement based in the nature of the elements, and thus indicative of knowledge of them. Today we might interpret a motion based in the expansion and contraction of air quantitatively, but to Drebbel such a motion was qualitative. It is not only incorrect to translate Drebbel's "living instruments" as mere "working models" as Jennifer Drake-Brockman did, but such a translation obscures Drebbel's understanding of his machine as based in natural qualities and not mechanics alone.<sup>11</sup>

Promoters of perpetual motion frequently argued that while it was impossible to build a mechanical perpetual motion, it should be possible to do so by drawing upon natural qualities, since nature herself circulated in perpetual motion.<sup>12</sup> Likewise, Drebbel cast his perpetual motion as a natural, qualitative motion, which could then be applied to other sorts of motions, even mechanical ones, to render them perpetual.

Just as Drebbel spliced material demonstrations into his text and grafted his perpetual motion onto the nature of the elements, he fused mechanics and the transmutation of the elements within his machine; his perpetual motion included mechanical parts, namely an astronomical clock kept in motion through the expansion and contraction of the elements. This was not Drebbel's only invention fusing knowledge of the elements and mechanics; his self-regulating oven, for instance, depended upon Drebbel's understanding of the expansion of the air as well as air's role in combustion in order raise and lower a lever controlling air

<sup>10</sup> Drebbel, *Wonder-vondt*: "Ghelijck (o Coningh) in dit tegenwoordige Instrument meught sien en proeven, alle nae lust, die waerheyt van mijn schrijven: dit is een twijchken van den eeuwigh-bewegenden Boom, ghegriffet op de ware kennis der Elementen" and "Voorts also *verstae* die oorsaeck des Windts, *maeck* Instrumenten die geweldelijck windt gheven, en door de *kennis* van ebbe en vloedt, *maeck* een Instrument . . . . [emphasis mine]."

<sup>11</sup> Drake-Brockman, "The Perpetuum Mobile of Cornelis Drebbel," 129. For the correct translation see Vermij, "Putting the Earth in Heaven."

<sup>12</sup> Mögling, *Perpetuum Mobile*, 40 and 44, and Gabbey, "The Mechanical Philosophy and its Problems."

flow to a fire. Boyle praised the oven as an example of the fusion of mechanics and chemistry.<sup>13</sup>

Drebbel thus crafted a machine-based but non-mechanical natural philosophy. His natural, or living, motions not only demonstrated his knowledge, but allowed it to be understood by others without excess verbiage. He boasted to King James that he could demonstrate his understanding of the prime mover "as well with living instruments, as with natural reasoning, so that I therefore should have no need to write much." Drebbel acknowledged that there were many who didn't think it possible for mankind "to understand these hidden causes with our understanding; therefore as proof that I understand the cause of the *Primum mobile*, I make a globe that can move perpetually, following the course of the heavens. . . ." <sup>14</sup>

As Drebbel's friend and editor G. P. Schagen wrote in his preface, such a "living instrument" successfully rendered difficult knowledge accessible. "If this knowledge was common among astronomers," said Schagen, "one would not require so many theorems in calculating the planets and other stars, but astronomy would be easy and Copernicus would prosper, since he demonstrated (with reasoning) that the Earth goes around every 24 hours, but this Alkmaarian philosopher can demonstrate the same not only with reasoning but also with living instruments."<sup>15</sup> Some readers greeted the idea that the construction of machines could offer easy, rapid, and bodily knowledge with enthusiasm; Abraham Frankenberg and Georg Philipp Harsdörffer, for instance, cited Schagen's pronouncement in support of Copernicanism.<sup>16</sup>

In 1619, the academic alchemist responsible for introducing alchemy to the curriculum at the Steinfurt Academy, Heinrich Nollius, recommended that the student of astronomy consult such "living globes."<sup>17</sup> Both the Rosicrucians and

<sup>13</sup> Boyle, *Works of Boyle*, Vol. 13, 298.

<sup>14</sup> Drebbel, *Wonder-vondt*: "Ten waer (o Coningh) dit so wel conde bewijzen met levendige instrumenten, als met natuerlijcke reden, soo en soude niet hebben bestaen dus veel te schrijven. Want my is wel bekend, dat meest alle cloecke verstanden niet willen gheloooven, dat wy dese verburghen oorsaken met onse vernuft moghen begrijpen, waerom tot bewijs dat verstae die oorsaeck van't *Primum mobile*. So maeck een cloot, die hem eeuwelijck bewegen can, nae den loop des hemels . . . ."

<sup>15</sup> See Schagen's preface: "Soo dese wetenschap onder de Sterkondigers ghemeen was soo en soudemen niet behoeven soo veel stellingen en rekeningh der Planeten en ander Sterren maer de Ster-konst soude licht zijn en Copernicus soude bloeyen. Want die bewijst (met reden) dat het Aerdtrijck alle 24. uren ront om gaet: Maer desen Alckmaersche Filosooph can 't selfde niet alleen met reden maer oock met levendige Instrumenten bewijzen."

<sup>16</sup> Frankenberg, *Oculus Sidereus*, paragraph xiv, and Harsdörffer, *Deliciae physico-mathematicae*, 309.

<sup>17</sup> On Nollius, see Moran, *The Alchemical World*, 122-29.

Cornelis Drebbel had constructed such living microcosms, according to Nollus. "In England," he said, "a perpetuum mobile is to be seen, which similarly represents the entire world, and shows in a wonderful way the motions of the stars, the conjunctions and oppositions of the planets and even the disposition of inferior things, with precision. The author of this perpetual motion is Cornelis Drebbel, a philosopher not to be despised."<sup>18</sup> Nollus recommended that his students consult such "true philosophers" "who with *their own hand* have constructed a perpetual motion, and who show in that construction not only the creation of the world, but even... are able to show most compendiously the course of the stars, the elements, and the nature of everything [emphasis mine]."<sup>19</sup>

Daniel Mögling, future court physician and mathematician to Landgrave Philipp III of Hessen-Butzbach, shared Nollus' appreciation for the pedagogic opportunities offered by manmade microcosms.<sup>20</sup> While still a student, Mögling wrote in support of the Rosicrucians under the pseudonym Theophilus Schweighart. In his *Prodromus Rhodo-stauroticus*, Mögling echoed Nollus' advice, advising the reader to seek out philosophers who have themselves built perpetual or prime motions, since such devices showed immediately as in a compendium not only the creation of the world, but the motion of heaven, the elements, and the nature and property of all things. These microcosms would allow them to observe the course of nature directly, rather than having to read long descriptions.<sup>21</sup>

The reception of *On the Nature of the Elements* benefited from Drebbel's fame as an internationally successful inventor of these devices. Readers sought to understand his machines in light of his text, and vice versa. For instance, they correctly

<sup>18</sup> Nollus, *Naturae Sanctuarium*, 61: "In Anglia perpetuum mobile visitur, quod similiter universum mundum repraesentat, & astrorum motus, coniunctiones & oppositiones planetarum mirandum in modum, atque inferiorum dispositiones exacte ostendit. Perpetui eius mobilis autor est Cornelius Drebel, Philosophus non contemnendus."

<sup>19</sup> Ibid., 684: "Consulendi ergo & compellandis sunt veri Philosophi, qui manu sua perpetuum mobile confecerunt, atque non tantum in eius confectione mundi creationem ostendere, sed etiam in eo confecto & elaborato cursum astrorum, Elementorum, & omnium naturam compendiose monstrare poterunt."

<sup>20</sup> On Mögling, see Moran, *The Alchemical World*, 172.

<sup>21</sup> Mögling, *Prodromus rhodo-stauroticus*, n.p.: "Was aber beneben diesem die Harmoniam dess Macrocosmi, mit dem perpetuo mobili, oder primo mobili belanget, wil dieselbe mehr in augenscheinlicher Besichtigung, als weitleunftiger Beschreibung bestehent, müssen wir hiervon diejenige Philosophos ersuchen, welche solches perpetuum mobile selbsten zugerichtet, und in dessen Zurichtung nicht allein die Erschaffung der Welt, sondern in dem allbereit zugerichteten, den Lauff der Gestirn, der Elementen unnd aller Ding Natur und Eygeschafft compendiose, augenscheinlich vorzeigen können."

noted the relationship between the movement of the retort demonstration in *On the Nature of the Elements* and the workings of his perpetual motion machine. In his *Perpetuum Mobile* of 1625, Mögling advised the reader who wished to understand Drebbel's perpetual motion to consider the retort described in chapter four of Drebbel's short *On the Nature of the Elements*.<sup>22</sup>

Drebbel's text did not appear to his readers in isolation. Readers connected his text to Drebbel's persona, to his easy and pleasant brand of empiricism, and to the famous machines which, in lieu of ancient authorities, validated his theories. In a liminary poem found in the first extant Dutch edition (1621), an anonymous poet advised readers to trust sight more than reason or reasoning ("reden"). The poet invited the reader to spend some time with Drebbel, promising that the reader would immediately acquire what he sought.

According to this poet, the experience of reading *On the Nature of the Elements* transported the reader to Drebbel's side. There they might enjoy a sensual experience – hearing thunder, seeing lightning, rain and hail, and feeling cold, heat, wind or quiet. The feeling that the book provided a material encounter with natural knowledge was strengthened by the reader's previous knowledge of Drebbel's celebrated machines. To the reader, Drebbel proved what he had described in words not by citing other authors, but by having built "natural" instruments that appeared to be alive.<sup>23</sup> The public presence that attended a famous inventor allowed readers to approach his texts with his persona and his celebrated inventions in mind. Those inventions helped to validate his natural philosophy through material means, increasing the sense that his was a knowledge found in the body, although delivered in texts.

The relationship between body, machine, and contrived demonstration also allowed Drebbel to shorten his text, offering his readers a knowledge based as much as possible in things rather than words. As the keystone to Drebbel's entire theory of the elements, Drebbel not only referred back to the retort demonstration when discussing seasonal changes, the transmutation of the elements, the genera-

<sup>22</sup> Mögling, *Perpetuum Mobile*, 26: "Wer mehrere Nachricht begehret, lese das kurtz... Von Natur der Elementen... vornemblich aber das vierdt Capittel desselven von der Retorten." For more on Libavius, Nollus, Mögling and their interpretations of Drebbel, see Keller, "Drebbel's Living Instruments."

<sup>23</sup> Drebbel, *On the Nature of the Elements*, Dutch 1621 ed., liminary poem: "Hier gy muegt den Donder hooren/ Van te vooren, bald'ren gram,/ Daer volgt naer een Bliksem-vlam. / Regen, Hagel, Snee om d'ooren,/ Me kond spooren, (als gy wilt)/ Koud', of Hitte, Wind of Stilt" and "Die 't beschreven doet versterken./ Met Tuyg-werken, die in schyn/ Levend', (doch Natuerlyk) zyn."

tion of all things, and the clarification of matter for the philosopher's stone, but he suggested time and again that his readers consider this example on their own.

For instance, after detailing the seasonal changes in heat and cold and movement of rain, clouds, and storms in chapter five, Drebbel suggested that by considering such changes, his readers could properly understand his "example of the wind" better than he could have described it in words. That was why he had not written any more than absolutely necessary. At the conclusion of chapter six, when Drebbel described how wind can shoot down from clouds, he again suggested that it would be possible to prove his account through Latin "reasonings" (*Rationibus*), but those who already understood the previously discussed causes would be able to understand this phenomenon better than he could describe it in words.<sup>24</sup>

Isaac Beeckman was one of those readers who took Drebbel's advice. In 1619, Beeckman described how wind sometimes shoots in one direction out of the clouds.<sup>25</sup> Referring to chapter six (from the first edition of *On the Nature of the Elements*), Beeckman went on to provide his own example from daily life similar to the both the demonstration and the examples Drebbel had given in chapter four; air expands within and shoots out of clouds the same way air, smoke, and powder expand and shoot out of bombs. Furthermore, the pages of Beeckman's journal are full of his research into the nature of heat and wind through his various plans for and construction of versions of Drebbel's perpetual motion.<sup>26</sup>

### Circulating Personae and Texts

Drebbel cast his reticent style as part of a spiritual and social attitude towards knowledge and to whom it belonged. Drebbel contrasted himself with those who sought fame by setting themselves up as greater authorities than others through the writing of books. "Aren't we all brothers?" When we test ourselves, we find that we have all been created by God as kings with all of nature as our inheritance.

<sup>24</sup> Drebbel, *On the Nature of the Elements*: "Darumb mein Bruder wan du dis im grunde betrachtest, wirstu recht verstehen, die vorgehende exempel vom winde, mehr dan ich schreiben könnte, derowegen habe ich nicht mehr geschriben, dan zum fundament und zu dem, das wir weiter verstehen werden, notig" and "welche ursachen man mit naturlichen Rationibus beweisen kündte, aber der vorgehende ursachen verstehet, wirdt das volkömlicher verstehen, dan ich beschreiben konte."

<sup>25</sup> Beeckman, *Journal*, Vol. 1, 346: "Den 10 November te Middelb., occasionem praebente cap. 6 libri Drebbelij Alcmariensis, gedrukt te Haerlem. *Van den natuyre der Elementen*, int Duytsch."

<sup>26</sup> Beeckman, *Journal*, Vol. 2, 201, 202, 363, 372 and Vol. 3, 203-4, 302-4, 358, 367.

He emphasized that his work was a "little book" or pamphlet, while criticizing the vanity of those who wrote "fat books" in praise of God.<sup>27</sup>

It was pride that led to the fall, and to the different opinions, factions and misunderstandings between men. It was also pride which prevented mankind from understanding Nature. As Drebbel described in his letter on the perpetual motion, such lack of understanding caused the different lots of man. "The gifts of God" however, offered all the ability to understand nature, if such gifts were well practiced.<sup>28</sup>

This emphasis on the practice of gifts reflects the motto Drebbel selected, "*Oeffen uw gaven recht*" (Practice your gifts rightly). Drebbel inscribed this motto in the various albums he was asked to sign, presenting himself in the vernacular and emphasizing practice. His signature can be found today in the album of the Bohemian alchemist Daniel Stolcius, the young Austrian nobleman Otto von Herberstein, the patrician Nürnberg law student Jakob Fetzer, the wealthy and learned Haarlem alchemist Daniel van Vlierden, and the Hamburg literary agent Joachim Morsius.

Such books were standard appurtenances of Northern European students upon their academic peregrinations. Students gathered erudite inscriptions in several classical languages from their peers and their teachers at the places of learning they visited. The books were arranged according to a social hierarchy, and thus required inscribers to clarify their standing among a collection of individuals frequently encompassing many ranks and nationalities. Drebbel often stands out in such collections. His inscription is the only vernacular one in van Vlierden's collection of inscriptions full of Leiden luminaries, for instance. Shockingly, Drebbel appears on page ten of von Herberstein's book, far ahead of his social superiors such as Isaac Casaubon (twenty-second). Von Herberstein clarified the reason for Drebbel's importance, noting around Drebbel's inscription that he was the author, or inventor, of the perpetual motion ("Autor perpetui mobilis").<sup>29</sup>

Drebbel, little caring for social or academic hierarchies, may well have en-

<sup>27</sup> Drebbel, *On the Nature of the Elements*: "lasset uns uns selber prufen, sein wir nicht Könige des köstlichsten kleinodts so Gott geschaffen? haben wir nicht allen reichthum der Welt zu unserm dienst?" "ich . . . . understundt mich gegenwertiges Buchlein deinent wegen lieber leser zu verfertigen"; "sollen wir grosse Bücher schreiben, Gott dar mit zu loben? Ist es nicht eitelheit?"

<sup>28</sup> Ibid.: "... welche unschult wir durch hochmutig, unnd misbrauch verlohren, daher haben wir mannigerlei urtheil, und meinung einer von andern, wie wol wir ein ander nicht kennen." "Der hochmüt den menschen verfuhrer unnd ihne verhinderet die Natur zu verstehen." "Onverstandt is de oorsaeck van den verscheyden wil, oordeel en leven des Menschen."

<sup>29</sup> For von Herberstein's attitude toward rank, see Zöllner, "Aus dem Stammbuch des Otto Heinrich von Herberstein," 314.



joyed disrupting the social order. As his associates, the Küfflers, informed Peiresc in 1624, “he lived always as a philosopher, concerning himself only with his observations, and, not caring for worldly things or aristocrats, he would sooner acknowledge a poor man than a great lord.” Drebbel did not care for schooling, but “as he grew in age, he continued to grow in inventions, without the help or reading of books, which he had always disdained.” He was also “quite old before he understood any Latin, and he did not know how to speak it.”<sup>30</sup> Hartlib reported that Drebbel opposed the discipline required by traditional academic instruction fiercely. “The binding ones-selfe to any Rule whatsoever dose hinder mightily a Mans free-Invention. Therefore Drebbel would not suffer his children to bee taught in schooles.”<sup>31</sup> Drebbel himself announced his lack of Latin in his letter to King James on the perpetual motion.<sup>32</sup>

Given Drebbel’s social egalitarianism, his general opposition to literate culture, his aversion to the citation of authorities and his confidence in his ability to know nature through the work of his hands, it is shocking indeed to find *On the Nature of the Elements* not only read, but applauded and taught within academic curricula. Within just a few years of the 1608 edition, the academic alchemist and rector of the Coburg academy, Andreas Libavius, for instance, translated the entire work into Latin and appended a line-by-line commentary in a massive work intended for students.<sup>33</sup> Heinrich Nollus frequently cited *On the Nature of the Elements* at length (both from the German and in Latin translation) within his hefty quarto chemical textbook of 1619.<sup>34</sup> Peter Lauremberg, at the time professor at the Hamburg Gymnasium, translated the work into Latin, and Joachim Morsius printed his translation in 1621.

The Herborn professor Johann Heinrich Alsted reprinted Morsius’ edition within his comprehensive 1626 philosophy textbook, and subsequently his edition of Drebbel was extracted from the compendium and reprinted separately in Geneva in 1628. Alsted called the work a “short and golden treatise” and the “key

<sup>30</sup> Peiresc, Bibliothèque Municipale Inguimbertaine, Ms. 1776, fol. 410r: “Il vit tout a fait en philosophe ne se soucie que de ses observations, et mesprisé toutes les choses du monde et les Grands, et saluera plustot un pauvre homme qu’un grand seigneur.” Ibid., 408v: “Il me dict qu’en croissant d’aage il aloit tousiours croissant d’inventions, qu’il procedoient de la vivacité de son esprit, sans ayde ny lecture de livres qu’il a tousiours mesprisé... Et qu’il etoit desia fort avancé en aage qu’il n’entendoit point le latin et ne le scavoit pas parler...”

<sup>31</sup> Hartlib, *Ephemerides*, 1639, 30/4/35A.

<sup>32</sup> Drebbel, *Wonder-vondt*: “Maer alsoo mijn meninghe niet en can volcomen uytbeelden, noch in de Engelsche, noch in de Latijnsche tael, so hebbe dat in Duyts geschreve.”

<sup>33</sup> Libavius, “Apocalypseos.” On Libavius, see Moran, *Andreas Libavius*.

<sup>34</sup> Nollus, *Naturae Sanctuarium*, 11, 61, 126, 148, 152, 236, 279, 752. Szydlo mentioned Nollus’ citations of Drebbel in *Water which does not wet hands*.

to physics.” He recommended Drebbel as one of the two greatest writers on the nature of the elements ever, praising in particular the way this alchemist and mechanic (“chemicus” and “mechanicus”) was able to demonstrate the usefulness of the knowledge of the elements using so “few words” (“paucis . . . verbis”). Alsted answered the question “Who has best described the generation of wind, rain, and other meteors?” simply with “Cornelius Drebbel in *On the Nature of the Elements*.”<sup>35</sup> In his marginal comments on Drebbel’s text, Alsted repeatedly praised Drebbel as an autodidact, and he noted Drebbel’s lack of Latin.<sup>36</sup>

A Ramist preference for knowledge found in and for use can help explain the enthusiastic reception of Drebbel’s works.<sup>37</sup> The new discipline of academic alchemy, in particular, brought together artisanality and academic culture.<sup>38</sup> In translating, commenting upon, and recommending Drebbel’s works, academic alchemists indicated their respect for knowledge found through practice. In so doing, however, they transformed those works. Translated and incorporated within extensive academic compendia, Drebbel’s vernacular pamphlet merged with learned Latin verbosity, obscuring Drebbel’s crafted, taciturn style. The relationship between pamphlet, machine construction, and the persona of a vernacular artisan was important to Drebbel’s appeal, yet circulation to other social sites transformed that relationship.

Thus, Libavius, for instance, did not consider Drebbel’s retort demonstration in chapter four of much importance. He interpreted Drebbel’s entire account of the elements as *Decknamen* concealing a series of alchemical processes, which he revealed in his commentary through comparison with an extensive alchemical corpus. Although Libavius pointed out that Drebbel’s theory of the wind differed from Aristotle’s, he considered the retort demonstration in chapter four not as the

<sup>35</sup> Alsted, *Compendium philosophicum*, 22: “Quaenam utilitas ad nos redeat ex solidâ & accuratâ cognitione quatuor elementorum? Id paucis ostendam verbis C.D. summi mechanici & chymici. Sic autem ille in brevi & aureo suo tractatu de natura elementorum . . . Confer C.A. Qui duo auctores ita scripserunt de elementis, ut jure merito omnibus scriptoribus anteponanantur” and 165: “Quisnam omnium optime descripserit generationem ventorum pluviarum, & similibus meteororum? Cornelius Drebbel in tractatu de naturâ elementorum. Vide sub finem hujus compendii physicae.” The other writer on the elements whom Alsted recommended (“C.A.”) was Cornelius Agrippa. I owe thanks to Howard Hotson for clarifying this point.

<sup>36</sup> Ibid., 288, 292, and 293.

<sup>37</sup> Hotson, *Commonplace Learning*, 121.

<sup>38</sup> For the introduction of alchemy to the university see Moran, *Chemical Pharmacy Enters the University*; Debus, “Chemistry and the Universities in the 17<sup>th</sup> Century,” and Hannaway, *The Chemists and the Word*.

keystone of Drebbel's entire account of movement, but as a digression that had nothing to do with the mysteries of the philosopher's stone.<sup>39</sup>

Peter Lauremberg offered yet another interpretation of *On the Nature of the Elements* in his translation. He greatly admired Drebbel's untutored style, finding within the popular and unassuming text "writing of a new character, and by a new author."<sup>40</sup> Even more praiseworthy was the harmony Lauremberg discerned between Drebbel's philosophy and ancient theories. He interpreted the work as divided into two distinct sections. The first part on the nature of the elements was Aristotelian, while the final two chapters dealt with alchemy. In the latter, "the foundations of abstruse wisdom are laid out so clearly that they can be known, seen, and even touched by anyone whose blood is not frozen in his veins."<sup>41</sup>

Lauremberg's interpretation of Drebbel's theory of the elements as Aristotelian did not lead him to call the text secondary or derivative. He accepted Drebbel's claim to personal knowledge discovered through his own hands, and admired Drebbel's innate, uneducated knowledge. It granted the author great glory, not only because that which he proposed agreed "with ancient, certain and genuine Philosophy, but much more because by meditating and experimenting with his own excellent *ingenium*, he has reached a level which rarely anyone reaches even with the help of many teachers and books."<sup>42</sup> The fact that many (though not all) of the findings of this modern artisan corresponded with ancient theories only increased his prestige.

Lauremberg's translation appeared without the figure of the retort or the reference to the figure in the text, although he did stress how through the retort we can sense the phenomena Drebbel described both visually and manually.<sup>43</sup> When Alsted reprinted Lauremberg's translation within his philosophical compendium, chapter four was entitled "How the wind & rains are generated, illustrated by three

<sup>39</sup> Libavius, "Apocalypseos," 370: "Nihil ista habent mysteriorum. Digressio est ad declarandos motus ventorum & generationes."

<sup>40</sup> Lauremberg in *Tractatus Duo* (1628), 3: "Quod dum facio, inveni scriptum caractere quidem novo, novoque auctore dispaluisse in vulgus, sed tamen sapere nativum generositatem antiquioris Philosophiae."

<sup>41</sup> *Ibid.*: "chemicae quidem duo illius postrema capita, in quibus abstrusioris sapientiae fundamenta tam aperte deteguntur, ut & agnosci: & videri & palpari facile possint ab eo, cui non prorsus frigidus obsistit circum praecordia sanguis. Peripateticae vero, quicquid reliquum est argumenti de elementorum naturis, transmutationibus, pluviis, tonitribus, fulguribus, ventis."

<sup>42</sup> *Ibid.*, 5: "Ea tamen res non tam dedecore quam gloria esse potest Drebbelio: non tantum quia cum prisca, solida, & genuina Philosophia conspirant ea quae propint; ut multo magis, quia ipse ingenii sui excellentia meditando atque experiundo sequutus est id, quo multi multorum praeceptorum & librorum adminiculis usi, raro, atque aegre perveniunt."

<sup>43</sup> *Ibid.*: "Id oculis & manu palpabimus."

examples."<sup>44</sup> Thus, the specially contrived and depicted demonstration of the retort received the same attention as the common examples of the roasting apple and the hot iron oven. Some of the important differences between Drebbelian and scholastic stoicheology, such as the former's highly variable rate of expansion between the elements and new theory of the winds, received less emphasis in Lauremberg's translation than in the early vernacular editions.

Lauremberg was very aware of the ways in which books transform authors. He took *On the Nature of the Elements* as an example for how content depended upon the form in which an author's work circulated. Lauremberg compared books in general, and Drebbel's in particular, to coins. A prince takes care that his coins go out into common circulation (*in vulgus*) stamped with his particular emblem. We do the same with books. We carefully handle, inspect, and turn over both books and coins, and if they bear something memorable on their front, we read and interpret them, each according to his own inclinations and talent (*genius*). We don't need to seek far for an example. Take this little work on the elements by Cornelis Drebbel. "Who hasn't handled it with a careful and diligent hand in the past few years?"<sup>45</sup> Unfortunately, continued Lauremberg, efforts to interpret the work had been hindered by its appearance in Dutch, which many people don't understand, and by the terrible German translation, which did not follow "the author's own opinion."<sup>46</sup> He viewed it as the responsibility of those producing the book to fashion a beautiful and authoritative impression of the author's opinions, so that it might circulate for the benefit of the Republic of Letters.

Lauremberg fashioned Drebbel's text into an elegant coin well suited for circulation. Morsius, the editor, also gave the translation a dress designed to celebrate and promote circulation within the Republic of Letters. Approximately thirty percent of Morsius' edition was not written by Drebbel, but by a wide cast of charac-

<sup>44</sup> Alsted, *Compendium philosophicum*, chapter four: "Quomodo generentur Venti & Pluvia. Quae res illustratur tribus exemplis."

<sup>45</sup> Lauremberg in *Tractatus Duo* (1628), 3: "Quod cum nummis, prudentissime Schumachere, quos sub peculiari emblemate percussos in vulgus ire curat princeps, idem assolet fieri cum libellis, quibus viri eruditionis & famae alicuius promotum eunt emolumentum publicum rei literariae. Utrosque curiose tractamus, inspiciamus, vertimus, & si quid memorabile prae se ferunt, legimus; quisque etiam ad arbitrium genii sui interpretamur. Exemplo esse potest (ne petam longius) opusculum hoc Cornelii Drebbelii de Elementis, quod sollicita & diligenti manu quotusquisque non tractavit paucis retro annis?"

<sup>46</sup> *Ibid.*: "Hoc solum faciliiori eius intellectioni obstare videbatur, quod Belgice esset conscriptum, quam dialectum non omnes aequae capiunt. Itaque inventus est haud ita pridem qui cum libellum Germano habitu produxit in scenam; sed infelici prorsus & ridiculo conatu. Nam neque sententiam auctoris assequutus est, ubi nervus & ipse succus ac spiritus argumenti delitescebat, neque omnia transtulit, neque satis dilucide aut Germanice."

ters. In selecting liminary poetry and writing his paratexts, Morsius drew upon and advertised the circulation of Drebbel occurring in the world of academic peregrinations, scholarly networking, and *album amicorum* inscriptions. Such circulation celebrated the harmony between Drebbel the artisanal philosopher and the learned world, which, given Drebbel's aggressively vernacular stance, was no small feat.

Morsius' paratexts smoothed possible lines of contradiction or rupture between a "new writer" and the mores of a learned readership. They further cast the relationships between members of that readership as far more harmonious than they in fact were. Morsius' advertisement of circulation portrayed a virtual society that existed only as a textual phenomenon. Morsius' construction of an idealized Republic of Letters in print allowed him to smooth over differences and to encourage further circulation.

Morsius employed his editions of Drebbel's works to expand his own reputation and the idea of the Republic of Letters in general to include alchemy and hermetic philosophy. The son of a wealthy Hamburg goldsmith, Morsius received a fine humanist education at the University of Rostock. After his university studies, Morsius travelled to the Netherlands. He selected Leiden, home to ample academic luminaries and publishing houses, as a convenient springboard into the life of a literary agent. There he edited the personal letters of great Leiden luminaries such as Scaliger and Clusius and other short tracts.

So far, there had been nothing greatly unusual about Morsius' career, but it was about to take a surprising turn. Having read the Rosicrucian tracts, Morsius was excited about the possibilities alchemy offered for the reformation of knowledge.<sup>47</sup> He decided to explore the world of alchemical publishing, and he chose to pursue the manuscripts of Drebbel for his first edition.

Before undertaking a trip to England, where he would meet Drebbel himself, he first sought out Drebbel's Dutch friends such as Daniel van Vlierden of Haarlem and Ijsbrandt van Rietwijck of Alkmaar. He visited van Vlierden in September 1619, and van Rietwijck one month later.<sup>48</sup> It was through such visits that Morsius collected the small treatises and personal letters he published. Around van Rietwijck's Rietwijcks inscription in his album, Morsius later noted that Drebbel had written a letter to Rietwijck which had been printed by Gottfried Hegenitius, and that he owed Drebbel's *On the Quintessence* to Rietwijck.<sup>49</sup>

<sup>47</sup> Schneider, *Joachim Morsius*.

<sup>48</sup> Morsius, Lübeck MS. 4a 25, 2, 223v.

<sup>49</sup> Morsius, Lübeck MS. 4a 25, 4, 833v, "excusa epistola Cornelis Drebbelii ad Isebrandt Rietwyck (cui eius tractatum de quinta essentia debemus) de mirabili optico speculo a se invento in Itinerario Gotfridi Hegenitii." For Drebbel's letter to Rietwijck, see Hegenitius, *Itinerarium*, 73.

In the networking practices that led up to the production of Morsius' edition, we find Drebbel circulating as a means of increasing sociability among those admiring this new artisanal philosopher. When he reached London, Morsius became acquainted with the patrician Nürnberg law student, Jakob Fetzer, signing his album in November 1619. Drebbel had already signed Fetzer's album the previous July.

Fetzer had included in his lavish volume a series of images depicting the region's curiosities, from London Bridge to the cassowary. Morsius offered Fetzer an image of the famed perpetual motion machine installed at Eltham palace outside the city, together with poetry drawn from Virgil and from his friend Thomas Seghetus.<sup>50</sup> Morsius identified the image of the perpetual motion itself as that of another friend, Cornelis Drebbel ("Effigies perpetui motus Cornelii Drebellii amici," see Figure 1). Interpreting the perpetual motion as an emblem for Drebbel's theory of the elements as a whole, and reflecting Drebbel's own belief that sensual knowledge of the elements led to knowledge of the divine, Morsius wrote, "Knowledge of nature and the separation of the elements is an excellent beginning to knowledge of divine things."<sup>51</sup> In early albums, images often served as the heraldry or emblems of individual inscribers, especially noble ones. Here, however, the image did memorialize a single individual, but built ties between Morsius and Fetzer via Drebbel, while linking the construction of courtly wonders to the knowledge of nature.

We find a very similar use of a depiction of Drebbel's perpetual motion in Morsius' own album (Figure 2). The images appeared not as part of a series as in Fetzer's album, but on the page of the undated inscription of the Kurlander Daniel Rohrman, suggesting that Rohrman himself drew the image or more likely commissioned it from a professional artist as a tribute to Morsius. In his inscription, Rohrman identified the machine as Drebbel's perpetual motion, citing Lucretius on the constant motion of all things. The image thus served as a representation of how the world worked through movement, an idea Rohrman could have drawn from Drebbel's own *On the Nature of the Elements*, but which he expressed instead in elegantly classical form.

In using Drebbel's machine as the image to demonstrate his affection for Morsius, Rohrman, like Morsius, connected multiple identities and relationships. In

<sup>50</sup> Seghetus' much lengthier poem can be found in *Delitiae Poetarum Scotorum*, 490. Seghetus inscribed Morsius' album at Lübeck Ms. 4a 25, 167 and 188v. On Seghetus, see Odložilík, "Thomas Seget."

<sup>51</sup> Morsius, album of Jakob Fetzer, Cod. Guelf. 231 Blank., fol. 309r: "contemplationis divinarum rerum eximium principium nosse naturam et separationem elementorum."

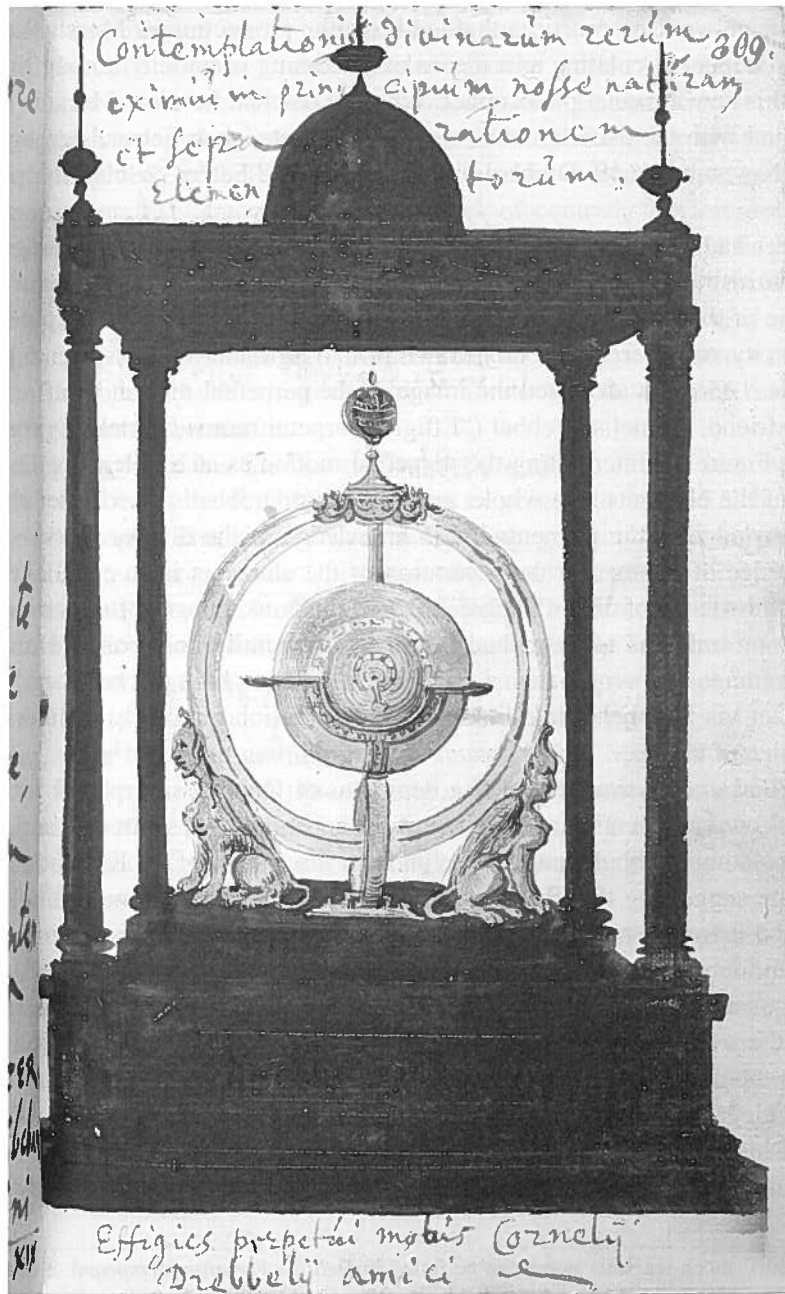


Figure 1: Drebbel's perpetual motion in Fetzer's album, with an inscription by Joachim Morsius. Herzog August Bibliothek Wolfenbüttel, Cod. Guelf. 231 Blank., fol. 309r.

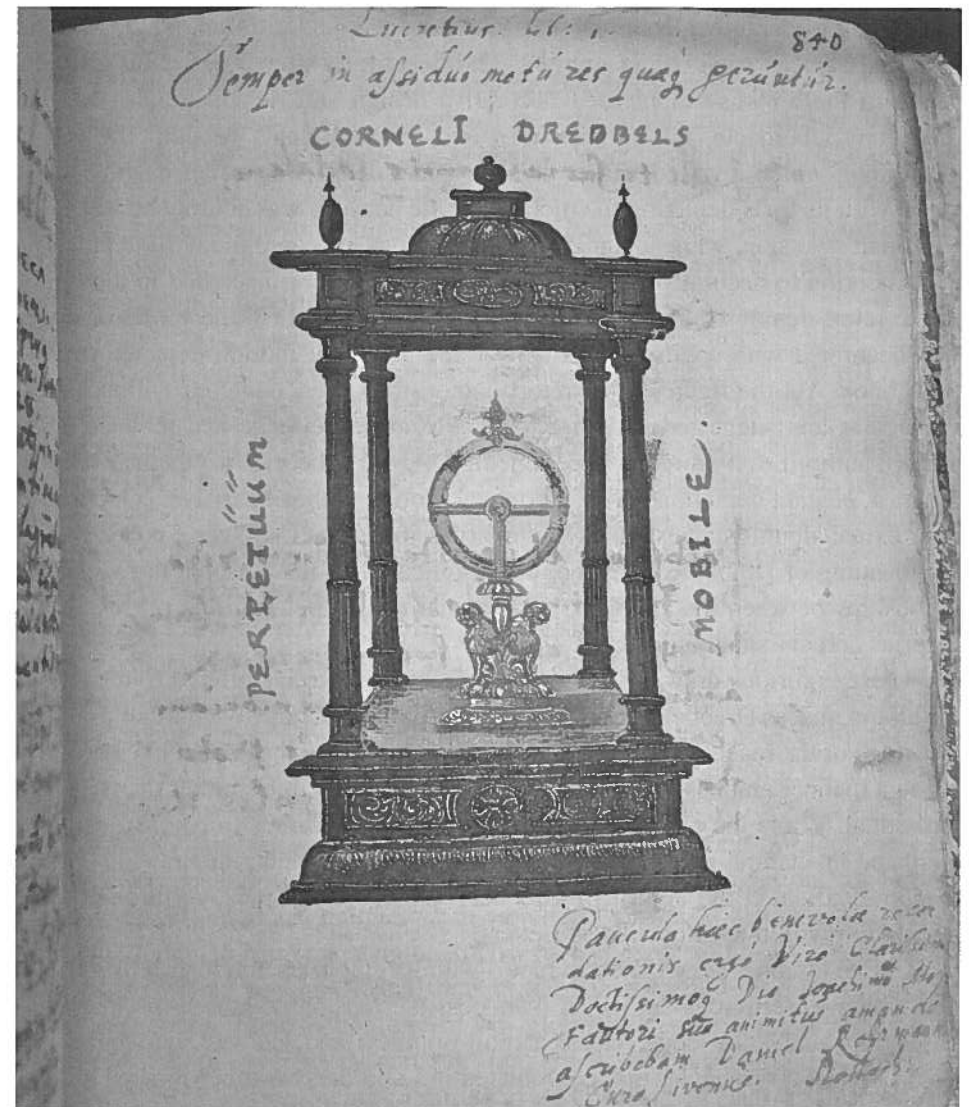


Figure 2: Drebbel's perpetual motion in Morsius' album, with an inscription by Daniel Rohrman. Stadtbibliothek Lübeck Ms. 4a 25, Vol. 4, 840r.

triangulating identities, Rohrman and Morsius entangled different media and the authorial stances such media implied. The beautifully drawn perpetual motions found in the albums emphasized decorative design and rich materials, such as the ebony tabernacle, the gilt machine, and (in Rohrman's version) the velvet cloth upon which it rested, rather than technical detail. For instance, the central globe with its dials depicting the motions of the heavens was entirely absent from Rohrman's version, while a pair of decorative lions appeared in lavish detail.

Attention to decorative or symbolic detail can also be discerned in the figure of the retort demonstration in *On the Nature of the Elements*: the vessel of water was decorated with sphinxes, just as was the perpetual motion depicted in Fetzer's book. Yet the figure of the retort demonstration encountered within a slim vernacular text suggested ways for readers to avoid verbiage and reliance upon ancient authorities by directly experiencing Drebbel's theories for themselves. By contrast, elegant depictions of the perpetual motion within extensive, eclectic and intertextual albums suggested ways of dilating, in elegant Latin verse no less, upon the meaning of Drebbel's machine, the significance of his persona, the social relationships between his admirers, and the harmonies between his practices, his theories and classical philosophy.

These luxurious drawings served as presentation objects offered to readers of the album, just as Drebbel had presented the original machine to King James I. The drawings of the machine functioned as representations of a persona, like heraldry, but in a manner emphasizing the integration of learned circles rather than a single individual. While the machine Drebbel built for King James I demonstrated and validated his natural philosophy through constant movement, the drawings of the machine validated the appeal of Drebbel's philosophical persona through their circulation within the Republic of Letters.

Unlike Drebbel's own taciturn motto with its emphasis upon vernacular practice, album inscriptions smoothed over possible tensions between his machine-based artisanal knowledge, classical philosophies, and learned sociability. Yet even Drebbel's vernacular motto circulated in Latin dress within Morsius' album. On the pages preceding Drebbel's inscription in Morsius' album, Joachim Olearius, a pastor in the village of Petschow outside Rostock, inscribed a lengthy tripartite poem in both German and Latin on the motto "Ofend u gaven recht" of the "philosopher, alchemist, and mechanic" Cornelius Drebbel of Alkmaar.<sup>52</sup>

<sup>52</sup> Olearius in Morsius, Lübeck MS. 4a 25, Vol. 2, 342r-343v: "philosophi hermetici et mechanici."

### Selecting Praise

After extensive travel and sociability among Drebbel's acquaintances and admirers, the time came for Morsius to publish the translations and manuscripts he had acquired. Morsius' first edition of Drebbel's works, published in 1621 in Hamburg with a dedicatory letter signed March 1620 at Leiden, included Drebbel's letter on the perpetual motion and his *On the Quintessence*. Morsius carefully selected dedicatees and liminary poetry, deciding how best to advertise his extensive networking while forging new ties.

Morsius chose to dedicate *On the Quintessence* to Heinrich Nollius, who, as we have seen, enthusiastically praised Drebbel in his textbooks of 1619. Morsius explained to Nollius how he decided to join the knowledge of nature and hermetic medicine to his study of public law, philology and sacred and profane history. The first evidence of his foray into alchemical letters was this little work of Drebbel's. He requested that Nollius send regards to his famous colleagues at Steinfurt, Guinand Rutgers and Clement Timpler, and he further promised to send more works by Drebbel within a few months.<sup>53</sup>

Indeed, a few months later, Morsius published a second edition of Drebbel's works, which now also included Lauremberg's translation of *On the Nature of the Elements*. Lauremberg had already dedicated the work to the Luneburg senator George Schumacher. Morsius appended his own dedication to Schumacher, describing how he had first been introduced to him by Heinrich Nollius, and asking him to send regards to the learned Johann Adolph Tassius.

Morsius chose yet another dedicatee, Daniel van Vlierden, for Drebbel's letter on the perpetual motion. He recalled how, before he had set out for Britain, he and van Vlierden had enjoyed such wonderful conversations about the "mysteriarch" Drebbel. Morsius mentioned how he had received *On the Quintessence* from their mutual acquaintance Ijsbrandt van Rietwijck. He also advertised another connection which might interest van Vlierden. He had received the letter on the perpetual motion from the famous Hungarian alchemist at London, Jan Banfi Hunyades, who was now a very intimate friend of his.<sup>54</sup> In each small tract Mor-

<sup>53</sup> Morsius in Drebbel, *De quinta essentia*: "Cum juris publici, philologiae & historiarum sacrarum, profanarum, omnium gentium studio, excellentissime Nollii, mire mihi placuit accuratam naturae medicinaeque hermeticae cognitionem conjungere. Serius quidem quam par erat, serio tamen, & ut confido non sine meo ac publico emolumento. Multum certe debeo nupero Britannico meo itineri, nec me suasore ullus ad aureum vellus petendum, famosam Colchidis insulam accedet."

<sup>54</sup> *Ibid.*: "Saepissime in memoriam redeo congressus nostri suavissimi, in sacro tuo secessu eremiteo, ante Britannicam meam profectionem de mysteriarchâ omnium seculorum commendatione

sus published, he spun out his web of contacts further and further. He dedicated every piece of Drebbeliana, and in each dedicatory letter he advertised how he received the piece, mentioned mutual acquaintances to the dedicatee, and suggested future collaborations.

Morsius went beyond dedicatory letters in his campaign to advertise and extend his dizzying array of relationships. He included numerous liminary poems praising not Drebbel, but himself. A diverse population, including noted alchemists, but also professors, noblemen, poets, clerics, and lawyers, contributed these poems.<sup>55</sup> Each poem was signed and dated, recalling *album amicorum* inscriptions. Indeed, the inscriptions of Peter Finxius, Ambrosius de Bruyn, and Johann Grassaeus can be traced back to the surviving three volumes of Morsius' four volume album. The poems appeared in the printed text arranged on the page just as they were within the manuscript album. To a population habituated to the practices of album inscriptions, such liminary poems set the text within the social practices of learned travel and scholarly networking.

By printing Grassaeus' album inscription in a volume dedicated to Heinrich Nollius, Morsius showcased his contacts and his skills as a literary agent. Morsius always recorded the accomplishments or publications of the inscribers in his album around their inscriptions. Under Grassaeus' inscription he noted that he was the author of a work entitled the *Arca aperta* of 1617. Morsius reproduced part of Grassaeus' inscription in his editions of Drebbel's works, including his own comment noting Grassaeus' authorship of the *Arca aperta*.<sup>56</sup>

The *Arca aperta*, despite its Latin title, was, like Drebbel's *On the Nature of the Elements*, a slim vernacular alchemical work championing artisanal knowl-

dignissimo, Cornelio Drebbelio. Ejus *Tractatum insignem de quintâ essentia*, ab optimo & rarissimae eruditionis J. C. Isebrando Rietwyck Alcmaria ad me directum his diebus in communem usum cultorum sincerioris chemiae produxi . . . Editionis autem huic cum adjungere constituerim ejusdem praefati nostri Drebbeli praestantissimi epistolam ad sapientissimum Angliae, Scotiae, Hyberniae & Franciae Regem Jacobum, de perpetui mobilis inventione scriptam, mihi a sagaci & industrio naturae indagatore, Ioanne Ungaro Hunniadino, familiare meo carissimo, Londini oblatam tibi eam dicare mihi visum."

<sup>55</sup> Morsius' first edition of Drebbel's works had liminal poetry signed by professor of medicine at the Ernestina University in Rinteln Peter Finxius, the Dutch poet active in London Ambrosius de Bruyn, the Polish baron and alchemical enthusiast Martin Gorasky, the famous alchemists Michael Maier, Hadrian van Mynsicht, and Johannes Grassaeus, as well as the cleric Gerhard Culmann and the poet Georg Heinrich Berkenduschius. The expanded second edition contained liminal poetry signed by the lawyer and poet Christopher Schwanmann and by Paul Blocius, rector of the Luneburg school.

<sup>56</sup> Morsius, Lübeck, 4a 25, 2, 442v. In Morsius' first edition of Drebbel's works in 1621, Grassaeus was identified by his full name. In the second edition, *Tractatus Duo*, Grassaeus was identified only as "J.G."

edge. The *Arca aperta* was also similar to *On the Nature of the Elements* in its appeal for academic alchemists seeking to incorporate artisanal knowledge into alchemical curricula. Nollius admired the *Arca aperta*, but did not know the identity of its anonymous author. He referred at one point to "the author of the *Arca aperta*" and at another even more specifically to the author of the "*Arca aperta arcani artificiosissimi* printed at Frankfurt by Johann Bringer."<sup>57</sup> By naming Grassaeus in the edition of Drebbel dedicated to Nollius, Morsius introduced yet another favored vernacular author to an academic alchemist.

In selecting liminary poems from the hundreds he had already collected in his massive album, Morsius integrated varied individuals who were unknown to each other, yet who seemed united in praise of his edition. Grassaeus was at the time engaged in a polemic with Michael Maier, yet Morsius joined the two feuding alchemists in seemingly unanimous approbation.<sup>58</sup> The virtual associations Morsius built acquired an enduring and robust existence through print. As late as 1772, the translator of a new German edition of Drebbel's *On the Quintessence* decided to include some of the original liminary poetry written to Morsius in the original Latin, as evidence that once upon a time "there was a united society of adepts, some of whose writings still survive."<sup>59</sup>

## Conclusion

Drebbel's story shows that to be a philosopher in early modern Europe, you did not need to be a gentleman, go to school, know Latin, or socialize with other philosophers. In the absence of such qualifications, you did need to cross a bridge over significant cultural, linguistic, and theoretical divides to gain acceptance in learned circles. Many historians have studied the locales bringing together early modern European artisans and the learned, including courts, printing houses, cities, and councils of trade.<sup>60</sup> As a wonderworker at the court of King James I, Drebbel did enjoy a certain amount of access to the learned. Yet by and large his identity as a philosopher did not emerge from his own locale. Compared to his reputation on

<sup>57</sup> Nollius, *Naturae sanctuarium*, 108: "... autoris, qui apertam arcam arcani artificiosissimi conscripsit, & absque omni dubio scientiam L. Philosophici habuit..." and 588: "... arca aperta arcani artificiosissimi Francofurti ad Moenum excusa apud Ioan. Bringerum."

<sup>58</sup> Leibenguth, *Hermetische Poesie des Frühbarock*, 39.

<sup>59</sup> *Neue alchymistische Bibliothek*, 308: "Wenigstens werden sie zu einem Angedenken und zu einem Beweise dienen, dass es damalen eine ganze vereinigte Gesellschaft von Adepten gegeben hat, deren Schriften wir zum Theil noch übrig haben."

<sup>60</sup> Ash, *Power, Knowledge, and Expertise*; Barrera-Osorio, *Experiencing Nature*; Harkness, *The Jewel House*; and Smith, *The Body of the Artisan*.

the Continent, in England Drebbel was considered much more as an inventor than as a philosopher.

Drebbel was not only an artisan who rubbed shoulders with philosophers in a particular place. He was also an artisan who became a philosopher for diverse populations in many far distant sites. This transformation did not occur through the personal interaction of Drebbel and the learned, but through the material carriers of books and drawings as they circulated across Europe.<sup>61</sup> Varying interpretations of his philosophy and even differing versions of his persona rested in part on the divergent forms such media took. The book represented the author's persona, and as the book changed, so too did the authority of its writer.<sup>62</sup>

Drebbel claimed philosophical authority by pointing to a special relationship between his text and materiality. Instead of lengthy citations from written authorities, he relied for proof on a contrived demonstration, examples drawn from everyday life, and the fame of his successful, physico-mechanical devices. Reading *On the Nature of the Elements* transported the reader into the presence of the elements. The aura of the rough artisan which attended this little, vernacular text encouraged its readers to relate the text to objects, and, as in the case of Isaac Beeckman, to recreate the phenomena discussed in the text.

The original, vernacular editions of this text alone, however, would not have established Drebbel's philosophical authority for many readers without the imprimatur and additional re-packaging of the work by Drebbel's editors and translators such as Libavius, Lauremberg, Alsted, and Morsius. Drebbel's aggressive contempt for ancient authorities, disregard for formal education, and appeals to everyday experience were not designed to appeal to the Republic of Letters. His statements about the potential of the untutored common man to share in the equal knowledge of nature were so egalitarian that they have led some historians to assume that he must have been an Anabaptist.<sup>63</sup> His scorn for vain authors who sought to make a name for themselves by writing "fat books" was not entirely empty posturing. As Burggrav noted, Drebbel printed only a few copies of the first (no longer extant) edition of his little book. There is no evidence that he had anything to do with the over twenty editions which followed, including translations into German, French, and four independent Latin translations.<sup>64</sup> How did

<sup>61</sup> Compare Lux and Cook, "Communicating at a Distance."

<sup>62</sup> Cf. Daston and Sibum.

<sup>63</sup> Snelders, "Alkmaarse Natuurwetenschappers," 119.

<sup>64</sup> Latin translations were by Libavius (1613), Lauremberg (1621), Burggrav (1628), and Luppius (1702).

such a text come to be studied and cited in academic textbooks, dissertations, and debates across Europe?

In Drebbel's case, the spans that held up a bridge between artisanal and philosophical worlds included a culture of courtly curiosity and learned travel, an alchemical tradition defining philosophers as practicing adepts, and a practically oriented, pedagogical Ramism which introduced alchemy to the academy. Drebbel was not prominent among the architects who brought these spans together. He worked to secure patronage from his employers but did little otherwise to curate his reputation for a wider audience or for posterity. Instead, agents and networkers such as Joachim Morsius joined the worlds of courtly wonder, theosophic adepts, and academic publishing to engineer Drebbel's reputation as a philosopher for the Republic of Letters.

Drebbel's pan-European celebrity as an inventor, artisan, and alchemist preceded his philosophical status. While Drebbel's identity as an inventor supported his claim to maker's knowledge, his role as an orchestrator of courtly wonders also placed him in a culture of collecting and learned travel which rendered his inventions more palatable as luxurious collectibles for international travelers. In the drawings of the perpetual motion within the albums of Fetzer and Morsius, textures of velvet and gilt softened the harsh edges of Drebbel's artisanality. These drawings emphasize the wondrous, secret knowledge of the adept over the common experience of the exploding apples and hissing irons found in Drebbel's text.

Renown as a courtly inventor alone did not, however, ensure status as a philosopher. Via his album inscriptions and album-derived paratexts, Morsius went on to tie the courtly wonder of Drebbel's perpetual motion to the worlds of both alchemical adepts and academic alchemists. The liminary poetry he selected from his album tied Drebbel's work to his own world of intensive networking and travel, a world in which Drebbel himself only participated from the sidelines, if at all. Morsius thus integrated the vernacular artisan as a philosophical authority within the Republic of Letters through the networking practices of learned sociability. Such a feat of social re-engineering might seem to stretch the most flexible network. Yet, as Morsius' album illustrates, he worked hard to expand his network in many other ways as well.

Morsius' extensive network connected lawyers, doctors, noblemen, humanists, academics, clerics, alchemists, religious enthusiasts, and artisans. He linked feuding individuals, introduced readers to their favorite anonymous authors, and tied the study of alchemy to humanist disciplines. While Drebbel grafted alchemy onto machines and spliced both into his vernacular texts, Morsius united disparate sites and styles of knowledge production in his Latin editions. Both deployed the

same text in different ways, expanding not only what counted as knowledge, but who could be counted as knowing. The constructive work linking the worlds of vernacular and Latin learning occurred in the material carriers of Drebbel's texts as they passed from vernacular to Latin and between different readerships.

Translations from the vernacular are an understudied phenomenon, which reached a peak in the first decades of the seventeenth century.<sup>65</sup> This movement was not only a manner of linguistic translation. The material character of the book, the experience of reading it, and the use to which such books were put also shifted in translation. Nor did all Latin editions of the text suggest similar interpretations. When Libavius translated Drebbel's text, *On the Nature of the Elements* jumped not only from the vernacular to Latin, but from a very slim, inexpensive octavo to an extremely hefty folio with extensive apparatus aimed at a new academic alchemist. To that audience, Libavius emphasized the sophistication of Drebbel's hidden textual allusions and downplayed the importance of contrived demonstrations.

Lauremberg, in his elegant translation, kept the little text spare, treating it as a beautiful, antique coin in which Aristotle could be found reincarnated. In this translation, the encyclopaedist Alsted admired the work as a taciturn, "masculine philosophy." As one who was himself struggling to control the tangle of polymathy, Alsted hoped reprinting such a work within a philosophical compendium would encourage budding philosophers to hack luxuriant overgrowth down to produce a more fruitful crop of carefully pruned knowledge.<sup>66</sup> The splicing on of Morsius' extensive paratexts in the form of album inscriptions made the text branch out once again into the far-reaching network of learned sociability, expanding further the work's possible readerships.

Libavius, Lauremberg, Alsted, Morsius and his network would not have read the text in the same way. Yet the care they took to re-fashion, re-interpret, and debate Drebbel pointed to their respect for his text. Learned readers disagreed in their interpretations of Drebbel's work just as they debated the meaning of other philosophical authorities. They did not treat him only as an ingenious inventor, but as the author of a complex work worthy of interpretation by each reader according to his own "genius," as Lauremberg put it.

The Silesian John Jonston, for instance, discussed Drebbel in a work arguing that the world was not declining. Jonston brought forward Drebbel's impressive

<sup>65</sup> Burke, "Translations into Latin in early Modern Europe."

<sup>66</sup> Alsted, *Compendium philosophicum*, 254: "Mascula philosophia me delectat. Utinam & vos, qui in tenerâ & lubricâ aetate mavultis disputare, quàm amputare! Amputare, inquam, stolonos luxuriantium ingeniorum."

inventions as evidence for the progress of the mechanical arts. He did not stop there, however. He also discussed Drebbel's written natural philosophy in his section on theoretical physics, where he concluded, "I know not whether Drebellius hath not exceeded the Ancients in his Book of the Elements."<sup>67</sup> Jonston did not reach a decision about whether Drebbel had indeed conquered Aristotle. What is amazing here is that there was a contest at all between an unlearned, vernacular artisan and the master of those who know. Drebbel the philosopher had arrived.

<sup>67</sup> John Jonston, *Of the Constancy of Nature*, 83 and *De constantia naturae*, 68-69.