Restoring Pluto

Koen Vermeir

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Theatricality in early modern alchemical practice

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Rather than I'll be bray'd, sir, I'll believe
That Alchemy is a pretty kind of game,
Somewhat like tricks o' the cards, to cheat a man
With charming.
Ben Johnson, *The Alchemist*

Introduction

The abbot of Saint-Cyran was struck by an arresting but destitute woman, seated on the pews in the chapel of the Castle of Vincennes. By 1641, Saint-Cyran (Jean du Vergier de Hauranne), the leader of the French Jansenist movement, had been imprisoned for three years already in the dungeons of Vincennes. The few prisoners that could be housed at Vincennes were of prominence or high birth and had a certain liberty. After church service, touched by the woman's bearing and piety, Saint-Cyran inquired who she was. She turned out to be Martine de Bertereau, Baronne de Beausoleil et d'Auffembach. She was imprisoned at Vincennes together with her daughter, and had been separated from her husband, Jean du Châtelet, who was now behind bars in the Bastille.

Moved by charity, Saint-Cyran asked his disciple Antoine de Rebours to find out what happened to the imprisoned couple's other children. He asked Mme Le Maître (the sister of Antoine Arnaud) to buy new good and warm clothes for the baroness, and requested M. de la Brouche to do the same for the baron.[2] De la Brouche delighted in the baron's surprise, when suddenly a tailor came into his cell to take his measurements. Saint-Cyran also desired to know more about the reasons for the baron and baroness's imprisonment. He warned de Rebours to be careful and secretive in his inquiries, however: when their oldest son had inquired after his parents, he had been put in jail himself. The baron and the baroness were mine prospectors, engineers and alchemists. In the last forty years, they had found hundreds

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[2] Claude Lancelot, *Mémoires touchant la vie de Monsieur de S. Cyran*, Cologne, 1738, vol. 1, pp. 188-9 and vol. 2, pp. 216-7. Jean du Vergier de Hauranne [Saint-Cyran], *Lettres chrétiennes et spirituelles de Messire Jean Du Verger de Hauranne, abbé de S. Cyran*, 1744, vol. 2, pp. 754-767. Pierre-Jean-Baptiste Nougaret, *Histoire du donjon et du château de Vincennes*, Paris, 1807, esp. p. 88-9.

of mineral deposits for the French crown, good locations to start new mines. In 1641, instead of being rewarded for their work, they were accused of practicing astrology and magic. A few years later, they died incarcerated.

In this paper, I will discuss the theatrical characteristics of some kinds of alchemy, in relation with natural magic and other practices, by exploring the Beausoleils's story. First, I show that their contemporary Francis Bacon considered alchemy an 'imaginative science', and that this gives us an important cue for understandings alchemy's theatricality. From the Baconian perspective, it is the power of the imagination that gives alchemy its poetical and theatrical aspect, that places alchemical practice and theatre between reality and fiction, and that transforms the self of both adept and spectator. The imagination generated the marvellous, and hence the particular theatricality that could be found in certain types of early modern stage-plays as well as in alchemy and natural magic. Second, I focus on the theatrical play of veiling and unveiling in alchemical practice. Here, openness and secrecy are not oppositional but go seamlessly together. In this analysis, the theme of illusion and reality, simulation and dissimulation, and the problematic of the revealing, ordering and demonstration of knowledge, which both characterise the baroque concept of the theatre, coincide.

Alchemical practices

In the medieval and early modern period, alchemy came in many kinds. Best known, of course, is the quest for transmutation to create noble metals, especially to make gold, and the search for the philosopher's stone. Others, like Paracelsus, rejected this 'Alchemia transmutatoria' and propounded an 'Alchemia medica' instead. Alchemy was involved in many other artisanal practices, such as distillation, dyeing, pigment manufacture, glass making and counterfeiting. Alchemy was also related to the practices of the metals industry, including mine prospecting, mining, metallurgy, refining and smelting. It is well known that for some alchemists, the attempt to transmute metals involved a spiritual component, a transformation and purification of the soul. Alchemy, therefore, could have profound theological implications in the eyes of practitioners as well as of critics. Multiple comparisons and analogies between the alchemical process and Christian doctrine were prevalent.[3]

[3] For a controversy on the relative importance of the spiritual aspect of alchemy, see e.g. Lawrence Principe and William Newman, 'Some problems with the historiography of alchemy' in William Newman and Anthony Grafton (eds.) *Secrets of Nature: Astrology and Alchemy in Early Modern Europe*, Cambridge: MIT Press, 2006,

In the sixteenth and seventeenth centuries, some of these practices, such as distillation, pyrotechnics or mining, became more autonomous and were practiced separately from other strands of alchemy, leaving aside alchemical theory for instance. Spiritual kinds of alchemy were sometimes strongly distinguished from practical alchemy, as in Robert Fludd's dismissal of practical alchemy as 'chymia vulgaris'. Nevertheless, these different alchemical themes remained associated, in the practice of many alchemists, physicians or artisans, but certainly in the imagination of their critics. The work of the Beausoleils was mainly in mine prospecting, which involved craft knowledge, astrology and practices of divination, yet they made clear that alchemy, the art of separating metals, was essential to the success of any mining enterprise: 'There exists no metal in its matrix without mixture: the heterogeneous is always mingled with the homogeneous. [...] In so far that those who ignore the principles of metals, their fusing and separation in the furnace of the grand trial, will loose a great good, and sell their fine gold and silver with their lead and copper, and with the other metals mixed, and instead of finding profit, they will find a loss.'[4]

The couple valued alchemical theory as well as practice. The baron had written a short alchemical tract in 1627, the *Diorismus Verae Philosophiae*, on first matter and the basic theoretical principles of alchemy. He explained the working of the Archeus and the generation of metals while rejecting more extreme claims, e.g. that it would be possible to transmute *any* metal into another, or that man's imagination would be able to introduce a form on metals. Man is only able to apply actives to passives, to separate minerals and to foster activity that has already begun by means of external heat.[5] The baroness too expounded alchemical theory in a long pamphlet she published. According to her, God has created a universal spirit present in all elementary things, so that everything produces its semblance. In this way, and according to astrological influences, metals grow by a vaporous liquid that emanates from the metallic matrix. If the alchemist applies small quantities of this fluid on other related metals, the latter will be transformed into the former. From this very rare metallic prime matter, often just discarded by ignorant miners, ancient philosophers have made a great Elixir that could cure

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pp. 385-434. William Newman and Larry Principe, 'Alchemy and chemistry: The etymological origins of a historiographic mistake' *Early Science and Medicine* (1998) 3, 32–65. William Newman, *Promethean Ambitions. Alchemy and the Quest to Perfect Nature.* Chicago: Chicago University Press, 2004. Brian Vickers, 'The 'New Historiography' and the Limits of Alchemy' *Annals of Science* (2008) 65, 127-156. Scott Mandelbrote, review of *Gehennical Fire* in *The British Journal for the History of Science* (1997) 30, 109-111.

[4] Martine de Bertereau, *Véritable déclaration de la descouverte des mines et minières de France*, s.l., 1632, p. 5-6.

[5] E.g. Jean de Châtelet, *Diorismus verae philosophiae*, 1627, §7.

all diseases and purify metals of their imperfections.[6] The real imitators of nature, she writes elsewhere, can transmute metals and can create a universal medicine by their knowledge of quicksilver and incombustible sulphur.[7]

There is little or nothing of spiritualism or religious overtones to be found in the published work of the Beausoleils. Nevertheless, it is revealing that they were patronised by the abbot of Saint-Cyran during their imprisonment. The baroness stood out because of her piety, generosity and charisma. By many signs, Saint-Cyran wrote, he was persuaded of her good nature and intentions, and he was convinced of her innocence.[8] He might have felt a kindred deeper spirituality. In arguing that one should not presuppose that others were evil, and that one should better suspend judgement in the face of insufficient evidence, he made a comparison with M. de Troyes, a former Capuchin friar who had been accused of quietism and who was also imprisoned in the Bastille. One would need many clear and evident proofs before accusing someone of heresy, and especially the most horrible heresies, Saint-Cyran argued. Here, he seemed to talk as much about the Beausoleils as about M. de Troyes, linking alchemy with current mystical currents. Jansenism itself, with its focus on personal spirituality, was often associated with mysticism and Saint-Cyran had himself been accused of mysticism and quietism. This created a bond between him and his fellow detainees.

Criticising alchemy for its heretical potential was very much present in France at the time. Many notable scholars, such as Gabriel Naudé, Marin Mersenne and Pierre Gassendi had condemned alchemy for both its impiety and for proposing a "chemical" religion in opposition to true Christianity.[9] These considerations might have played a role in the accusations of magic, astrology and demonic involvement voiced against the Beausoleils. Saint-Cyran objects, however, that drawing horoscopes was part of science, and that there was nothing wrong with it, if one does not go beyond the prognostications of the stars and keeps God outside of it all.[10] Saint-Cyran pointed out that there was a naturalistic interpretation of the Beausoleils's astrological and alchemical practices.

Alchemy was often grouped together, usually by detractors, with practices such as magic and astrology. Francis Bacon, for instance, criticises the 'vain promises and pretences of

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[6] Martine de Bertereau, *La Restitution de Pluton*, 1640, in Nicolas Gobet, *Les anciens minéralogistes du royaume de France*, Paris, 1779, p. 380-1.
[7] Bertereau, *Véritable déclaration*, p. 6
[8] Saint-Cyran, *Lettres chrétiennes*, p. 764-5.
[9] E.g. Gabriel Naudé, *Apologie pour tous les grands personnages qui ont étés faussement soupçonnés de magie*, Paris: F. Targa, 1625. Marin Mersenne, *La vérité des sciences*, Paris : Du Bray, 1625. Against astrology, see Pierre Gassendi, *Epistolica exercitatio*, Paris: Sebastian Cramoisy, 1630 ; *Apologia in Io. Bap. Morini librum*, Lyon: Guillaume Barbier, 1649.
[10] Saint-Cyran, *Lettres chrétiennes*, p. 765.

Alchemy, Magic, Astrology, and such other arts, which (as they now pass) hold much more of imagination and belief than of sense and demonstration.'[11] He continues by remarking that alchemists also mingle in religion: they 'call in likewise many vanities out of astrology, natural magic, superstitious interpretations of Scriptures, auricular traditions, feigned testimonies of ancient authors, and the like.'[12] Although alchemy was clearly an independent tradition, it was recognised that it had much in common with other practices that dealt with hidden qualities that could not be explained by standard philosophical doctrine. Bacon gives a characterisation of magic, which resonates with the baron's description of alchemy, as 'the science which applies the knowledge of hidden forms to the production of wonderful operations; and by uniting (as they say) actives with passives, displays the wonderful works of nature.'[13] The Beausoleils did consider alchemy, astrology and divination as essential to their mining work, as well as many 'secrets' and skills from natural magic and different craft traditions, yet the association of all these tightly interlocked practices made them more vulnerable for accusations of illicit procedures.

In 1628, the Beausoleils had already been accused of magic by a local official in Bretagne.[14] The provincial provost, called Touche Grippé, together with the substitute of the local procurator, had raided their residence at Morlaix while the baroness was on her way to the Parliament of Rennes to register their royal commission for mine prospecting, and while the baron was prospecting a mine in the forest of *Buisson Rochemares*. The two officials opened their coffers, and confiscated everything they found: the metals, gold and silver, their instruments for discovering mines, instruments for trying the metals, all their papers including official reports, personal papers and their notes of mine locations, representing years of hard work. All this was done without any warning, and solely on Touche Grippé's presumption of the involvement of illicit magic. He presumed that it was impossible to find mines underground without magic and that therefore demons must be involved.[15] At that time, the Beausoleils were able to acquit themselves of such accusations, and their mine prospecting commissions were confirmed in 1632 and 1634. In the 1632 letter, the royal officials requested explicitly to bring to a halt all troubles and interferences with the work of

[11] Francis Bacon, *The Works of Francis Bacon* (E. Spedding ed.), Stuttgart: Frommann, 1989, vol. III, p. 503, see also p. 362 and p. 289.
[12] Bacon, *op.cit*., vol. III, p. 289.
[13] Bacon, *op.cit*., vol. IV, p. 366–7.
[14] The reprint of the royal commission mentions registrations at Toulouse, Bordeaux and the Province in 1627, the last one on 10 December. The registration at Rennes is confirmed in the letter of the King and later commissions, however (where Rennes or 'Bretagne' is always mentioned latest). In all probability, therefore, de Bertereaux registered the commission in Rennes in the spring of 1628.
[15] Bertereau, *Restitution de Pluton*, p. 422-3.

Beausoleil, and to stop any opposition or accusations, and the bailiff and local police were permitted to use all means to execute this order.[16] Nevertheless, the Beausoleils' goods were never returned to them. The baroness complained in 1632 that she had spent the last six months trying to get restored their possessions, neglecting all her other activities, but in 1640, her efforts were still without any success.

Alchemical Theatre

The seventeenth century was a theatrical time. Everyone was wearing a mask, and as Shakespeare, Calderón, Molière, and many other authors remarked, we all play our different roles on the stage of the world. Courtiers learned how to form and project different images of their 'self' onto the outside world. In a courtly culture of simulation and dissimulation, of pleasing and seducing patrons and opponents, these techniques were necessary to survive in a charged social setting.[17] The world too became more and more conceptualised as a theatre. In the words of Richard Alewyn and Karl Sälzle: 'Ein jedes Zeitalters schafft sich ein Gleichnis, durch das es im Bild seine Antwort gibt auf die Frage nach dem Sinn des Lebens und in dem es den Schlüssel ausliefert zu seinem Geheimnis. Die Antwort des Barock lautet: Die Welt ist ein Theater. (…) Kein Zeitalter hat sich mit dem Theater tiefer eingelassen als das Barock, keines hat es tiefer verstanden. In keinem Stoff aber auch hat das Barock sich völliger offenbart als im Theater. Es hat das Theater zum vollständigen Abbild und zum vollkommenen Sinnbild der Welt gemacht.'[18] Not only the world and the self, however, but also knowledge became understood in theatrical terms. Collections, exhibitions and medical lecture halls, in which knowledge was collected, publicized and demonstrated, were called theatres. If we only look at the book titles published in the late sixteenth and seventeenth centuries, we find Theatrum anatomicum, Theatrum naturae, Theatrum animalium, Theatrum botanicum, Theatrum machinarum, Theatrum orbis terrarum, even a Theatrum sympatheticum auctum, and many more.[19]

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[16] Bertereau, *Restitution de Pluton*, p. 446-7.

[17] See e.g. Joann Cavallo 'Joking Matters: Politics and Dissimulation in Castiglione's Book of the Courtier' *Renaissance Quarterly* (2000) 53, pp. 402-424. Perez Zagorin. *Ways of Lying: Dissimulation, Persecution, and Conformity in Early Modern Europe*. Cambridge, Mass.: Harvard University Press, 1990. Jon Snyder, *Dissimulation and the Culture of Secrecy in Early Modern Europe*. Berkeley: University of California Press, 2009. Jan Assmann and Aleida Assmann (eds.), *Schleier und Schwelle*, Wilhelm Fink Verlag München, 1997.

[18] Richard Alewyn and Karl Sälzle, *Das grosse Welttheater*, Rowohlt, 1959, p. 48.

[19] For new perspectives on the theatre of knowledge, see Helmar Schramm, Ludger Schwarte, Jan Lazardzig (eds.) *Kunstkammer, Laboratorium, Bühne. Schauplätze des Wissens im 17. Jahrhundert.* (Theatrum Scientiarum I) Berlin: Walter de Gruyter, 2003 and ibid., *Spektakuläre Experimente. Praktiken der Evidenzproduktion im 17.*

Also alchemy had its own 'theatres': Lazarus Zetzner's *Theatrum Chemicum* (1602-1661), Elias Ashmole, *Theatrum Chymicum Britannicum* (1652) or Friederich Roth-Scholtz's *Deutsches Theatrum Chemicum* (1728-1732) were large collections of previously published and unpublished alchemical texts.[20] The theatre metaphor merged and crystallized many different meanings. On the one hand, it came to stand for the orderliness, the unlocking and accumulation of knowledge. It promulgated the openness of knowledge, which was staged as a festive spectacle and promised a complete synoptic access to the world. On the other hand, and sometimes simultaneously, the theatre metaphor could be used for stressing the illusionary aspect of the appearances, or the veiled nature of knowledge, which never arrived at the true substance of things. Among many other convergences of meanings, it is the blending of openness and secrecy, reality and illusion, veiling and unveiling in the baroque metaphor of the theatre that especially interests me here. In this sense, the term 'theatre' seems especially suitable for alchemy. Indeed, for many contemporary observers, alchemy was located at the borderline of illusion and reality. Alchemists were seen as walking the borderline between order and chaos, of creating and disintegrating knowledge. At the same time, alchemy is the ideal locus to show the theatricality of veiling and unveiling at work. It is on these two aspects of theatricality that I will focus in this paper.

Francis Bacon was a close observer of alchemy, dismissing some variants and accepting others.[21] In many respects, the tradition of alchemy and natural magic came very close to his own project of an experimental natural history. It was Bacon who called alchemy a science full of imagination. He is not opposed to alchemy in general, but he criticised those who, with a 'few grains of an elixir should in a few moments of time be able to turn other metals into gold by the agency of that elixir.'[22] After the Fall, man had to work in order to better his situation, and Bacon suspected that much in magic and alchemy was vain promises or illegitimate shortcuts.[23] Also disillusioned adepts claimed that their fellow alchemists had 'not recorded anything truthful in their books, but only fictions and riddles.'[24] Because alchemy is

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Jahrhundert (Theatrum Scientiarum III) Berlin: Walter de Gruyter, 2006, and especially the introductions in these volumes.

[20] See also Heinrich Khunraths *Amphitheatrum Sapientiae Aeternae* (1595) or Adolph Christoph Bentz, *Neu-vermehrt und verbesserte philosophische Schaubuẖne* (1710) for other kinds of alchemical theatres.

[21] See e.g. Stanton Linden, 'Francis Bacon and Alchemy: The Reformation of Vulcan', *Journal of the History of Ideas* (1974) 35, pp. 547-560.

[22] Bacon, *op.cit*., vol. IV, p. 368; see also vol. III, p. 362.

[23] 'But such is the immoderation and intemperance of men that they not only promise to themselves things impossible, but expect to obtain the most difficult things without trouble or toil, as in a holiday recreation.' Bacon, *op.cit*., vol. IV, p. 368.

[24] Isabella Cortese, *I Secreti*, Venice: 1561, p. 19-21, quoted in William Eamon, *Science and the Secrets of Nature*. Princeton: Princeton University Press, 1996, p. 164.

imaginative, for Bacon, it is also poetical. Bacon could have applied his definition of poetry to alchemy, because for him both were 'concerned with imitation of true events, yet with this difference, that it commonly exceeds the measure of nature, joining at pleasure things which in nature would never have come together (...). This is the work of Imagination.'[25] Alchemists and magicians, Bacon writes, are 'suitors and lovers of fables'.[26] For Bacon, the alchemical work provides a fascinating but unsettling mixture of fiction and verisimilitude, of imagination and true experience.

Even if alchemy consists chiefly of dreams, the true element in it should not be neglected. 'They have brought to light not a few profitable experiments,'[27] Bacon writes, and the goals of alchemy are noble. Bacon believes that the transmutation of silver into gold is possible and he even proposes his own experiments: 'We will direct a trial touching the maturing of metals, and thereby turning some of them into gold: for we conceive indeed that a perfect good concoction or digestion or maturation of some metals will produce gold.'[28] Traditional alchemy had 'over-fired' the work, according to Bacon, and he urges more knowledge about the properties and the 'first seeds and menstruums of minerals' and more patience in the process of transmutation.[29] The great professors of alchemy, however, have sought to 'veil over and conceal by enigmatical writings', to add imaginations and such other devices to save the credit of impostures.[30]

The imaginative potential of alchemy might also serve positive goals. One kind of poesy, 'Dramatic Poesy', Bacon writes, 'has the theatre for its world'.[31] It can be excellent if it is directed well, for the stage is very influential in disciplining as well as corrupting the spectators. Indeed, among the ancients, it was used as a way of educating men's minds to virtue, although Bacon thought that contemporary theatre mostly corrupted morals. The transformative power of theatre, creating a virtuous catharsis or moral debasement, was also projected on alchemy, which could lead to spiritual enlightenment according to some, or to moral degeneration, according to others. Bacon argued that it is by the power of imagination, that theatre and rhetoric had such a strong impact on the listeners. The imagination can overrule reason; it is a 'seducement that worketh by the strength of the impression.'[32] Although 'the *duty* and office of Rhetoric is to apply Reason to Imagination for the better

[25] The actual quote only refers to poesy, not alchemy, see Bacon, *op.cit.*, vol. IV, p. 292.
[26] *Ibid.* IV, p. 169.
[27] *Ibid.* II, p. 448, see also III, p. 289
[28] *Ibid.*, II, p. 448, see also III, p. 803
[29] *Ibid.*, II, p. 448 and IV, p. 367-8
[30] *Ibid.*, III, p. 289
[31] *Ibid.* IV, p. 316
[32] *Ibid.* III, p. 394

moving of the will', the power of imagination in rhetoric and theatre can be used for many purposes that contradict reason and morality.[33] By extension, alchemy, as characterised by imagination and poesy, has the power to do the same. It is the imaginative and theatrical potential of alchemy, its use of metaphors and allegory, which can lead man to virtue and purification. In some cases, the imagination supports meditative powers and alchemy might even create (semi)religious experiences. Critics would say that the imagination misleads adepts and draws them into dangerous heresies. Bacon writes about the theatre: 'Nay, it has been regarded by learned men and great philosophers as a kind of musician's bow by which men's minds may be played upon.' This power of imagination is 'one of the great secrets of nature'. Theatre is magic. Theatre has a magical power to influence and play the minds of others. Magic, including alchemy and astrology, are also theatre. For Bacon, it is exactly because of their use of the theatrical, rhetorical and poetic techniques of the imagination, that magic and alchemy were powerful.

Beyond this Baconian analysis, alchemy was theatrical in many more senses. Alchemical illustrations, for instance, often had a particularly theatrical look.[34] These illustrations depict stock characters, like the typical characters in a Molière play: the king and the queen, the hermaphrodite or Hermes continue to appear and they play similar roles each time. Like in a theatrical performance of a fable, the wolf, lion, and dragon play their part, and even nature, the sun and the moon are personified in their characteristic way. These characters also signify a set of meanings recognisable for the adepts, like the recognisable roles, functions and meanings of 'the king', the buffoon', 'the wanderer' or 'the physician' in a theatre play. These figures usually display theatrical movements and gestures, and are engaged in mysterious and spectacular acts, such as murder, fighting, torture, transformations or copulation. The full potential of these images is still unknown. They contained coded messages and symbolic meanings, subjects for meditation, and meant to act on the imagination of the adept or spectator.

Some of the stories or allegories in alchemical narratives are also particularly theatrical. A typical genre is the quest, based on Homeric or chivalric exemplars, such as the quest for the Holy Grail. Analogously, the alchemist has to search the philosopher's stone, overcoming multiple difficulties and obstacles on the road. The extravagance of the allegories and metaphors, the dramatic use of noble figures, weddings and festive events brings us

[33] *Ibid.* III, p. 409

[34] See e.g. the Ripley Scrolls (15th century), Jaroš Griemiller's *Rosarium Philosophorum* (1578), Michael Maier's *Alalanta fugiens* (1617) or Daniel Stoltzius von Stoltzenberg's *Chymisches Lustgärtlein* (1624).

immediately in a theatrical atmosphere. The same is true for the mysterious supernatural or praeternatural events and transformations that are narrated. In particular, it is the combination of verisimilitude and the unreal that transports us in another world, which reminds us of the theatre. This fantastical theatre transgressed the norms of classical theatre, but this was also liberating, and it constituted another theatrical model during the heated debates of the ancients and the moderns.

It is not a coincidence that during the Baroque, magic and alchemy - with their fantastical elements and supernatural transformations, bringing together cultural anxieties, vivid narratives and the feeling of the unreal - was also very popular on stage. Enchantresses, such as Circe and Armide, were the most frequent mythological characters put on the stage in France.[35] Theatrical scenes of magical transformations were commonplace. Magic was also a source of inspiration for numerous Renaissance and Baroque Italian playwrights. Magical wonders were prevalent in comedies by Machiavelli, Bargagli, Noris, Stanzani, Broschi, Ferrari and many others, and especially in Ludovico Ariosto's *Il Negromante* (1520). Giordano Bruno, himself a famous *magus*, depicted in the comedy *Il Candelaio* (1582) an amateur alchemist, named Bartolomeo, who is duped by a group of tricksters. In Ben Johnson's *The Alchemist* (1610), it was the alchemist 'Subtle' who, with two companions, swindled naive Londoners. The alchemists were able to project their follies into the imagination of the credulous. Subtle was in the end outwitted by his fellow conman, however, and had to flee empty handedly. The theme of fraud and trickery served as the background for the complex intrigues that characterized these comedies.[36] The exaggerated twists in the plot resembled the magical transformations they ridiculed, yet it was the credulity of the people, who let their imaginations be influenced and transported to believe the most absurd notions, which is central to these plays. Comedy plays here the traditional role as a means to expose vice, foolishness and vain imaginations to ridicule.

The Jesuit scholar Gaspar Schott defined magic as 'whatever is marvellous and goes beyond the sense and comprehension of the common man'.[37] Wonder, magic and alchemy were closely intertwined, and their predilection for the marvellous, suspension and surprising

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[35] J. Rousset, *La Littérature de l'Age Baroque en France. Circé et le Paon*, Paris, 1954, pp. 261-162 and 266-167.

[36] For fraud as a theme in the history of alchemy, see Tara Nummedal, *Alchemy and Authority in the Holy Roman Empire.* Chicago: Chicago University Press, 2007. For alchemical fraud as a theme in English comedies, see Linden, *op.cit.*, 547-8.

[37] Gaspar Schott, *Magia Universalis*. Würzburg: Schönwetter, 1657, Pars I, Prolegomena. See also Henrichs, Norbert. ‚Scientia Magica' in Alwin Diemer (ed.) *Der Wissenshaftsbegriff: Historische und Systematische Untersuchungen*, Meisenheim am Glau: Hain, 1970, p. 30-46 for various early modern and Enlightenment definitions of magic.

effects had a distinct theatrical potential. Giambattista Della Porta, accomplished alchemist and the most famous natural magician of his age, defined magic in general expansively as 'nothing else but the survey of the whole course of Nature.' In particular, magic was about 'the causes of wonderful things'.[38] Della Porta considered alchemy as part of his natural magic, treating of the transformation of metals, of counterfeiting glorious stones and of distillation in different books of the second edition of his *Magia Naturalis* (1589), as well as publishing separate tracts on alchemical subjects. Della Porta stressed the marvellous nature of magic and alchemy, but interestingly, he also wrote and directed theatre plays for his patron Cardinal Luigi d'Este. (In fact, this cardinal saw Della Porta as an alchemist and hoped he would deliver the philosopher's stone).

Della Porta was a master of the *commedia erudita,* with as a defining characteristic an infatuation with marvels and wonders. This delight in *meraviglia* was taken to an extreme in action, situation, character and plot. Starting from imitation and verisimilitude, everything in the *commedia erudita* was exaggerated and taken *beyond* the natural. Interestingly, one example of Della Porta's plays was *L'Astrologo* (1606), a comical play about a charlatan astrologer, later adapted by Thomas Tomkis as *Albumazar* (1615). William Eamon has pointed out the similarities between Della Porta's magical practice and his theatre plays. 'Tortuous plots and *imbrogli*, characters stylized beyond all pretense to realism, exhibitions of legerdemain, slapstick humour, *macaronic* language, superfluous disguises, and outlandish caricature were the marks of Della Porta's comic style. Everything was done in an atmosphere of hilarious unreality, with grace, gravity and *sprezzatura*.'[39] This is the theatricality that also characterises natural magic and alchemy in their fascination with the wondrous, the extravagant and that what goes beyond the natural.

Also medical alchemy, the paracelsian brand, was often performed on stage. Here, different recipes, based on chemical processes, were supposed to cure specific diseases. Sometimes, also a real 'elixir', good to cure any ailment, was proposed. Such recipes were sold on the street or the piazza, often on makeshift stages, by itinerant quacks, mountebanks (*montibanchi*, from mounting banks or small stages) and charlatans (*ciarlatani*, from pratting). The show often involved acts of stage magic, juggling and songs, but the main goal was to sell medicines and other household secrets by entertaining the public with slapstick comedy and gigs. William Eamon has argued that these little theatre plays were the origin of

[38] Giambattista Della Porta, *Magiae Naturalis*, Naples: Matthias Cancer, 1558, liber I, caput 1.
[39] Eamon, *op.cit.*, p. 227. See also Louise Clubb, *Giambattista Della Porta, Dramatist*. Princeton: Princeton University Press, 1965.

the commedia dell'arte.[40] Such recipes and wonders were also transmitted in so-called 'books of secrets':[41] these included alchemical recipes as well as medical formula, housekeeping techniques and even parlour tricks. In the Middle Ages and the Renaissance, 'secrets' were a powerful metaphor for the collection and ordering of knowledge. In the early modern period, this metaphor shifted from secrets to the theatre. *Secretum* was being replaced by *theatrum*.

A theatre of openness and secrecy

There exists a little known 'alchemical theatre', which can be interpreted as a marker of the transition from 'secrets' to the 'theatre' as a metaphor for the collection of valuable knowledge. Heir of the tradition of books of secrets, Steven Blankaart's (1650-1704), *Theatrum chimicum, ofte geopende deure der Chymische Verborgentheden* (1693) (later translated in German as *Theatrum Chimicum, Schau-Platz und Thür zu den Heimlichkeiten in der Scheide-Kunst*) consisted of hundreds of practical alchemical recipes, as well as descriptions of basic alchemical apparatuses and methods. A populariser of iatrochemical medicine, combining Van Helmont, Sylvius and Descartes, Blankaart also published and translated many collections on alchemy and chemical medicine. Interestingly, the theatricality in the title of this book refers not so much to the stage, but rather to a complex dynamic of openness and secrecy. The 'theatre' has become a '*Schau-Platz*', a place to show openly the secrets of alchemic practices and orders of knowledge. The Dutch title is even more explicit: it promises an 'open door' on the 'hidden things' of alchemy. Blankaart explained that traditional alchemy concealed its art in darkly hidden expressions and secret meanings. Indeed, *Chemia* had its etymological origins in *Chama*, from *Zimia*, which means hiding or concealing. In contrast, he insisted on publishing everything clearly, and he presented his book as a stage, on which everything about chemistry is openly displayed.[42] In the remainder of this paper, I will focus in particular on this special kind of theatricality, the rhetoric of veiling and unveiling, which characterises the dynamic of openness and secrecy in early modern alchemical practices.

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[40] See David Gentilcore, *Medical Charlatanism in Early Modern Italy*, Oxford: Oxford University Press, 2006; M.A. Katritsky, *The Art of Commedia*, Amsterdam: Rodopi, 2006; and Eamon, *op. cit.* See also Helmar Schramm, ‚Das offene Buch der Alchemie und die stumme Sprache des Theaters. "Theatralität" als ein Schlüssel gegenwärtiger Theaterforschung' in B. Dotzler and E. Müller (eds.) *Wahrnehmung und Geschichte. Markierungen zur Aisthesis materialis*. Berlin: Akademie Verlag, 1995, p. 103-118.

[41] On books of secrets, see Eamon, *op. cit.*; Steven Williamson, *The secret of secrets.* Ann Arbor: University of Michigan Press, 2003.

[42] See Steven Blankaart, *Theatrum chimicum, ofte geopende deure der Chymische Verborgentheden*, 1693, preface and chapter 1.

Traditional historical scholarship has treated science as essentially open, and technology as secretive. Robert Merton's view that openness was one of the four central norms of science (with secrecy as its antithesis) has been adopted by many historians and philosophers of science. David Hull, for instance, considered openness an intrinsic virtue 'central to science from its inception'. Technology was secretive because of its practical and commercial applications, in contrast with science, which was seen as a quest for pure knowledge.[43] Newer work in the history of science has thoroughly questioned the associations of science with openness and technology with secrecy. Now historians agree that modes of secrecy penetrate science and diverse technical practices, crafts traditions and artisan practices are not entirely secretive.[44] A similar opposition was constructed between early modern esoteric traditions and 'science', which were again characterised by secrecy and openness respectively. The discussion ran parallel to the science/technology discussion. In the case of esoteric traditions, the main reason for secrecy had been considered the adept's belief in the sacred nature of magical knowledge, which had to be strictly guarded against defilement by outsiders. Alchemy was the most prominent example, because its penchant for secrecy seemed the decisive factor that distinguished it from proto-chemistry.[45]

These views have been amended by recent studies. It has been pointed out that the kinds of secrecy in alchemy were not necessarily due to 'esoteric tendencies'. It is now thought that, for instance, the guarded exchange of secrets in alchemy was more related to trade secrecy than to mysticism, and that these secrets had economic rather than sacred value.[46] Newman and Principe have also indicated other reasons for secrecy, such as the early modern culture of curiosity in which the play with secrecy in riddles, allegories and other intellectual exercises

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[43] Robert Merton 'The Normative Structure of Science' [1942] in Storer, N.W., *The Sociology of Science*. Chicago: University of Chicago Press, 1973, p. 267-278. David Hull 'Openness and Secrecy in Science: Their Origins and Limitations' *Science, Technology, & Human Values*, (1985) 10, 4-13, p. 12. Ernan McMullin, 'Openness and Secrecy in Science: Some Notes on Early History' in *Science, Technology, & Human Values*, (1985) 10, pp.14-23.

[44] Pamela Long, *Openness, Secrecy, Authorship. Technical Arts and the Culture of Knowledge from Antiquity to the Renaissance.* Baltimore: Johns Hopkins University Press, 2001. Karel Davids (eds.), *Early Science and Medicine 10* (2005): 341-348. For more references, see Koen Vermeir and Daniel Margocsy 'States of Secrecy: An Introduction' in *British Journal for the History of Science* (forthcoming 2011).

[45] Brian Vickers (ed.) *Occult and Scientific Mentalities in the Renaissance*. Cambridge: Cambridge University Press, 1984. William Eamon, 'From the Secrets of Nature to Public Knowledge' Minerva (1985) 23, pp. 321-347. Betty Dobbs, 'From the Secrecy of Alchemy to the Openness of Chemistry' in Tore Frängsmyr (ed.) *Solomon's House Revisited*, Canton: Science History Publications, 1990, pp. 75–94. Paul David, 'The Historical Origins of 'Open Science'' *Capitalism and Society* (2008) 3. Owen Hannaway, *Chemists and the world*. Baltimore: Johns Hopkins University Press, 1975, pp. 585-610 and Owen Hannaway, 'Laboratory Design and the Aim of Science: Andreas Libavius versus Tycho Brahe' *Isis* (1986) 72, 585-610.

[46] Cf. Pamela Smith, *The Business of Alchemy. Science and Culture in the Holy Roman Empire.* Princeton: Princeton University Press, 1994. Nummedal, *op.cit.*

was like an intellectual game causing delight.[47] Furthermore, according to revisionist historians, secrecy and openness cannot be considered the decisive factor anymore for distinguishing esoteric traditions from 'science'. Both alchemists and early chemists dabbled in secrecy and symbolic representations, and clear distinctions cannot be drawn.[48] It turns out that the practices of lauded natural philosophers were also characterised by an exchange of secrets.[49] Sometimes they protected state interests or respected the artisans' demand for secrecy. At other times, they tried to secure their priority, or they bargained and schemed, or even betrayed their partners for intellectual prestige or material gain. Alchemists, natural magicians, artisans and natural philosophers all seemed to meddle in many forms of secrecy. Historians have also argued the other way: authors from the esoteric tradition sometimes strived for openness. Agrippa Von Nettesheim's, for instance, actively strived for an open discussion, defended the authorship over his works and tried to publish widely.[50]

Nevertheless, in all these recent studies, the opposition between 'openness' and 'secrecy' remains a guiding principle. Scholars have recognised that both openness and secrecy are present in natural philosophy, craft traditions as well as in natural magic and alchemy. As Pamela Long put it: 'For them, the values of openness and secrecy often existed side by side.'[51] The problem is that now these practices seem to be paradoxical, because they merge contradictory tendencies of openness and secrecy. As I have argued elsewhere, I think we should recognize that openness and secrecy are not necessarily oppositional or contradictory. Secrecy and openness can go together in complex ways.[52] There is nothing paradoxical in the dissemination of secrecy or the values of secrecy, for instance, and many of the secrets transmitted in the books of secrets can be considered 'open secrets' that were already widely known and applied. One good way to characterise this complex dynamic and co-existence of openness and secrecy is as a theatrical performance to which practices of veiling and unveiling are central.

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[47] William Newman and Lawrence Principe, *Alchemy Tried in the Fire*, Chicago: Chicago University Press, 2005, p. 81.
[48] William Newman, 'Alchemical Symbolism and Concealment: The Chemical House of Libavius', in Peter Galison and Emily Thompson (eds.), *The Architecture of Science*, Cambridge, Massachusetts, 2000, p. 59-77.
[49] Jan Golinski, 'Chemistry in the Scientific Revolution' in David Lindberg and Robert Westman (eds.) *Reappraisals of the Scientific Revolution*, Cambridge: Cambridge University Press, 1990, pp. 367-396. Larry Principe, 'Robert Boyle's Alchemical Secrecy', *Ambix* (1992) 39, pp. 63-74. Jole Shackelford, 'Tycho Brahe, laboratory design, and the aim of science,' *Isis* (1993) 84, 211-230.
[50] See Long, *op.cit.*, Ch. 5.
[51] Long, *op.cit*., p. 174, and a similar statement on p. 144.
[52] Koen Vermeir, 'Openness versus Secrecy: Historical and Historiographical Remarks' *British Journal for the History of Science* (forthcoming 2011).

The ‘secrecy’ in esoteric traditions is often a rhetorical strategy. In many cases, it is not the assumed secret that is most important, but rather the social structure and dynamics of secrecy. Indeed, in ‘esoteric traditions’, one can always find the same kind of inveighing against openness.[53] These are like fixed formulas, endlessly repeated in different books and contexts, which suggests that they have a ritual function. As a genre, it creates a certain identity and tradition, which is increased by the specific dynamics of secrecy, which is all about inclusion and exclusion. The ‘do not divulge it’ label implies a specific rhetoric that plays with the psychodynamic and social characteristics of secrecy. In many cases, in saying that one keeps a secret, one is actually bringing across that one wants to unveil it (maybe in return to a proper compensation, or maybe just for the intrinsic fascination of the dynamical play of secrecy). Rather than trying to reduce such cases to an instance of ‘openness’ or ‘secrecy’, it is the complex dynamics of veiling and revealing that we should try to understand.

Secrets were valuable in the early modern period, not just as commodities, but even more as cultural and social markers. If someone shares a secret with someone else, it indicates that this person is trusted and valued by the first, and the resulting possession of the secret makes him even more important. Paul David recently argued that the early modern culture of patronage was at the origin of the open character of science, and that this development was distinctive and vital to the Scientific Revolution. David argues that the promise of patronage was a powerful incentive to build a public reputation, and this reputation was achieved by openness combined with a collegiate reputational reward system based upon accepted claims to priority. In contrast, one can argue that the culture of patronage was as much about having valuable secrets than about publicising your knowledge. Cunning use of the dramaturgy of secrecy was a powerful means of building a reputation, by advertising that one has a secret as widely as possible and at the same time carefully controlling the access to the content of the secret. This was how many secrets were actually exchanged between clients and patrons, how the first ‘academies of secrets’ functioned, and how alchemists as well as natural philosophers vied for the patronage of powerful princes. As I will show, this is also a good way to describe Martine de Bertereau’s alchemical practice.

On the one hand, if we do not think of openness and secrecy as opposites, but as positive states that can coexist and are exploited in a theatrical performance, new possibilities to describe esoteric traditions open up. A secret is only worth something if someone knows you

[53] *Ibid.*

have a secret. Esoteric traditions play with the dialectic of lure and withdrawal, with the skilful use of obscurity and mystification, blending obliqueness and opacity. It was always a tactical question whether to stun the audience with a demonstration of wondrous phenomena or to explain the causes behind it. Subtle forms of hiding and revealing are present in the symbolism, illusions and allusions, and especially in the strategies of concealment and the emblematic images typical for alchemy. Esoteric traditions are therefore better characterised as a play of veiling and unveiling, a simultaneous partial revelation and partial concealment, similar to a theatrical performance. On the other hand, theatrical events show that a strict distinction between the basic categories of 'openness' and 'secrecy' is impossible to uphold. Indeed, early modern theatre refers at the same time to a public event and includes practices of concealment, illusion and deception. The psychodynamics of secrecy is crucial for understanding theatrical phenomena. To captivate the public, one should not disclose too much at a time. In order to incite the imagination and to give the public a sense of wonder, hidden things should be gradually unveiled, building up suspense and tension, and slowly increasing the fascination.

These practices, this amalgamation of secrecy and openness, is referred to in the title of Steven Blankaart's alchemy book *Theatrum chimicum, ofte geopende deure der Chymische Verborgentheden*. Different kinds of wonder and theatricality could be appropriate and could help in attracting patronage. The beholders could be delighted or thrilled by the demonstration of a transmutation, or they might be oppressed by anxiety if they suspected that demonic powers were involved. When Elias Ashmole commented on the unorthodox symbols employed by Thomas Norton, a Bristol alchemist, he considered their 'hieroglyphic' character as evidence that Norton was 'a learned Astrologian' who would not divulge his secrets to the vulgar but instead employed 'Vailes and Shadows, as in other parts of the Mistery.'[54] What is forgotten in a simple analysis of openness and secrecy is that certain things cannot be easily wrapped in packages of 'information'. That is how Bacon describes Parabolical Poesy, similar to but of a higher character than theatre, because it is used 'as a means of communication between divinity and humanity'. It is simultaneously, according to Bacon, a method of teaching and an artifice for concealment. It combines openness and secrecy, because the dignity of certain things requires 'that they should be seen as it were through a veil.'[55] The

[54] Almost verbatim from William Newman and Anthony Grafton 'Introduction: The Problematic Status of Astrology and Alchemy in Premodern Europe' in William R. Newman and Anthony Grafton (eds.) *Secrets of nature: astrology and alchemy in early modern Europe*, Cambridge, MIT Press, p. 21.
[55] Bacon, *op.cit*., vol. IV, p. 316-7.

theatrical nature of early modern alchemy, these complex modes of veiling and unveiling, were constitutive to the - sometimes divine - meanings they expressed.[56]

Martine de Bertereau's theatrical alchemy

At first sight, the baroness of Beausoleil's alchemical practice and publications are not particularly theatrical. Her mine prospecting practices, her alchemical operations for separating metals or her publishing style do not involve the theatrical allegories, imaginative jumps or emblematic images that I discussed. Neither does she employ the typical secretive techniques and esoteric rhetoric of alchemical literature, nor is she engaged in theatrical performances to sell her recipes. If anything, her work is closer to Bacon's own proposals of a prosaic alchemy than to the poetic, imaginative and theatrical alchemy that he condemns. Exactly for this reason, this is an interesting case study, for it can show that the model of a theatrical play between openness and secrecy also bears fruit in such cases.

In the second half of the sixteenth century, European mines had stagnated. The easily available metal had been unearthed, and the cheap silver and gold coming from the Americas made the further development of mines unprofitable.[57] Around 1600, French mines were in a lamentable state.[58] Henri IV and Sully launched a major effort to restore the mining industry: they ordered a survey of the mines in the kingdom[59] and they invited German mining experts to France.[60] In 1601, Henri IV named his valet Pierre Van Beringhen (native of Gelderland, and considered 'German') general inspector of mines. The latter asked Jean du Châtelet, native of Brabant and the later baron the Beausoleil, to come to France for prospecting mines. German mining officials were well known for their expertise, and German miners for their skills. In order to attract more of them, the King granted important privileges in a 1604 decree, including naturalisation, tax exemptions and other monetary benefits. At the same time, the decree tried to limit the freedom of the workers, who were notoriously superstitious,

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[56] Mario Praz, *Studies in Seventeenth-Century Imagery* London: Warburg Institute, 1939. William Ashworth, 'Natural History and the Emblematic World View,' in D.C. Lindberg and R.S. Westman (eds.) *Reappraisals of the Scientific Revolution*, Cambridge: Cambridge University Press, 1990, pp. 303-332. Rudolf Wittkower, *Allegory and the Migration of Symbols*, Boulder, CO: Westview Press, 1977.

[57] Nummedal, *op.cit.*,p. 76 ff.

[58] See e.g. Eugène d'Auriac, 'L'administration Française au VII siècle', *Revue des études historiques* (1891) 57, pp. 1-26.

[59] See De Malus (Fils) *Avis des riches mines d'or et d'argent, et de toutes espèces de métaux et minéraux des monts Pyrénées* (1632) See also Jean Du Puy, *La recherche et descouvert des mines Pyrenees* in Gobet, op.cit., p. 75-147.

[60] Jules Mathorez, *Les étrangers en France sous l'ancien régime: histoire de la formation de la population française.* Paris: Champion, 1919, p. 90-1.

blasphemous and quarrelling. Priests had to watch over them and they were threatened with torture if licentious.[61]

After the demise of Henry IV, in 1610, Maria de Médicis reversed course in mining policy. These were the changing and difficult circumstances in which the Beausoleils had to operate. As Heller remarks, it was 'a weak and confused regime which lacked a sense of direction when it came to economic matters.'[62] Although French workers refused to do the dangerous and underpaid mining work, the regime became more hostile towards foreign workers. The Regent tried to force the unemployed Frenchmen, who inundated the streets of Paris, to move into the countryside and to work for wages.[63] In the Estates-General of 1614, migrants were depicted as criminals and policy makers advised a crackdown.[64] Jean du Châtelet, in the meantime married to Martine de Bertereau, moved to other countries to try his luck. The couple searched for mines and put them into production in the whole of Europe, from Poland to Italy, and the baroness even claims to have crawled in the mines of Peru.[65] As marks of a stellar career, the baron was named General Commissioner of Mines in Hungary by the Holy Roman Emperor, General of Mines of the Apostolic State by the Pope, and of mines in Tirol and Trente, Bavaria and the Palatinate & Cleves by different local dukes.[66]

Only in 1626, there came a renewed interest in mining. A ruling on the iron industry was introduced and high officials tried to lure the Beausoleils back with promises of financial and other privileges. Antoine Coeffier de Ruzé, marquis d'Effiat, superintendant general des finances & des Mines & Minières de France, wrote a commission for them, praising their expertise and earlier services to the kingdom, and the baron practically received a monopoly on prospecting the mines of France.[67] The Beausoleils got leave from the Holy Roman Emperor, left their oldest son responsible for the mines in Hungary, and travelled back to France. Confronted with local resistance to their work, however, and being robbed and accused for magic by local officials, they had to interrupt their work. The King had to write an explicit order to local officials not to obstruct them. The next superintendant general, Charles

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[61] BN MS Fr. 10718, fo. 3ir.-v.; Inventaire des arrets du Conseil d'Etat (regne de Henri IV), ed. Noel Valois, Paris, 1886-93, no. 8310.
[62] Henry Heller, *labour, science and technology in France, 1500-1620*, Cambridge UP, 1996, p. 183.
[63] Heller, *op.cit.;* d'Auriac, op.cit., p. 1-26. See also Mathorez, *op.cit.*., esp. ch. 5. Martine de Bertereau ostensibly supported this policy of emptying Paris of good-for-nothings. She proposed that with the profits from the mines, the state could build vessels and fill them with the vagabonds that prowled around Paris. In this way, Paris would be swept clean and France's naval power strengthened.
[64] Georges Marie Rene Picot and Paul Guerin (eds.), *Documents relatifs aux etats generaux de 1614*, Paris, s.d., pp. 192-3.
[65] Bertereau, *Restitution de Pluton*, p. 348.
[66] Bertereau, *Véritable déclaration*, p. 2 & 7-8
[67] Bertereau, *Véritable déclaration*, p. 2; Bertereau, *Restitution de Pluton*, p. 444-5.

de la Porte, had to lure them again with promises and a renewed commission in 1634.[68] Between 1635 and 1637, the Beausoleils prospected for mines in the Lyonnais, Languedoc and other regions of France. By 1640, however, almost after 15 years of prospecting work for the French crown, the Beausoleils had not been reimbursed for any of their expenses. Furthermore, they had not been granted concessions to operate any of the mines they found. The paperwork, filed in 1634 already, was still in the hands of Claude le Ragois de Bretonvilliers, chairman of the mining committee, who seemed to block the procedure.

This is the context in which Martine de Bertereau wrote two pamphlets on mining. The *Véritable Déclaration* is presented as an explanation of the causes why the riches of France's mines were not being explored. She gives first a description of their mining practices, establishing their expertise, after which she denounces the fraud of other miners as well as the incompetence of the French mining officials. In *La Restitution de Pluton*, she explains in more detail the practice and theory of mining and mine prospecting and she answers objections to the opening of new mines. These two books are all about openness, or so it seems. Instead of esoteric alchemy or secretive craft knowledge, de Bertereau presents mining practices as a public profession. Mine prospectors are public officials in service of the state. All techniques and theories are openly explained and published. Mine prospecting, for which the Beausoleils used divining rods, is a form of divination, literally: a practice of uncovering the hidden. Indeed, the point of mining itself is to bring hidden metals in to the open. Mining itself becomes a metaphor of openness, and in contrast to secrecy, de Bertereau's work makes clear, only openness will empower the state and will enrich its people.

In this light, the people who obstruct their work become enemies of the state and the people. Mining officials who are incompetent should be sanctioned and they should be replaced by a committee of true experts.[69] The King should be watchful for fraudulent prospectors who want advance money, pretend they prospect for mines and then run away with the funds. The Beausoleils had also found many miners who worked the King's idle mines secretly, mostly at night, without permission and without paying the taxes to the crown.[70] Critics were dismissed as enemies of the common good. Because these critics accused the couple of secretive practices and magic, it became crucial for the Beausoleil's to argue openly and publish their theoretical principles and practices.

[68] Bertereau, *Restitution de Pluton,* p. 445-50.
[69] Ibid., p. 351.
[70] Bertereau, *Restitution de Pluton,* p. 448-9

The *Véritable Déclaration* and *La Restitution de Pluton* are not just strategies of openness however. These two books can best be understood as theatrical self-representations. De Bertereau tries to forge her identity as the first woman alchemist and mining expert. She starts the *Véritable Déclaration* with the statement that a woman can be a mining expert, even in the face of the many eyebrows such claims might raise. She appeals to women of classical times, who excelled in warfare or in philosophy. In *La Restitution de Pluton*, she legitimises herself, when she gives advice to a king, by referring to biblical precedents. She writes that through her, God will open Richelieu's eyes, and she compares herself to Jeanne d'Arc, saving the French nation.[71]

The central aspect of the book is a performance of her expertise. Here, she makes public the secrets of nature as well as the secrets of her profession. She details the thirty years of know-how she and her husband have gained in different mines over the whole world. She even mentions an encounter with gnomes ('Nains'), little creatures around three feet high, 'old and dressed like mineworkers', to make the presentation of their extensive experience complete.[72] Her exposition of the theories of the generation of metals established their theoretical proficiency, and her explanation of several practical techniques of finding water and metals made clear that she is also a skilful practitioner. One needs to be well versed in sixteen disciplines in order to be a mining expert: astrology, architecture (including machine building), geometry, arithmetic, perspective, drawing, hydraulics, law, languages, medicine, surgery, botany, pyrotechnics, mineralogy, theology and alchemy.[73] In all these fields, she writes, she and her husband are knowledgeable, and they have demonstrated this before such a large number of great Christian monarchs that it could not be doubted.[74] They have been through the perilous practices of mining, they have all these very difficult experiences, and they have access to the 'very occult knowledge' of mining.[75] In their mining work, the Beausoleils argued, they open mines, bring to light metals, and uncover the secrets of nature, while in their writings they publicise knowledge of mining, show their expertise and uncover the incompetence of the mining officials.

What they really show is more complex, however. The baron's book only surveys alchemical theory in a general way. In the baroness's pamphlets, she details some of their mine prospecting practices, such as paying attention to the local vegetation, tasting the water

[71] Ibid., p. 343, Bertereau, *Véritable déclaration,* p. 1.
[72] Bertereau, *Restitution de Pluton,* p. 349
[73] Ibid., p. 388-339. See also Agricola *op.cit.* See also Della Porta, *op.cit.*
[74] Ibid., p. 339
[75] Bertereau, *Véritable déclaration,* p. 1

and looking at rising vapours, yet many of the practices she describes were already published by Agricola or Vitruvius. Nevertheless, she does adapt these descriptions to local contexts, accusing others of just repeating the classical texts in contexts were they did not apply. In particular, she describes different kinds of instruments and divining rods that they use for prospecting purposes, but the descriptions are so succinct and cryptic that some of the instruments are hard to identify. Similarly, the descriptions of alchemical theory are only meant to show their expertise rather than to convey knowledge, and descriptions of their alchemical practice of separating metals are minimal. In short, they are veiling and revealing their knowledge as in a theatrical play. Showing off things that were already public, yet still adding details that prove their hands-on experience. Giving tantalising clues about new prospecting instruments, yet withholding information about their actual use.

Every exposition hides and reveals. Even in order to teach, you cannot give the information all at once. In structuring information, one has to wait with disclosing some aspects, and one needs to use rhetoric for generating an effect in the students or the public. Nevertheless, these theatrical aspects are present in a particular way in the work of the Beausoleils. It is probably most visible when they unveil the fruit of their work: a long list of mines they found in the different provinces. The locations are described in such vague terms, however, that they are very difficult to locate. Until today, many of the mines they had described have allegedly been rediscovered, which gives a lot of credence to their skills, but some mines are still unknown or are impossible to identify because of the vague descriptions.[76] Again, this is a technique that shows and hides simultaneously. They make plausible their claims of expertise and they show impressive results that will be very useful for the state. Their claims could be confirmed by officials, but only if they are guided by the Beausoleils to the exact location of the newly discovered mineral deposits.

For Martine de Bertereau, her expertise in alchemy and mining was not only cause for self-presentation but also led to a self-transformation. The transformation she wrote about was not the transformations of spiritual alchemy, however. Her work changed her into an inventor, into someone who could divine and uncover hidden things. This gave her a touch of divinity. She referred to the ancient heathens, who deified those who by art and industry discovered something new. The gates of the temple dedicated to them were guarded by Harpocrates, who held a finger to his lips. According to the baroness, this was to keep the secret for future

[76] Association française pour l'avancement des sciences, *Conférences faites en 1918*, Paris, 1918, p. 137. Nicolas Gobet, *Les anciens minéralogistes du royaume de France*, Paris, 1779. Louis Figuier, *Histoire du merveilleux*, Paris: Hachette, 1860, vol. 2. Auriac, *op.cit.* See also http://envor2004.free.fr/cariboost1/crbst_70.html

generations, that these men, bestowed with divine honours, had only been humans. The baroness made a further comparison. In ancient Rome, birds were used for divination. Furthermore, the good advice of the geese of the Capitol, raising alarm at the approach of the enemy, had once saved the city. Therefore, the Romans believed that these animals were divine. By analogy, her own divinatory skills as well as her expertise in mining, which allowed her to give advice even to a king, transformed her too. Harpocrates had to keep this theatrical secret: even if they were just humans, inventors and diviners should be exalted as divine beings on the stage of the world.

Divination: tacit knowledge or secrecy?

In the reception history of this episode, Martine de Bertereau has commonly been accused of secrecy and esotericism. Eighteenth and nineteenth century commentators were struck by the success of the Beausoleils's methods for finding water and minerals. They could appreciate some of the prospecting techniques described by de Bertereau, such as opening the earth, smelling and tasting, or observing vegetation. Some of her instruments, such as different compasses, quadrants and an astrolabe, also made sense to them. They could not believe, however, that divining rods, cut at the appropriate hours for the right astrological influences, could possibly work. As a result, they interpreted references to the divining rod as instances of theatrical secrecy. Waiving with the divining rod was just a show to impress the imagination of the vulgar. It would lend the Beausoleils mysterious powers and this might have aided them in overcoming local resistance. A recent interpreter has claimed that these are typical craft techniques of obfuscation, and that de Bertereau wanted to keep her real prospecting techniques secret by confusing the reader with nonsensical additions about divining rods and astrology.[77]

These interpretations are problematic on different counts. First, de Bertereau does describe her prospecting techniques in plain words, and the divining rod is only one aid. It is not clear how referring to the rod would help keeping her other techniques secret. The use of the divining rod is also consistent with the theory of the generation of metals that she explains - a theory that was widely accepted at the time. Astrological influences made the difference in the generation of metals, so they might also play a role in techniques used for their

[77] See Gobet, *op.cit.*, Figuier, *op.cit.*, Martina Kölbl-Ebert, 'How to find water: the state of the art in the early seventeenth century, deduced from writings of Martine de Bertereau (1632 and 1640)' *Earth sciences history* (2009) 28, pp. 204-218.

discovery.[78] The divining rod was just one other striking aspect of the Beausoleils's great expertise. The instrument was not yet known in France, but it was fashionable and widely used - though also contested - by German miners. De Bertereau used the divining rod as a performative instrument. She did not so much use it to impress the vulgar - although that might have been part of their aim - but to deliver *certain* proof of the presence of metals or water. First, on approaching a place, she used the 'compas mineral' or the 'verge de Mercure' to find out if there were any minerals or waters to be discovered.[79] Secondly, she used this instrument to give ocular testimony and certain proof, for official witnesses, that there was a mineral water source.[80] Although de Bertereau dismissed the vulgar opinion that science needed to be theatrical, with a great parade of costumes and instruments, her own dealings with the divining rod are also 'spectacular' in a different sense.[81] The divining rod *performs* the certainty of her knowledge before the eyes of the spectators.

These positivist scholars bolster their claims by contradictory descriptions of how the baroness found a new source of mineral waters at Chateau-Thierry. De Bertereau described how she used a divining rod for finding this source in her *Véritable Décaration*. In contrast, Claude Galien, a local physician of Chateau-Thierry, described the same event without referring to the divining rod. This, or so these scholars claim, is proof that she did not actually use the divining rod. Hence, her writings and descriptions are full of secrecy, obfuscations and are not to be trusted.[82] It should be noticed, however, that both authors describe a different event and have different interests and aims. For Claude Galien, it was known for a long time already that there were sources somewhere in this town: there were even remnants from antiquity in a cave where quantities of water were always present, suggesting that their forefathers used these waters. In fact, that there were sources in the neighbourhood was not difficult to divine: Galien explained that the flow of water in the streets was so extensive that they had to construct water pipes to let the water flow away.[83]

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[78] All the instruments, also the compasses etc., needed to be made/cut at the right time and you needed to be born at the right time for astrological reasons.

[79] De Bertereau refers to: 'compas mineral' (Bertereau, *Véritable déclaration,* p. 9); 'verge de Mercure' or 'verge Lunaire' (Bertereau, *Restitution de Pluton,* p. 131-2). We cannot be certain that she refers to the divining rod here, but these were names that were in wider use, and contextual evidence seems to suggest she did refer to the rod.

[80] 'ie leur fist voir occulairement (& par Espreuue certaine)', Bertereau, *Véritable déclaration,* p. 9 ; 'si vous appliquez la verge Lunaire & la Mercuriale dessus, & qu'elles s'inclinent (...) il est très)certain qu'il y a de l'eau.' Bertereau, *Restitution de Pluton,* p. 432.

[81] Bertereau, *Restitution de Pluton,* p. 409.

[82] Kölbl-Ebert, *op.cit.*

[83] Claude Galien, *La descovvertr des eaus minerales de chasteau thierry, & de leur proprietez*. Paris: Cardin Besongne, 1630, p. 4.

They did not use these waters, however, until 'a divine Genius, a virtuous lady,' i.e. Martine de Berterau, passed by and made them attentive of the medicinal qualities of this mineral source. As a physician, Galien was interested in the experiments they did to figure out the hidden powers of the water and he examines in detail the qualities of these sources. His book made for an excellent advertisement.[84] In contrast, Martine de Bertereau was more keen on describing how she found the exact location of the pure source. She hardly mentions the experiments she executed with the local physicians, but she relates how she followed the indications of the divining rod. By means of the rod, she found a source under the hostelry *La Fleur de Lys* and another one located under the house of the widow Guiot, which would be beneficial for curing illnesses of the liver, the spleen, kidney and bladder stones. The fact that de Bertereau and Galien relate different aspects of the story is due, I think, to their respective interests, and not so much to any method of obfuscation.

Finally, it would be incomprehensible why de Bertereau would conceal her real craft secrets by writing about her use of the divining rod, after being accused of magic by Touche Grippé. She knew that the divining rod was controversial, and that her practices were vulnerable to accusations of magic. Although many miners in Germany defended the rod, an authority such as Agricola had expressed himself against it. Agricola even located the historical origins of the divining rod in the impure founts of magic.[85] Nevertheless, instead of striking out all references to 'magical' practices in her texts - what one would expect -, she strongly defended these practices as essential to mining and prospecting. She argued the need for natural magic, alchemy and 'occult knowledges', but gave these practices a natural interpretation, as was usual in traditions of natural magic.[86] She brushed accusations of

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[84] Galien, *op.cit.*, p. 9-10 : 'nous en enuoyasmes querir sur le champ pour en faire l'espreuue auec la noix de galle, & en vn moment nous trouuasmes que le beau cristal de nostre humeur liquide apparut metamorphosé dans la sombre couleur de la fleur que le mois de Mars voit naistre : Estonnez de cest euenement apres quelque entretien nous nous en retournons flattez de l'espoir d'vne meilleure attente, en intention dans les occasions d'en esprouuuer les merueilles, ce qu'ayant fait le mesme esté en plusieurs maladies auec vn succés tres heureux, nous en rapportasmes les effects à ceux principalement qui auoient besoin de leur aide, lesquels l'année suiuante cognurent dans leur breuuage nostre experience veritable. Galien starts his book with the lament that all that is to be seen on the theatre of the world is so much subject to change and that everything passes by in the course of time. 'tout ce qui se voit sur le theatre du monde est si fort sujet à la reuolution. (...) Tout s'enfuit auec le fil de nos iours' (Galien, *op.cit.*, p. 1). His medicinal waters, he suggests, will arrest this flow of time! In the rest of the book, he examines the power of these sources for the prolongation of life, also drawing on astrological and alchemical theories.

[85] See e.g. a German version of Agricola's *De Re Metallica*, that might have been used by the Beausoleils; Agricola, *Berctwerctbuch*, 1580, p. 29-31. In contrast, see Della Porta, *Criptologia*, pp. 200-1. He ridicules the enchantments or magical inscriptions that sometimes go with the use of the divining rod, but explains that the divining rod worked by purely natural means.

[86] See Bertereau, *Restitution de Pluton*, p. 415 ff., p. 418 specifically on alchemy, p. 426-8 for the divining rod. See Della Porta *op.cit.* for a similar defence of natural magic.

demonic involvement aside by accusing her critics of ignorance of the hidden properties of nature.

The secondary literature has interpreted limited and vague descriptions of de Bertereau's mining techniques as 'esotericism' and as a way to keep her techniques secret. I have argued that her writing was in part a theatrical strategy of veiling and revealing, showing her skills but withholding in part her results. De Bertereau does not use the typical tropes of esotericism: to the contrary, she promotes openness. Another reason for some of the vagueness of her explanations might have been a rhetorical strategy of exposition. De Bertereau kept referring to future publications in which she would detail her skills more fully.[87] She might have considered the two pamphlets she did publish - a self-presentation of their skills and of their results, in order to gain the favours of the General Intendant of Mines or Richelieu respectively - were not the right genre for a fuller, technical account. Finally, part of the secrecy might have been due to the difficulty of making explicit the tacit knowledge involved in her actual mining practice. Tacit knowledge is very different from secrecy in principle, but in the specific case of publishing a description of difficult mining techniques, it might be difficult for interpreters to distinguish between the two.

A similar problem might have befallen Touche Grippé. Apart from the magical associations of drawing horoscopes and using divining rods, the techniques and skills used by the Beausoleils, imported from Germany and unknown to local mining officials in France, might have come across as strange and opaque. He might have interpreted the limited explanations of their skills as esoteric behaviour that shielded illicit practices. Therefore, he felt compelled to open up their house and bring to light what they had hidden in their chests. This misunderstanding, if we accept de Bertereau's account, might have been due to incomprehension of the limited expression of the miner's tacit skills. Touche Grippé distrusted the Beausoleils, because he had never heard an acceptable account of how the divining rod was actually used, and how it might work in a natural way. De Bertereau tried to remedy this in her publications, giving a partial description and explanation of how they practiced their craft. But these publications, with their theatrical play of hiding and revealing, have cost them dearly. On the one hand, they revealed too much and made them look suspect. On the other hand, they did not seem to reveal enough to convince their opponents that they were not engaged in illicit magical practices. In fact, these publications made them even more

[87] Bertereau, *Véritable déclaration*, p. 9; Bertereau, *Restitution de Pluton*, p. 441.

vulnerable to attacks. Instead of rehabilitating the divining rod in France, they were accused of magic and imprisoned.[88]

In their publications, the Beasoleils had given their opponents a plausible and convenient pretext to get them convicted, although the real reasons for their imprisonment might have been different.[89] Saint-Cyran hinted at the corruption of officials, and he referred to a lot of money that might have been at stake.[90] De Bertereau's performance of herself as the incontestable expert, exposing mining officials as incompetent or frauds, might have aggravated their case.[91] 'It is a terrible thing in France, she wrote, that those who need to maintain justice are the first to steal and corrupt.'[92] Although she might have meant to refer only to her direct adversaries, such as Touche Grippé and maybe some other lower mining officials who obstructed their work, it might have struck Richelieu as rather offensive. Although the world might be a theatre, the Beausoleils had to suffer the real consequences of their performance.

Even in prison, the Beausoleils did not give up their life long passion. Martine de Bertereau still wanted to educate her daughter into the skills of mining and alchemy, which was 'in the family', and made sure she took good Latin lessons.[93] She also showed some of her fellow prisoners and visitors some of her expertise. She offered Saint-Cyran a copy of her book, which he forwarded to M. de Rebours as proof of her skills and to show that no illicit magic was involved. Everything was explicable by natural means. At first, a visitor, Mademoiselle Boithier, was scared when she was shown a seemingly magical transformation in a glass flask. She and Saint-Cyran were reassured, however, and they had a good laugh, when they learned from de Bertereau that it was only a demonstration of the 'végétal' of silver and mercury, which grew and regenerated in a flask. On a national scale, the imprisonment and ensuing death of this passionate and expert couple threw the French mining industry into disarray again, provoking an exodus of skilled mining experts. In 1667, Colbert remarked in despair that there was nowhere in France a skilled mining expert to be found, only pretenders.[94]

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[88] At the end of the 17th century, Pierre le Brun and Nicholas Malebranche would still attribute the success of the divining rod to demonic powers. See Pierre le Brun, *Lettres qui découvrent l'illusion des philosophes sur la baguette, et qui détruisent leurs systèmes*. Paris, 1732.

[89] Note, for instance, that the astrologer Jacques Gaffarel was protected by Richelieu, who made him his librarian, despite his suspect practices and beliefs.

[90] Saint-Cyran, *Lettres chrétiennes*, p. 764.

[91] See e.g. on their incompetence, and the habit of officials of combining lucrative offices, Bertereau, *Restitution de Pluton*, p. 351

[92] Ibid., p. 422.

[93] Saint-Cyran, *Lettres chrétiennes*, p. 755.

[94] Correspondance administrative t. III, p 802ff, cited in d'Auriac, *op.cit.*, p. 24.