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# Rudolf II of Prague and Cornelis Drebbel: Shakespearean Archetypes?

*by Robert Grudin*

It will probably occur to the reader, as it has more than once to me, that the material that follows could have been organized more suitably in two separate essays. Any new proposal for a Shakespearean model or archetype deserves a private hearing of its own, and introducing two of them in a single article implies perhaps the effort to strengthen a pair of rather uncertain arguments by propping them up against each other. But Rudolf II and Cornelis Drebbel present a special case. Almost every fact I learned about one taught me more of the other. I would have trouble writing about them separately—at least in article form—without excessive cross-referencing.

On top of this, for about two years, Rudolf and Drebbel were closely related in life. They knew each other well, apparently liked each other, and certainly depended on each other. They represented a uniquely Renaissance collaboration: a fabled ruler, hungry for the power to dominate nature as well as men, and the technological virtuoso who seemed to hold the secret of that power. Their stories, especially as they may relate to Shakespeare, are so strongly and variously united that to separate them would be to lose an element that gives meaning to both. Therefore I will leave them together for the moment, hoping that the future will bring the fuller treatment that each deserves.<sup>1</sup>

*Rudolf II, Prospero, and the Duke in Measure for Measure*

Like many other characters from Shakespearean comedy and romance, Prospero of *The Tempest* and the Duke of *Measure for Measure* are generally presumed to be products of pure invention—figures pieced together

from general typologies, and forced into the service of dramatic necessity, without reference to real persons living or dead. Efforts to find historical sources for these characters, while yielding some resemblances, have generally failed to reveal extensive similarities or even tantalizing clues. These efforts have largely been based on name-similarities that coincidentally have driven scholars back into that foreign territory with which they are best acquainted, the Italian Renaissance.<sup>2</sup> Other approaches and areas of history that might have yielded better results have been ignored, largely because Renaissance historiography did not offer much chance for such inquiry until the 1970s and 1980s. In what follows I will avail myself of this relatively new historical evidence, as well as some earlier scholarship, in an effort to give two Shakespearean orphans, conjecturally, a historical pedigree.

Grandson to Charles V and Ferdinand I, son to Maximilian II, Rudolf II ruled the Holy Roman Empire from 1576 until his death in 1612. After his coronation he moved the imperial court from Vienna to Prague, where he took up residence in that sprawling complex of buildings known as the Hradschin. In the decades that followed, his court became a haven for a more formidable array of authorities than can be placed in any other royal residence during the period: artists of all sorts, humanists, philosophers, courtiers, scientists, alchemists, medical theorists, cabalists, poets, inventors and theologians. Familiar to modern eyes would be the names of Sir Philip Sidney and Fulke Greville (who both visited briefly), Sir Edward Dyer, Sir Henry Wotton, Johannes Kepler, Tycho Brahe, John Dee, Edmund Campion, Edward Kelley, and Giordano Bruno. Less familiar, but certainly notable in their own time, were the painters Giuseppe Arcimboldo, Roelant Savery, and Bartholomaeus Spranger, the Paracelsians Michael Maier and Oswald Croll, the humanist Caspar Dornavius, the inventor Cornelis Drebbel, and the "great Rabbi of Prague," Judah Loew ben Bezalel. A generous patron of emblem artists, Rudolf also supported the study of secret signs and codes; his court housed the development of a form of pictorial mannerism (founded by Arcimboldo) whose essence lay in the identification of Rudolf's princehood with the universal bounty of nature. Rudolf was praised, indeed panegyricized, in art and poetry as a champion of the liberal arts. His collection of artworks was rivaled in Europe only by the Medici and was complemented by collections of gems, machines, and icons; notable among his possessions were "wonder-cabinets" that presented, as his modern biographer R. J. W. Evans puts it, "encyclopaedia(s) of the visible world."<sup>3</sup>

These lineaments of empire notwithstanding, Rudolf showed no great love of politics or aptitude for it. To the recurrent political discord and unassuageable religious conflict that he faced, his responses were erratic

and ineffectual. Quite early in his career it was rumored that he wished to retire from public life, and by the turn of the century he had shut himself up in the Hradschin, his career as emperor effectively at an end. In 1605 he lost control of Hungary to his ambitious younger brother, Matthias. In 1606, the Proposition of the Archdukes (Vienna) attacked him as an eccentric, atheistic imperial delinquent. In 1611 he was formally supplanted as king of Bohemia, again by Matthias. Rudolf's "last desperate political ventures" (various stratagems for regaining power and revenging himself upon his brother) were undertaken in conspiratorial council with a group of advisers that included the Dutchman Cornelis Drebbel, whom Rudolf was said to have called "the greatest personage in the world." These schemes were cut short by the emperor's fall from power, and his death soon afterward in January 1612.<sup>4</sup>

Rudolf's final intrigues illustrate an aspect of his character that deserves our attention. He loved mystery and was an energetic if over-ambitious schemer. He delighted in secret signs and codes (Arcimboldo and Drebbel were among his experts here), cloaked his own actions in mystery, involved himself in numerous sexual liaisons, and had a passion for every conceivable occult means of enlarging personal power.<sup>5</sup> Typically surreptitious and bizarre were his imprisonment of the alchemist Edward Kelley<sup>6</sup> and his outlandish plot, made with the English adventurer Sir Anthony Sherley, to enlist the shah in a league against the Turks.<sup>7</sup> Rudolf's utter failure at one machination never seemed to dull his enthusiasm for the next. And, especially early in his career, this strange *modus operandi* seems actually to have profited him politically, to have entranced his associates and visitors with the mystique of majesty.<sup>8</sup>

### *Rudolf's Relations with England*

Rudolf's notable and increasingly notorious career was no secret in London. The Holy Roman Emperor was, after all, the senior monarch in Europe. Repeated citations in state papers suggest a lively interest in his (and Matthias') activities and attitudes.<sup>9</sup> Elizabeth had opened relations with Rudolf by sending Sir Philip Sidney (together with Dyer, Greville, and other emissaries) on an errand of "condolence" for the death of Maximilian II that doubled as English reconnaissance into European political and religious attitudes.<sup>10</sup> Rudolf's turbulent relationship with the Irish alchemist Edward Kelley, which brought Sir Edward Dyer to Prague on a kind of relief mission, must have rendered relations between England and the Empire uneasy, especially since getting poor Dyer out of range of Rudolf's wrath necessitated a letter from Elizabeth.<sup>11</sup> Her later dealings with Rudolf were further troubled by Rudolf's

ennoblement of the British subject Thomas Arundell. This latter problem and its aftermath (Arundell insisted on keeping his title) were much in the news near the turn of the century;<sup>12</sup> but the Kelley/Dyer affair cannot have been a secret either.

Rudolf's relations with James I were more cordial. An imperial delegation totaling about one hundred and headed by a Prince George Lodovic appeared in London in July of 1605 and was housed in Lombard St.<sup>13</sup> Clearly aware of Rudolf's love of learning, James dedicated to the emperor the 1609 edition of his statist pamphlet, *Apologia pro juramento fidelitatis*. That same year Rudolf sent James two gifts: a celestial globe and a clock.<sup>14</sup> The two monarchs had important tastes in common;<sup>15</sup> a shared penchant of special interest to us here was for the services of the Dutchman, Cornelis Drebbel. For James, Drebbel constructed a renowned *perpetuum mobile* and possibly did special effects for masques; for Rudolf, Drebbel built another *perpetuum mobile*, sat in council, and applied his metallurgical skills in the imperial mint.<sup>16</sup>

Rudolf's foibles and misadventures were also topics of English concern. Early in James's reign, the courtier John Barclay published his influential *Euphormionis lusinini satyricon* (pt. 1, 1605; pt. 2, 1607), a Latin prose romance that satirized Rudolf as a diseased libertine and vain alchemist.<sup>17</sup> Less bitter but equally damning were the letters of the scholar/ambassador Sir Henry Wotton, which convey an episodic history of Rudolf's decline. Wotton writes to Lord Zouch from Vienna, describing Rudolf's financial difficulties (19 December 1590, 17 April 1591) and remarking that the emperor and his brother Maximilian read so much about magic that "there is no book of that argument left in the Library" (15 January 1591). Having noted early on (17 April 1591) Rudolf's "loose" manner of government, Wotton will later remark that the emperor can no longer control even the burghers of his own city (14 November 1609). In the same letter he sees Rudolf's weak government as the tragic cause for his fall from power:

I am forced to end in contemplation of a prince, highest in name and least in virtue, punished from heaven most justly by the fatal lethargy of his own affairs.

(To the Lord Treasurer, Robert Cecil, Earl of Salisbury)

Wotton's reports of competition and enmity between Rudolf and Matthias (28 March 1608, 14 November 1609) culminate with the news of Rudolf's final abdication:

they have extorted from the Emperor his consent to make Matthias King of the Romans: so as having first spoiled him of obedience

and reverence, next of his estates and titles, they have now reduced him to so low a case, that he is no longer patron of his own voice.

(To Sir Arthur Throckmorton, 8 May 1611)<sup>18</sup>

Wotton was by no means the only source of privileged information about Rudolf. Salisbury, who was the king's principal secretary and at the nerve center of foreign affairs, was abundantly informed about the emperor and Archduke Matthias by a variety of ambassadors and intelligencers.<sup>19</sup>

There were artistic and intellectual ties as well. By 1610, when he officially became Prince of Wales, James's son Henry was already in the process of assembling his own court. This project, which was to be cut off by the prince's death in 1612, was so radical a departure from English royal tradition that Henry's most recent biographer, Roy Strong, sees fit to call it "England's lost Renaissance."<sup>20</sup> Henry's intention, energetically and ambitiously advanced in the face of financial dearth, was to found a cosmopolitan, mannerist court on the model of Medicean Florence and Rudolfine Prague: a royal center noted for its vast and eclectic collections, its extravagant art and architecture, and its technological bravado. Roy Strong links Henry's encyclopedic tastes as art collector directly with Rudolf's, whose collections he calls "*primus inter pares* in the Europe of his time." He continues,

The Prince had direct knowledge of these [Medicean and Rudolfine] collections. The Fiorentini in his circle would have described to him the wonders of Medicean Florence, in addition to which he was, in 1611, to have an architect who had not only been in the service of the grand dukes but who had also worked for the Emperor Rudolf in Prague. There were to be two other direct links with Prague, Abraham van der Doort, who was appointed Keeper of the Prince's collections in 1612, and the magus Cornelis Drebbel, whose chief patron was the Prince [Drebbel was actually in the Prince's employ by 1609]. So that in the spring of 1610 when he began to form his own household and to collect, build, decorate and lay out the gardens of his two palaces at Richmond and St. James's, the Prince was inaugurating a new era, in which he was deliberately placing himself and his surroundings in direct association with the aims and ideals that had motivated the Medici grand dukes and the Emperor Rudolf.<sup>21</sup>

Though Henry's court was in general a bold departure from his father's, he shared with James a lively interest in the emperor and Prague.

*Rudolf and Measure for Measure*

Resemblances between Rudolf's reign and Shakespeare's *Measure for Measure* are both topical and thematic. *Measure for Measure* (1604, with a possible post-1606 addition)<sup>22</sup> appears during a critical period in Rudolf's career. Shakespeare's play is set in Hapsburg Vienna, where Rudolf had originally ruled and where he still maintained a residence.<sup>23</sup> Shakespeare's "Duke" and Rudolf are princes in political hot water, and in both cases their problems are related to their having been reclusive and having neglected affairs of state. The Duke tells Friar Thomas,

My holy sir, none better knows than you  
 How I have ever lov'd the life removed,  
 And held in idle price to haunt assemblies  
 Where youth and cost, witless bravery keeps.  
 (I.iii.7-10)

Connected with these reclusive traits, we assume, has been the Duke's vacant attitude toward government, which has disastrous effects:

We have strict statutes and most biting laws  
 (The needful bits and curbs to headstrong steeds)  
 Which for these fourteen years we have let slip.  
 . . . so our decrees,  
 Dead to infliction, to themselves are dead,  
 And liberty plucks justice by the nose;  
 The baby beats the nurse, and quite athwart  
 Goes all decorum.  
 (I.iii.19-21, 27-31)

This would seem to parallel Rudolf's "lethargy" and "loose" government described by Wotton above, and his resultant loss of power over the burghers of his own city.

A more general parallel between the Duke and Rudolf holds until the end of the play. The Duke adopts the Machiavellian<sup>24</sup> scheme of reform via deputy and embarks upon a course of clandestine manipulation that extends almost to the happy conclusion. Machiavellian policy was too popular a pastime to be the sole justification of an argument which seeks to connect the two figures; but here the Duke's rather eccentric concern for personal secrecy, coupled with phrases which describe him as "having dark things darkly answer'd," and "that old fantastical Duke of dark corners" (III.ii.177, IV.iii.157), would seem to provide a more specific link with the secretive Hapsburg monarch. And granted such a Rudolfine





al arts—a distinction sharply reminiscent of Rudolf, who was enshrined by his court artists as a champion of the liberal arts and whose reign was praised by Dornavius in the oration, “Felicity of the Age: being an Oration that Proves the Liberal and Mechanical Arts of our Time Superior to Those of Many Ages Past.”<sup>25</sup>

Prospero arrives on the island with books from his Milan library. It is from these that he learns the “rough magic” that allows him to dominate his island and its visitors. Prospero’s magic and the projects to which he directs it find a historical parallel in Rudolf’s activities. As the hostile archdukes describe Rudolf,

His Majesty is interested only in wizards, alchymists, kabbalists and the like, sparing no expense to find all kinds of treasures, learn secrets and use scandalous ways to harm his enemies. . . . He also has a whole library of magic books.

(Proposition of the Archdukes in Vienna, 1606)<sup>26</sup>

Prospero’s magic, as a sort of *magia naturalis*, is specifically concerned with the four elements. As Miranda pleads with her father to spare the Neapolitan ship from the storm, she ticks off all four of the elements (sky, pitch, sea, fire) that are his dominion; and as Prospero, about to retire as magician, reviews his achievements, he mentions them all again (winds, sea, fire, promontory; I.ii.1ff., V.i.40ff.). His servants Ariel and Caliban have obvious elemental connotations; Caliban he calls “thou earth” (I.ii.314). The goddesses in his Masque, Ceres, Iris, and Juno, represent respectively earth, water, and air; Venus, absent but mentioned, is associated with fire.<sup>27</sup> At Rudolf’s court, the Four Elements were identified as profoundly meaningful symbols of princely identity. The emperor’s many-sided or “composite” nature—a variety of attitudes, skills, and moods amenable to the vicissitudes of time—were represented by Arcimboldo in more than one series of paintings called *The Elements*.<sup>28</sup>

The Paracelsian tradition, as represented by Bruno, Croll, Maier, the Rulands, and others, was immensely strong at Prague and cross-fertilized with England through emissaries like Dee, Drebbel, Maier, and Fludd.<sup>29</sup> Elsewhere I have discussed Shakespeare’s transfiguration of Paracelsian ideas into dramatic and ethical structures.<sup>30</sup> Prospero’s Paracelsianism lies in his homeopathic interpretation of likes and contraries (likes cure likes while contraries merely abet each other) and his application of this theory as a response to ethical challenges. Shakespeare, moreover, sets Prospero in a Paracelsian framework by linking his power to an astral (Ariel) and a terrestrial (Caliban) principle.<sup>31</sup>

### *Rudolf and History*

Before leaving Shakespeare and Rudolf, I wish to look at two related questions: why Rudolf and his fascinating court were not subjects of publication during Shakespeare's time, and why, with the world awash with Shakespearean scholars, the Rudolf/Shakespeare parallels were not discussed long ago.

In Shakespeare's time, publications concerning living monarchs (panegyrics and elegant Latin allegories excepted) were certifiably indiscreet and punishable by the loss of such valued items as hands and heads. In his own time, Rudolf was not widely discussed in print because it would have been dangerous to write about him frankly; and by the time it became possible, Rudolf and his court had been forgotten. Except for his patronage of the visual arts, his Turkish war, and a proclamation or two, Rudolf remained forgotten in the English-speaking world until the early 1970s. In 1972 Frances Yates, in her book *The Rosicrucian Enlightenment*, could still remark that "there is as yet no good book on Rudolf II," though in a later comment in the same book she qualifies this somewhat: "Our knowledge of the world of culture surrounding the Emperor Rudolph II is still extremely scanty, and we await the publication of Robert Evans's important study of Rudolphine culture."<sup>32</sup> As Evans himself puts it in *Rudolf II*,

The role of the Austrian Habsburgs as patrons of culture and scholarship in the sixteenth century is a curiously unfamiliar one, and it appears never to have been studied directly outside the specialized sphere of art history. (116)

The relative obscurity of Evans's book since 1972 may be attributed to routinely poor communications between Renaissance literary scholars and Renaissance historians.

### *Cornelis Drebbel and Prospero's Magic*

Of the whole assortment of characters who plied their way between London and Prague in Shakespeare's time, perhaps the most interesting was Cornelis Jacobszoon Drebbel (1572-1633). If his patron Rudolf II is a long-forgotten and undeservedly neglected figure, Drebbel is something equally shadowy, a kind of dismembered historical ghost. The obscurity from which he burst upon the English scene is implied by the variety of names his contemporaries used to conjure him up: Cornelis the Dutchman, Cornelius-son, Drubelsius, Derbbel, Dribble, Tribble, De Rebel. The

obscurity into which he had fallen by the early twentieth century is evidenced by the fact that the eleventh edition of *Britannica* mentions him but once (as a dyemaker), while the thirteenth refers to him twice, as two different people (the current *Britannica* and the *Columbia Encyclopedia* have put him back together again and given him brief paragraphs). But in his mature years, and for some time after his death, he was a famous man, well known in three of the great courts of Europe, alluded to by Jonson and Bacon, spoken of with respect by Boyle, Leibniz, de Peiresc, Constantijn Huygens, and Christiaan Huygens.

A native of Alkmaar, Drebbel arrived in London about 1605. Except for his 1610-12 sojourn with Rudolf and perhaps one other short trip to the Continent in 1620, he appears to have spent the rest of his life in England. In the employ of (among others) James I, Prince Henry, the Duke of Buckingham, and Charles I, Drebbel was responsible for a bewildering variety of projects. He designed gardens and fountains. He practiced iatrochemical (i. e., Paracelsian) medicine. He was an expert on drainage and produced impressive innovations in pumps, clocks, dyes, telescopes, and microscopes. His creations included a means of purifying sea-water, a torpedo, and what was probably the world's first self-regulating machine, a stove for incubation. He invented and tested a sizable submarine and isolated and bottled oxygen (!) as a convenient means of keeping his submariners alive. His perpetual motion machine, on display at the King's House at Eltham, drew lively attention from notable observers, including Francis Bacon, Ben Jonson, Constantijn Huygens, Marin Mersenne, Nicolas de Peiresc, the visiting Prince of "Wirtemberg" (Wurtemberg), and Thomas Tymme, who includes an illustration of it in his *A Dialogue Philosophicall, wherein Nature's Secret Closet is Opened* (1612). Clearly influenced by Paracelsus, Drebbel was an heroically inventive spirit, anticipatory of modern science and technology in every respect except the habit of secrecy that consigned a number of his discoveries to oblivion. But for this habit, Drebbel would now be so well remembered as to need no introduction here.<sup>33</sup>

As interested in spectacle as he was in science, Drebbel conceived of special effects for public drama and devised astounding entertainments with music, sculpture, and fountains. Writing to James I from Prague, he promises (in addition to a self-adjusting clock and a telescope that can render manuscript legible from a distance of one mile) the following premonition of *Son et Lumiere*:

. . . when the sun shines the curtains and doors of said instrument would open of their own accord, and beautiful music would be heard [played automatically]. . . In addition I had resolved to connect a fountain to this musical instrument (usually called the vir-

ginals) from which continuous jets of water would come, and from which, when the sun shines, a hundred various rivulets would appear—all very pretty to be seen. Furthermore, Neptune would appear from a grotto of rocks accompanied by Tritons and sea-goddesses, bathing in the water which surrounds the altar of Neptune. . . . But if the sun is overclouded or has sunk, then the fountains would cease to flow. . . . And Neptune would retire into the grotto of rocks accompanied by his following as he sadly laments the absence and the loss of the splendor of the sun. Moreover, Phoebus appears from the clouds, playing on his zither, and seated on his coach with his four galloping horses, and it shall seem as if these are floating on their wings in the air, and the wheels of said coach shall turn.<sup>34</sup>

Drebbel's configuration of such musical waterworks implies contact if not collaboration with Salomon de Caus, his colleague in Prince Henry's brilliant court. De Caus conceived of projects very similar to Drebbel's fountain, including, Strong tells us, automata and "a recreation of the Alexandrian speaking statue of Memnon."<sup>35</sup>

The theoretical implications of these and other inventions by Drebbel and de Caus were not lost on their fellow courtier, Francis Bacon. As Rosalie Colie has shown, the various inventions and studies described as belonging to the academy in his *New Atlantis* are largely based on the work of Drebbel and de Caus.<sup>36</sup> Indeed the very name Bacon gives his academy, "Salomon's House," may be a tribute to the ingenious Frenchman.

A contemporary description of Drebbel, passed on by "a Dutch Chronicler of Alkmaer," is strikingly reminiscent of Shakespeare's Prospero. Like Prospero, Drebbel could (says Van der Woude, the chronicler) create storms, and once made the great Hall of Westminster so cold for his king that "James and his followers took to their heels in hasty flight."<sup>37</sup> Moreover, Drebbel produced fantastic illusions:

[F]or instance, he could show you kings, princes, nobles, although residing at that moment in foreign countries; and there was no paint or painter's work to be seen, so that you saw a picture in appearance, but not in reality.<sup>38</sup>

Drebbel himself writes to a Dutch friend detailing similar feats, all accomplished with the aid of his "magic lantern":

I take my stand in a room and have obviously no one with me. In the first place I make my dress and appearance different before the

eyes of all those that are in the room. Now I am dressed in black velvet, and in a moment, as quick as thought, I am in green velvet, in red velvet, ringing the changes in all the colours of the world in succession. . . .

Besides, I can change myself into a real tree, with leaves fluttering as if in the breeze, and this without anyone's noticing; and not only into a tree, but into anything that I may wish. After that I change myself into the shape of any creature, as I may myself desire, now into a lion, then into a bear, and then again, a horse, a cow, a sheep, a calf, a pig and so forth.<sup>39</sup>

Reminiscent of Prospero's claim that "Graves at my command / Have wak'd their sleepers, op'd, and let them forth / By my so potent art" (V.i.48-50), Drebbel could call up giants and make it seem

that the earth was opening and ghosts arising from it, first as a cloud and then in the forms of good spirits, such as Alexander the Great or another prince or king.<sup>40</sup>

Like Prospero's magic, Drebbel's *perpetuum mobile* at Eltham incorporated "the power of the four elements" (Drebbel also wrote a text entitled "On the Nature of the Elements").<sup>41</sup> Tymme makes the operation of the famous machine more specific:

[H]e extracted a *fierie spirit* out of the mineral matter, joyning the same with his proper *Aire*, which included in the Axletree, being hollow, carrieth the wheelles, making a continuall rotation or revolution, except issue or vent be given to the *Axletree*, whereby that imprisoned Spirit may get forth. (emphasis mine)<sup>42</sup>

In *The Tempest*, the spirit Ariel is imprisoned in a tree and can be liberated only by Prospero:

It was mine art  
When I arriv'd and heard thee, that made gape  
The pine and let thee out.

(I.ii.291-93)

Tymme's book probably appeared too late to have any influence on *The Tempest*, but there is no reason to doubt that the phrase, "imprisoned spirit," or some like language, was used customarily to describe the then-famous machine. Tymme, who clearly has little idea of what he is talking about, is probably falling back on Drebbel's own deliberately mystifying description.<sup>43</sup> Marin Mersenne, in a 1634 letter to de Peiresc,

writes "quelque esprit enfermée."<sup>44</sup> The idea of the liberation of imprisoned fiery spirits, moreover, would seem to have taken on some sort of poetic vogue. In Thomas Campion and Inigo Jones's *The Lords' Masque* (1613), Orpheus informs Entheus, "Jove therefore lets thy *prisoned sprite* obtain / Her liberty and fieryscope again" (lines 89-90; emphasis mine), and sixteen "fiery sprites" are commanded to "Break forth [from] the earth like sparks" (lines 202-3). The stage directions read:

Sixteen Pages like fierie-spirits, all their attires alike being composed of flames, with fierie wings and bases, bearing in either hand a torch of virgin waxe, come forth below, dauncing a lively measure . . .<sup>45</sup>

Jones's colored sketch for their costumes (reproduced in the Riverside Shakespeare) is one of his best-known graphic designs.

Shakespeare writes about imprisoned spirits elsewhere in the Romances, and under interesting circumstances. In act 1 of *Cymbeline* the wicked Queen, with murder on her mind, tries to acquire poison from Cornelius the physician, on the grounds that she wants to try it in "conclusions" (experiments). Suspicious of her motives, Cornelius criticizes her experimentalism (it will do nothing, he says, "but make hard your heart"). Instead of poison, he gives her a harmless soporific:

but there is  
No danger in what show of death it makes,  
More than the *locking up the spirits* a time,  
To be more fresh, reviving.  
(I.v.18-42; emphasis mine)

Granted, the context is different. But, like Drebbel, the speaker practices medicine, and the speaker's name is Cornelius.

The disagreement with the Queen about experimentation, touched on in the play, is also worthy of note. As a celebrated inventor, Drebbel would have been considered an especially able judge of whether specific "conclusions" should be tried or not. In his letter "De perpetuo mobile" (probably written before 1610), he inveighs against competitors who support their proofs with "inauditis vocabulis et absurdis processibus," and vows to take a more scrupulous course.<sup>46</sup> Years later, Drebbel's name would figure prominently in the dispute between speculative philosophers who felt that experimentation was a useless pastime and Baconians who held that it led to practical good. Drebbel would be cited, for example, by William Petty, as an example of a scientist whose undeniable successes validated the Baconian position.<sup>47</sup>

It was this practical success that gave Drebbel his powerful cachet, saving his name at once from the imprecations routinely hurled at magi, alchemists, or pure theorists. Elias Ashmole would use Drebbel as an example of the "Heroick" (i. e., truly effective) dimension of alchemy.<sup>48</sup> Indeed, Drebbel's work does not at all reflect the appeal to the supernatural typical of Renaissance magic from Agrippa through Kelley, but rather the more robust and practical manipulations of nature available through mathematics, as with John Dee, and chemistry, as with Paracelsus. Drebbel's Paracelsianism is, in fact, another link between him and Prospero.<sup>49</sup>

Like Paracelsus, Drebbel was intent not on transcending nature but rather on liberating and then exploiting its hidden powers.<sup>50</sup> This belief, coupled with astonishing initiative and technical precision, led to all his achievements. Decades after Drebbel's death, people in high places were still trying to discover his secrets.<sup>51</sup> Drebbel's work, in other words, was a classic example of the almost seamless transition from magic to science in the Renaissance. It is no wonder that Bacon gives Drebbel's inventions, together with De Caus's similar achievements, so much attention in *The New Atlantis*.

Drebbel's appearance and personality were striking. Hans von Vendenheim, who visited Eltham with the Prince of Wurttemberg in the spring of 1610, describes the Dutchman as "very blond and handsome and of most gentle manners, quite different from others of that sort [i. e., inventor-types]."<sup>52</sup> Later observers characterize Drebbel as an eccentric who used his own apparent rusticity as a kind of shield. Constantijn Huygens, who knew him after 1620, says that he looked like a Dutch farmer. Nicolas de Peiresc (c. 1627) quotes one of Drebbel's sons-in-law:

Drebbel behaves like a simple and ignorant person. When he is asked whether he can make this, that or the other thing, he says he cannot. He only shows his real self to persons he considers intelligent or those who desire to become so.<sup>53</sup>

Peter Paul Rubens, who met Drebbel in 1629, found this rough exterior unforgettable:

I never remember having seen a man of more extraordinary personal appearance than he. There is something in that badly dressed man that fills one with surprise and that would make any other man ridiculous.<sup>54</sup>

Strong and well built, Drebbel comported himself gently and with humility. He never took offense and never carried a sword.<sup>55</sup>

But neither Drebbel's talents nor his personal appeal could gain him lasting happiness. His family life was clouded by the antics of his wife Sophia, whom de Peiresc called "grandement lubrique," and whose affairs apparently ate up substantial amounts of income.<sup>56</sup> Pressed for cash, Drebbel petitioned Prince Henry for permission to set up a lottery; later he opened an alehouse "below the bridge" and attracted custom because of his popular fame as the "strange Monstar" who had traveled under water.<sup>57</sup> His modest proposal to erect near London an artificial sun, that would via pipeline heat all of the city, was never funded.<sup>58</sup> Pressed into action on the 1628 La Rochelle expedition, Drebbel failed to blow up a single French ship.<sup>59</sup> Even some of his most impressive successes, victims of his own secrecy or the apathy of others, lapsed into oblivion. Years after Drebbel's death, the famous submarine could still be seen, rotting at anchor.<sup>60</sup> And the *perpetuum mobile*, cause of his early fame, ran down and stopped. As Bishop Wilkins ironically remarked in 1648:

It seems this imprisoned spirit [the "fierie spirit" that drove it] is now set at liberty or else is grown aweary, for the instrument (as I have heard) hath stood still for many years.<sup>61</sup>

We have both circumstantial and textual evidence of Shakespeare's acquaintance with Drebbel or Drebbel's work. Prospero, in his attitude towards the four elements, his Paracelsianism, and his skill at producing storms and lifelike illusions, resembles Drebbel more than he does any other Renaissance magus. Other performers might have claimed the ability to compass such feats, but none approached Drebbel's level of success at them or Drebbel's reputation among contemporary authorities. Shakespeare's treatment of Ariel's imprisonment in a tree, and of Cornelius in *Cymbeline*, who locks up spirits, would seem to be topical references to Drebbel's famous machine. We know from Rye<sup>62</sup> that the illustrious *perpetuum mobile* was in place at Eltham in 1607, well in advance of what was probably the first performance of *The Tempest* (1 November 1611). The Prince of Wurtemberg visited Eltham and met Drebbel on 1 May 1610, the day after he had seen *Othello* performed at the Globe.<sup>63</sup> These two visits, whose chronological proximity is probably coincidental, suggest nonetheless that the King's Men and Drebbel were considered by the prince to be major London attractions.

Given such mutual notoriety, Shakespeare and Drebbel would have been certain to know something of each other. As leading playwright of the King's Men, Shakespeare was, for the first decade of the seventeenth century, probably the most important writer for the English stage. By the end of 1610, Drebbel had not only constructed and displayed his famous



machine, but performed other wonders at three royal courts: King James's, Prince Henry's, and Emperor Rudolf's. Both Shakespeare and Drebbel were members of the royal household, and though members of the royal household were many in number, it would seem likely that two such sensational performers, both at court for some time by 1610, would have been curious about each other's work.

Besides, Drebbel had a special affinity for theater. His charismatic personal showmanship and his genius for illusions and entertaining devices would seem ideally suited for the stage, particularly at a time when such devices, in the hands of Inigo Jones, were much in vogue. Our only hard evidence of Drebbel's theatrical involvement, however, is post-Shakespearean. In 1620, John Cotton, John Williams, and Thomas Dixon petitioned the king for a license to build, in Lincoln's Inn Fields, "an amphitheator stronge and faire," whose magnificent frame would house an unexampled variety of entertainments: plays in English and Latin, simulated naval battles, feats of arms, instrumental and choral performances, masques, dances, athletic demonstrations, pageants, inventions, dryads, naiads, nocturnals, and fighting wild beasts. By "nocturnals" the petitioners meant "unexpressible Figures: Visions and Apparitions, Figureing deepe Melancholly and unusuall Representations." Mentioned by name, together with the well-known musicians Alphonso Ferrabosco, William Byrd, Innocent Lanneir, and Robert Johnson, is "Cornelius the Dutchman,

the most admired man in Christendom for singular Invention and Arte with divers others of our nation, that will undertake for our Sea Fights, Prospectives, Nocturnalls, Driades, Naides, Fire, and Water-workes.<sup>64</sup>

King James's initial response (dated 10 February) was positive, but within months he changed his mind and canceled the license, demanding a more precise contract. This apparently put a damper on the project, for nothing is heard of it again until early in the reign of Charles I (1626), when Williams and Dixon resubmitted it, only to have it denied.<sup>65</sup>

This failure aside, Drebbel apparently never lost favor with his original royal patron. In the Procession to the Funeral of James I on 7 May 1625, special places were given, side by side, to "Cornelius Dreble the Engineer" and "Baston le Peer the Dauncer" and near the "Actors and Comedians."<sup>66</sup>

With all of this in mind, my guess (and "guess" is the most dignified word that can be applied in such cases) is as follows: Shakespeare was acquainted with the main facts about Rudolf and Drebbel. Shakespeare knew that Rudolf and Drebbel had interests in common, and that Drebbel

bel was going to Prague to work for the emperor. Shakespeare was aware of King James's friendly feelings towards both Rudolf and Drebbel. Characteristics of both the emperor and the engineer, moreover, were deeply appropriate to Shakespeare's thematic and philosophical interests during this period. Shakespeare took aspects of both Rudolf and Drebbel for his characterization of Prospero.

Any evaluation of Shakespeare's possible use of Rudolf or Drebbel, however, must be qualified by the following strictures. By "archetype" or "prototype" we may not intend "template" or "complete model." Here as elsewhere, Shakespeare took what he wanted from available sources and let the rest be. Conversely, the material he did take, no matter how generously interpreted, cannot be accepted as fabricating a "complete" Duke or Prospero.<sup>67</sup> The character of a "complete" Shakespearean figure, even if it is directly linked to an historical source (for example, the heroes of the Histories), is also the product of thematic intention, philosophical insight, psychological verisimilitude, sudden fancy, and the unequivocal demands of theater.

Finally, any identification of personal traits emerging from source studies cannot preclude complementary "identifications" on other levels of meaning. Prospero, for example, can be glossed as "the artist/hero"—hence, as an idea; in a related sense, Prospero can be identified as Shakespeare himself. Interpretation, which insists on logical coherence, can deal at best clumsily with such multiple identities. But creating them is a native activity of art.

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## N O T E S

1. For invaluable counsel and assistance in preparing this article, I am grateful to Leland H. Carlson, R. J. W. Evans, Barbara Mowat, and George Rowe; to Virginia Renner of the Huntington Library and James Fox of the Knight Library, University of Oregon; and to my students, Caroline Jewers and Mark Bakalar. Anna Bakalarova provided me with valuable background materials from Prague. Thanks are also due the Humanities Center, University of Oregon, for a grant that supported me for a few days at the Huntington Library.

2. Regarding *Measure for Measure*, most frequently noted is Gregor Sarrazin's conjecture that the Duke, mentioned in the *Dramatis Personae* as Vincentio, derives from Vincenzo Gonzaga, Duke of Mantua from 1587 to 1612. But similarities between the two figures are few. For a summary of views, see the New Variorum Edition of *Measure for Measure*, ed. Mark Eccles (New York, 1980), 3. The much-discussed theory that Shakespeare based his Duke on James I, well

argued by J. W. Lever in the *Arden Measure for Measure* (1965; rpt. New York, 1967), is based more on ideas expressed in James's *Basilicon Doron* than on similarities of character (xlviili-li). Conjectures regarding Prospero's origin have been limited to name-similarities rather than parallels with living figures; see Horace Howard Furness's New Variorum Edition of *The Tempest* (New York, 1892; rpt. New York, 1964), which includes the interesting supposition that Shakespeare may have actually played a character named Prospero in Jonson's *Every Man in his Humour* (4).

3. Here, as with many of my references to Rudolf and his court, I am indebted to Robert Evans's *Rudolf II and His World: A Study in Intellectual History, 1576-1612* (Oxford, 1973). For comments on this book, see text, 189. Dr. Evans has been kind enough to read an early version of this essay and supply important corrections and references. The wonder-cabinet quotation is on 177. On Arcimboldo, see 174f; on Savery, 173; on Spranger, 166-71; 205f; on Croll, 207f.; on Dornavius, 149; on Loew, 240f. For more on Rudolf, see Frances A. Yates, *The Rosicrucian Enlightenment* (London, 1972), 15-17. On Rudolf's patronage of emblem-book writers, see Henry Green, *Shakespeare and the Emblem-Writers* (London, 1870), 85, 89, 96. On the idea of the museum as world-encyclopaedia, see Sven Alfons, "The Museum as Image of the World," in *The Arcimboldo Effect* (New York, 1987), 67-85. Also see the *Cambridge Modern History*, vol. 3, chap. 21; K. Volcelka, *Rudolf II und seine Zeit* (Vienna, 1985); and S. Fucikova, *Prague um 1600* (Frankfurt, 1988). For a fascinatingly detailed, if jaundiced and undocumented, account of Rudolf's magical predispositions, see Henry Carrington Bolton, *The Follies of Science at the Court of Rudolph II* (Milwaukee, 1904).

4. Evans, *Rudolf II*, chap. 2; on Drebbel, 189. Also see Anton Gindely, *Rudolf II und seine Zeit, 1600-1610*, 2 vols. (Prague, 1863-68), 2:313 and chap. 5, passim. After disenfranchising Rudolf, Matthias had imprisoned the emperor's counselors, Drebbel included, condemning all to death. Rudolf, seeing the scaffold erected beneath his window, pleaded with his brother to spare Drebbel (as related by de Peiresc in French), "le plus grande personnage du monde." Matthias relented, but Drebbel still had difficulty getting back to England. It took a personal letter from Prince Henry to pry him loose; see F. M. Jaeger, *Cornelis Drebbel en zijne Tijdgenooten* (Groningen, 1922), 126; and Lawrence Ernest Harris, *The Two Netherlanders: Humphrey Bradley and Cornelis Drebbel* (Leiden, 1961), 143-47. On Rudolf's "last desperate political ventures," see Gindely and the *Cambridge Modern History*, 3:733-35.

5. Evans, *Rudolf II*, chap. 6. On codes, see 238f.

6. See Ralph M. Sargent, *At the Court of Queen Elizabeth: The Life and Lyrics of Sir Edward Dyer* (London, 1935), 111-22.

7. Evans, *Rudolf II*, 77f.; also see Boies Penrose, *A Sherleian Odyssey* (Taunton, 1938), 98-102.

8. On Rudolf's court mystique, see the abundantly illustrated collection of essays about his court painter, *The Arcimboldo Effect*, especially the chapter by Massimo Cacciari entitled "Animarum Venator," 275-96. A broader view of artistic activities at Rudolf's court has been provided by Thomas Da Costa Kaufmann in *The School of Prague* (Chicago, 1988).
9. For example, Rudolf receives more than twenty mentions from January to July of 1589, in *CSP, Foreign*, alone.
10. This visit is described most fully by M. W. Wallace in *The Life of Sir Philip Sidney* (Cambridge, 1915), 172-83.
11. See n. 6 above. For Elizabeth's letter, Sargent (*Court of Queen Elizabeth*, 120) refers us to State Papers, Germany, vol. 1, 1578-1603, fols. 134f.
12. See G. B. Harrison, *Elizabethan Journals*, 2:76, 82, 186, 213, 249, and 294, for reports of Arundell's efforts to keep his title. For Elizabeth's complaint to Rudolf about Arundell, see Harrison's edition of *The Letters of Queen Elizabeth* (London, 1935), 241-43.
13. Harrison, *A Second Jacobean Journal* (London, 1958), 58.
14. Evans, *Rudolf II*, 81f.
15. *Ibid.*, 80-83. See also Roy Strong, *Henry, Prince of Wales, and England's Lost Renaissance* (London, 1986), 87, 185f.
16. *Ibid.*, 189. On Drebbel's possible involvement in court drama, there is as yet no hard evidence, though Jaeger (*Drebbel en zijne Tijdgenooten*, 26f.) believes it likely and offers the interesting conjecture that Drebbel worked under Inigo Jones's direction. On Drebbel's work for Rudolf see Gerritt Tierie, *Cornelis Drebbel* (Amsterdam, 1932), 6. Additional insight into English-Bohemian relations at the time of King James I is provided by Josef Polisensky's "England and Bohemia in Shakespeare's Day," in *Charles University on Shakespeare*, ed. Zdenek Stribrny (Prague, 1966), 65-81.
17. John Barclay, *Euphormionis lusinini satyricon*, trans. (with helpful introduction) David A. Fleming (Nieuwkoop, 1973). Barclay was a Gentleman of the King's Bedchamber (c. 1606) who later helped the king translate his *Premonition* into Latin. The witty *Satyricon* went through many editions in the seventeenth century and was praised by, among others, Robert Burton, Balthasar Gratian, and John Dryden. On Rudolf ("Aquilus") see pt. 2, chaps. 27-28. Also see Kaufmann, *The School of Prague*, 22, 225, and his "Eros et Poesia: La Peinture a la Cour de Rodolphe II," *Revue de l'Art*, 69 (1985): 31, 43 nn. 12ff.
18. Letters quoted and cited are from Logan Pearsall Smith, *The Life and Letters of Sir Henry Wotton*, 2 vols. (Oxford, 1907). The letter of 15 January 1691 is excerpted in 1:252 n. 1
19. Salisbury's correspondence, preserved at Hatfield House, has been collected

and indexed in the *Calendar of the Manuscripts of the Most Honourable the Marquess of Salisbury* (London, 1886-1971). For information on Rudolf, see especially vols. 17-21. On Matthias see vol. 20, and in particular Sir John Ogle's letter to Salisbury, speculating on Matthias's intention of deposing his brother (25 May/4 June 1608, 171).

20. See n. 15 above.

21. Strong, *Henry, Prince of Wales*, 185f. On 186 Drebbel's name is misprinted as "Crebbel." On the date of Drebbel's association with Henry, see 216.

22. The post-1606 addition conjecture, which was put forth by Dover Wilson in his edition of *Measure for Measure* (1922), offers further support to the theory that Shakespeare was writing with Rudolf in mind. The conjecture depends on Wilson's interpretation of a line in I.ii: "1: *Gent.* Heaven grant us it peace, but not the King of Hungaries" (100-101; in other texts, 4-5). Wilson comments: "After a war of thirteen years, the Empire concluded peace with the Turks on Nov. 11, 1606. This peace was signed, against the Emperor's will, by his brother Archduke Matthias, King of Hungary. . . . The words, at once so pointed and so irrelevant, must be a topical allusion . . . proving that the play was lengthened sometime after Nov. 11, 1606." The Wells/Taylor theory that the passage including First Gentleman's speech (about the first hundred lines of the scene) is a non-Shakespearean addition (*The Complete Works* [Oxford, 1986], 893) seems to me unnecessary and stylistically unwarranted. The passage, with its repeated flip-pant references to grace, sin, and hypocrisy, is well integrated into the play's themes, and its style is typical of Shakespearean satire in the Problem Comedies.

23. Giraldo Cinthio, one of Shakespeare's sources, names his hero the Holy Roman Emperor "Maximian," a clear reference to Rudolf's father, Maximilian II.

24. N. N. Holland was the first to see the link between the notorious Remirro de Orco anecdote in chap. 7 of *Il Principe* and the Duke's policy in *Measure for Measure*; see "*Measure for Measure: The Duke and The Prince*," *Comparative Literature*, 11 (1959): 16-20.

25. Evans, *Rudolf II*, 187; Strong, *Henry, Prince of Wales*, 185.

26. Evans, *Rudolf II*, 196. The translation is Evans's. For the original, see F. Stieve, ed., *Briefe und Akten zur Geschichte des Dreisigjährigen Krieges* (Munich, 1985), 6:49.

27. Elsewhere I have shown how these goddesses convey a theory of natural order specified most notably in Shakespeare's time by Guillaume Sallust Du Bartas and have argued that Prospero's banishment of Venus from the Masque is an effort to reharmonize nature by expelling fire. This article, "Prospero's Masque and the Structure of *The Tempest*," *South Atlantic Quarterly*, 71 (1972): 401-9, was later enlarged to become the final chapter of *Mighty Opposites: Shakespeare and Renaissance Contrariety* (Berkeley, 1979), 185-211.

28. On this theory see Cacciari (n. 8 above), 275-96.

29. On Bruno's visit to England, see Frances A. Yates, *Giordano Bruno and the Hermetic Tradition* (Chicago, 1964), chaps. 12 and 13, and Hillary Gatti, *The Renaissance Drama of Knowledge: Giordano Bruno in England* (London, 1989). Maier and Croll were highly influential Paracelsian advocates. Maier and the Rulands were physicians to Rudolf II. On Dee's visit to Prague with Kelley, see Sargent, *Court of Queen Elizabeth*, 95-105. Maier's visits to England and collaboration with Robert Fludd are documented in Yates, *The Rosicrucian Enlightenment*, 70-90.

30. It is worth noting that Shakespeare's son-in-law, Dr. John Hall, was a well-known physician who applied Paracelsian remedies. Hall's published casebook refers to five major authorities, two of whom (Joseph DuChesne [Quercitanus] and Daniel Sennert) advanced Paracelsian or similar theories. See Harriet Joseph, *Shakespeare's Son-in-Law: John Hall, Man and Physician* (Hamden, Conn., 1964), 58, 78 (notes to First Century, Observation xxxi, and Second Century, Observation xvii). Evans mentions that Sennert lived or had contacts in Prague (*Rudolf II*, 200). See also Allen Debus, *The Chemical Philosophy* (New York, 1977), 148-53, 160-68 (DuChesne), 191-200 (Sennert). On other links between Shakespeare and Paracelsus, see Grudin, *Mighty Opposites*, in particular chap. 2.

31. Grudin, *Mighty Opposites*, 196-99. For Paracelsus' view of the astral/terrestrial contrariety, see Paracelsus, *Selected Writings*, ed. Jolande Jacobi (Princeton, 1951), 115.

32. *The Rosicrucian Enlightenment*, 17, xiii. Yates apparently had not seen Gindely, *Rudolf II und seine Zeit* (n. 4 above).

33. On Cornelius Drebbel, see Janus Dousa's 1850 entry in *Notes and Queries* (old series, 2:6f.), which avails itself of the grossly inaccurate *Kronycke van Alkmaar* (Gravenhage, 1745). In glossing the Prince of Wurtemberg's travel journal, William Brenchley Rye (1865) relates some of Dousa's remarks, adding more details from available English sources (*England as Seen by Foreigners in the Days of Elizabeth and James I* [London, 1865; rpt. New York, 1967, 232-42]). Rye, in turn, is used by Hereford and Simpson to gloss Ben Jonson's references to Drebbel (Jonson, *Complete Works* [Oxford, 1925-52]); the major Drebbel note is to the reference in *Epicoene*, V.iii.63, but also see the note to *The Staple of News*, III.i.59; Drebbel is mentioned by name (humorously in company with Cornelius Agrippa) in Jonson's masque, *News from the New World*, performed before James I in 1620 (lines 96-98; with additional references to two of Drebbel's claims to fame, a telescope, lines 80ff., and perpetual motion, lines 344-46). On Drebbel, the most detailed biographies—all long out of print—are those by Jaeger and Harris (n. 4 above), and Tierie (n. 16 above). Also see H. A. Naber, *De Ster van 1572, Cornelis Drebbel* (*Wereld-Bibliotheek*, no. 54), and the *Dictionary of National Biography*. Harris's treatment of Drebbel's technical innovations is the most detailed to date, though Harris wrote too early to have a clear view of Drebbel's position in the transition from alchemy to chemistry. Charles Webster attests to Drebbel's importance among his contemporaries in *The Great Instauration* (London, 1975),

especially 389-91; Webster mentions Drebbel as a practicing iatrochemical therapist in his essay "Alchemical and Paracelsian Medicine," in Charles Webster, ed., *Health, Medicine, and Mortality in the Sixteenth Century* (Cambridge, 1979), 305. Drebbel's more general indebtedness to Paracelsus is evident in his isolation of oxygen (Paracelsus was the first to practice such "isolations" in the interest of medicine, first to theorize about this practice, and hence the first "chemist"), as well as in the design of his *perpetuum mobile*, the details of which had been anticipated by the Paracelsians (Harris, *The Two Netherlanders*, 57f.). Perhaps the most acute evaluation of Drebbel's character and achievement is Lynn Thorndike's in his *History of Magic and Experimental Science*, vol. 7 (New York, 1958), 492-97. On Drebbel and gardens (he was hired by the Duke of Buckingham to work on improvements at New Hall, a favorite resort of James I and Charles I), see Philip McEvansoneya, "A Note on Cornelius Drebbel," *Journal of Garden History*, vol. 6, no. 1 (1986): 19-20. Tierie conjectures, I think correctly, that Drebbel's fame-destroying secrecy stemmed from the need to maintain personal control over, and hence financial gain from, his inventions (Tierie, *Cornelis Drebbel*, 89f.). On Drebbel and Prince Henry, see Strong, *Henry, Prince of Wales*, 216f. On Drebbel's sensational underwater demonstration in the Thames (apparently with James I himself among the spectators), see Harris, *The Two Netherlanders*, 167f. Drebbel's isolation of oxygen, which later was to draw admiration from Leibniz, gained widespread attention in the early 1660s, when it was mentioned in publications by both Robert Boyle (*New Experiments, Physico-Mechanical* [1660]) and Sir Kenelm Digby, *Discourse concerning the Vegetation of Plants* [1661]). See Harris, *The Two Netherlanders*, chap. 15, passim. For Drebbel's self-regulating machine, see *A History of Technology*, ed. Singer, Holmyard, Hall, and Williams (Oxford, 1957), 3:679f.

34. Harris, *The Two Netherlanders*, 146f. Also see Webster, *The Great Instauration*, 347.

35. Strong, *Henry, Prince of Wales*, 146f, 106-10. Yates, *Rosicrucian Enlightenment*, 11-14.

36. Rosalie Colie, "Cornelis Drebbel and Salomon de Caus: Two Jacobean Models for Salomon's House," *Huntington Library Quarterly*, 18 (1954-55): 245-60. Also see Colie's chapter on Drebbel, "Salomon's House in London," in her *'Some Thankfulness to Constantine': A Study of English Influence upon the Early Works of Constantijn Huygens* (The Hague: Nijhoff, 1956, 92-110). Tierie asserts (without documentation, in *Cornelis Drebbel*, 26) that Drebbel and Bacon were in personal contact. On Henry's court, Strong, in *Henry, Prince of Wales*, not only gives an admirably detailed historical description but sets the people and events described in the context of European cultural history.

37. Rye, *England as Seen by Foreigners*, 234

38. *Ibid.*

39. Tierie, *Cornelis Drebbel*, 49f.
40. Quoted by Colie, "Cornelis Drebbel and Salomon de Caus," 254.
41. *Ibid.*, 241f.
42. Tymme, *Dialogue Philosophicall*, 50ff.; Rye, *England as Seen by Foreigners*, 235f.
43. Jaeger (*Drebbel en zijne Tijdgenooten*, 64n.) is also of this opinion.
44. Marin Mersenne, *Correspondance* (Paris, 1945-88), 4:282.
45. *The Lords' Masque* was presented in the Banqueting House on 14 February 1613 as part of the celebrations for the marriage of Princess Elizabeth and Frederick Count Palatine. See John Nichols, *The Progresses of King James I* (1828), 2:554-65. The text is reprinted, with some of Jones's original designs, in *Inigo Jones: The Theater of the Stuart Court*, ed. Stephen Orgel and Roy Strong, 2 vols. (London, 1973), 2:240-52.
46. ". . . Non modo rationibus & exemplis utar, sed verum etiam exempla ad veritatem examinabo" (*Tractatus duo* [Geneva, 1628], 68). This letter, addressed to James I, is bound in with Drebbel's *De elementis* and his *De quinta essentia*. I date it before 1610 because of its manifest intention of introducing the *perpetuum mobile* to James.
47. Petty's reference to Drebbel occurs in an undated letter (c. 1648) to Henry More that is cited by Charles Webster (*The Great Instauration*, 147f. and 391).
48. Elias Ashmole, Prolegomena to the *Fasciculus Chemicus* (1650), 9-11. Ashmole used the pseudonym "James Hasolle" to protect his identity. The main text of the *Fasciculus Chemicus* is composed of translations from the Latin *Fasciculus Chemicus* of Dr. Arthur Dee (John Dee's son) and of another text by Jean d'Espagnet. See C. H. Josten, *Elias Ashmole*, 5 vols. (Oxford, 1966), 1:63-67. See Josten's plate I for an example of Ashmole's cipher-writing that mentions Drebbel in connection with Sir Edward Dyer and Sir Samuel Backhouse.
49. Strong, *Henry, Prince of Wales*, 216-18, puts Dee and Drebbel together in the "'arts mathematicall' tradition of the Renaissance magus" (217) and speaks of the strong influence of this tradition in the court of *Henry, Prince of Wales*. On Prospero and Paracelsus, see 12f. and notes 29-31 above. Also see D. P. Walker, *Spiritual and Demonic Magic from Ficino to Campanella* (London, 1958), 75-84.
50. Drebbel's son-in-law, Abraham Kuffler, informed de Peiresc that, according to Drebbel, "la verité et l'excellence des sciences consiste en la cognoissance des secretz de la nature, dans laquelle elles sont toutes" (de Peiresc, fol. 408 verso; quoted in Jaeger, *Drebbel en zijne Tijdgenooten*, 125; also quoted in Tierie, *Cornelis Drebbel*, 96), and that Drebbel "vit selon les loix de la nature et ne croit a rien" (fol. 410 verso, *Drebbel en zijne Tijdgenooten*, 128, *Cornelis Drebbel*, 18). Paracelsus' view of science and nature is expressed in his "The End of the Birth, and the Consideration of the Stars": "Thus in magical science there exist two operations,



one which nature herself produces, selecting man as the instrument, and as the recipient of her influence, whether bad or good, the other operates by means of arbitrary instruments, such as statues, stones, herbs, words, also comets, similitudes, halos and any other supernatural generation of the constellation. *Thus nature herself is able to prepare her magical powers and perform her own operations by their means*" (emphasis mine); *The Hermetic and Alchemical Writings of Paracelsus*, ed. Arthur Edward Waite (1894; rpt. Boulder, Colo., 1976), 2:289-314, 300.

51. Rye, *England as Seen by Foreigners*, 238-41. Drebbel's son-in-law and sometime partner, Abraham Kuffler, was still in possession of Drebbel's torpedo design when he visited Mr. Secretary Pepys on 14 March 1662 (see *Diary*); but it was a secret that, said Kuffler, could be shared only with kings.

52. Rye, *England as Seen by Foreigners*, 61.

53. Tierie, *Cornelis Drebbel*, 17; for the original French, see Jaeger, *Drebbel en Zijne Tijdgenooten*, 132. Jaeger read de Peiresc in manuscript (Bibliothèque de Carpentras, MS. 1776, fols. 407-13) and reproduces several pages of his text.

54. *Ibid.*, 18.

55. De Pieresc, quoted by Jaeger, *Drebbel en zijne Tijdgenooten*, 128.

56. *Ibid.*; Harris, *The Two Netherlanders*, 128.

57. Strong, *Henry, Prince of Wales*, 216. Jaeger, *Drebbel en zijne Tijdgenooten* (quoting Harleian MS. 7011, fol. 56), 29.

58. Harris, *The Two Netherlanders*, 189f; Jaeger, *Drebbel en zijne Tijdgenooten*, 132. Described in detail, Drebbel's project sounds unusually like some large-scale applications of modern solar power. He needed twenty thousand pounds to dig a large hole on a hill and install equipment that included some unknown non-consumable burning material and the mirrors necessary to heat it. Air thus warmed apparently would be convected to the city via pipeline.

59. Harris, *The Two Netherlanders*, 195f. In his own defense, Drebbel blamed this failure on the "fear and cowardice" of his cohorts. Presumably, they did not bring his weapons as near the enemy vessels as he would have liked. All of Drebbel's *petards flottants*, except for one that exploded harmlessly in the water, were captured by the French. On the makeup of these weapons, see Jaeger, *Drebbel en Zijne Tijdgenooten*, 77f.

60. Harris, *The Two Netherlanders*, 168f.

61. *Mathematicall Magick*, 229; quoted by Rye, *England as Seen by Foreigners*, 238.

62. Rye, *England as Seen by Foreigners*, 241f.

63. *Ibid.*, 61. An earlier visit to Eltham (16 June 1609) is recorded by Georg von Schwartzstat, Baron of Offenbach. The Baron describes the brass globe of the *perpetuum mobile* as being "about the size of a man's head"; it is a marvel "like to which time has not seen, nor does any other region see it now." According to

Schwartzstat, who probably heard it straight from Drebbel, the inventor was already in the process of making another *perpetuum mobile* for the emperor; see the translation by G. P. V. Akrigg, "England in 1609," *Huntington Library Quarterly*, 14 (1950): 92f.

64. Quoted by G. E. P. A. in *Notes and Queries*, 11th ser., no. 10: 481f., from Tanner MS. 89, Bodleian Library, pp. 50-58.

65. *Ibid.*, 502f.

66. Nichols, *The Progresses*, 4:1042.

67. For other traditions bearing on Prospero's magic, see Barbara A. Mowat, "Prospero, Agrippa, and Hocus Pocus," *English Language Review*, 11 (Autumn, 1981): 281-303. Mowat seems to have been the first scholar to mention Rudolf II and Prospero in the same context (285).