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INTRODUCTION

Imagining alchemy: visual and figurative representations in premodern sciences

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Abstract

Images are ubiquitous in the alchemical arts. From diagrams of laboratory equipment, through fantastical images of mythical beasts, to elaborate metaphorical descriptors, images flourished in chymical environs. Such images were more than merely decorative; they offered vital clues which could be used to decode complex and often deliberately obscure treatises, revealing the signs – or tokens – that an alchemist should expect to encounter if their work proceeded successfully. Following recent calls to view the term 'image' in its broadest sense, this introduction argues that we must consider both visual and textual imagery in alchemical contexts, as images conjured with pigments and with words alike were essential means of understanding alchemical theories and ideas. It is argued that it is vital that the scope of 'the image' is extended to also include linguistic imagery formed through allegory and metaphor, as these were as vital a part of the broader corpus of alchemical imagery as its pictorial counterparts.

Fantastical, vivid and intriguing images are ubiquitous in the alchemical arts. Mythical creatures leap from the margins of alchemical treatises, chymical texts are littered with symbols, and illustrations of commonplace laboratory equipment become festooned with images of births, deaths and marriages. These often richly hued images are remarkable works of art in their own right, but their purpose was more than merely decorative; they were a means of understanding the complexities of the *magnum opus*, or Great Work, assisting alchemists in their comprehension of complex chymical ideas.

Alchemical texts were typically made deliberately obscure in order to ensure that chymical knowledge remained in the hands only of those considered worthy of it. Consequently, alchemical treatises were shrouded in layers of metaphor, allegory, allusion and *decknamen* (cover names) that prohibited the true meaning of the text from being widely accessible. As Jennifer Rampling has argued, this concealment formed part of the exegetical practice of 'reading alchemically', putting an alchemist's skills to the test and allowing them to prove themselves to be true philosophers in the process.[1] In such contexts, images acted as conduits of meaning, providing clues that could elucidate obscure texts and assist alchemists in bringing their work to completion. This role was remarked upon by Frank Sherwood

[1] Jennifer M. Rampling, 'Reading alchemically: guides to "philosophical" practice in early modern England', *BJHS Themes: Learning by the Book: Manuals and Handbooks in the History of Science* (2020) 5, pp. 57–74.

Taylor in 1958, who wrote, 'we may think that the alchemical picture was a truer expression of what alchemy was about than the alchemical book or recipe. The picture gave the inwardness of the process'.[2] However, Sherwood Taylor went on to argue that images, though meaningful on a human level, 'did not give any real chemical information. For that it was necessary to read the texts, comparing one with another'.[3] For Sherwood Taylor, then, images were useful in assisting comprehension, but were nevertheless merely illustrative, requiring the wider context of accompanying text to provide any practical, chymical instruction.

Barbara Obrist, conversely, argued that pictorial imagery mirrored textual metaphors relating to the accidental qualities of substances and their transformations, whilst diagrams and tables encoded in alchemical symbols provided a means of explaining the *magnum opus* that was more durable than language, subject as words are to changes and miscomprehensions not only across space and time, but also between two individuals.[4] In this way, images become stabilizers in the face of linguistic difference and transformation, offering a vital means of checking one's comprehension, whilst simultaneously depicting the 'tokens' – sensory signifiers of change – that an alchemist should expect to encounter if they perform the *magnum opus* correctly. Though text was still a necessary component, as Sherwood Taylor had noted, Obrist argued that images themselves could offer practical guidance if the information they contained about matters such as accidental qualities could be decoded appropriately, allowing them a greater degree of longevity.

Psychologist Carl Jung had made similar claims in 1953, arguing that 'what the written word could express only imperfectly, or not at all, the alchemist compressed into his images; and strange as these are, they often speak a more intelligible language'.[5] Though Jung has often been criticized for his beliefs that alchemy was a purely spiritual – in this context read psychological – pursuit, his correspondence with Obrist on this particular matter is indicative of the image's power to transcend the limitations of the written word. The image could make the transmission of knowledge more seamless, pictorially presenting a process that may easily become lost in translation if limited to the realm of words, but it could also function as a cipher key, providing clues to what a deliberately obscure alchemical text was trying to convey. By 'compressing', as Jung puts it, complex ideas into images, the alchemist provided readers of their treatises with a more durable tool for understanding the *magnum opus*.

Imagery is thus a central part of the alchemical corpus, and indeed of the methods of exegesis used to comprehend such works. So profound was the alchemical illustration that in some instances it dominated alchemical books and manuscripts, providing the primary means of comprehension. This is seen, for instance, in the marvellously wrought late medieval Ripley scrolls, where text is relegated to the place of explanatory side notes, or in printed works such as the *Mutus Liber, in quo tamen tota philosophia hermetica, figuris hieroglyphicis depingitur* (1677), where no text has been included at all. However, more commonly pictorial representations – be they images or diagrams – sat alongside written treatises, helping to elucidate the complex ideas and processes the latter conveyed. Rampling has, for instance, demonstrated the value of reading George Ripley's *Compound of Alchemy* (1471) in light of a diagram consisting of a series of concentric circles referred to as 'Ripley's wheel'

[2] Frank Sherwood Taylor, *The Alchemists: Founders of Modern Chemistry*, London: Heinemann, 1958, p. 158.

[3] Sherwood Taylor, op. cit. (2), p. 159.

[4] Barbara Obrist, 'Visualization in medieval alchemy', *International Journal for Philosophy of Chemistry* (2003) 9(2), pp. 131–70.

[5] Carl G. Jung, 'Foreword to the Swiss edition', in *The Collected Works of C.G. Jung: Revised and Expanded Complete Digital Edition* (ed. Gerhard Adler, Michael Fordham, Herbert Read, and William McGuire), Princeton, NJ: Princeton University Press, 2023, p. xi.

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designed to illustrate the planetary spheres and their relation to the terrestrial world.[6] Ute Frietsch, on the other hand, has explored the role of the visual in the theosophical–chemical works of Robert Fludd in the seventeenth century, arguing that his mixed-media approach provided a crucial opportunity for Fludd not only to depict his ideas in more widely comprehensible ways, but also to shape his identity as a natural philosopher.[7] Juliane Müller, meanwhile, has analysed the imagery within the *Mir'āt al-'ajā'ib* (The Mirror of Wonders), an illustrated Arabic treatise composed between the twelfth and sixteenth centuries, tracing the ways in which these images, crucial visual representations of the text, were reproduced across the centuries.[8] Though Müller's study demonstrates the extraordinary survival of the core images that constitute this work across forty-five surviving copies, it nevertheless also begins to problematize Obrist's claims that images were durable by revealing several instances in which pictorial changes were brought about by changes to the texts they were illustrating.

It is unsurprising that several important works have been published in recent years that suggest frameworks by which alchemical images can be studied and categorized. Rampling in 2023, for example, questioned the very concept of 'alchemical' imagery, arguing that several of the icons used in alchemical contexts, such as glass distillation vessels, would be as at home in an alchemical treatise as they would be in a goldsmithing manual or a medical text. Rampling thus proposes a typology based on the function of images, underscoring the importance of not only what they look like, but what they *do*.[9] In adopting such an approach, images that could occur in multiple disciplinary contexts could be dubbed alchemical as their particular usage in an alchemical treatise befitted chymistry specifically. Peter Forshaw's much-anticipated four-volume work on Heinrich Khunrath, known for his intricate theosophical alchemical illustrations, published between 2024 and 2025, meanwhile, contains an extensive analysis of the role that occult symbolism played in the iconography of Khunrath's work and world view.[10] Forshaw's work builds on a framework expounded in an earlier contribution to Dana Jalobeanu and Charles T. Wolfe's *Encyclopedia of Early Modern Philosophy and the Sciences* in which he argued that there is a sixfold division of alchemical imagery, reflecting the diversity of visuals available to the alchemist: illustrations of laboratory apparatus, bestiary, religious analogies, mythological analogies, geometric diagrams and glyphs.[11]

This call to view the category of 'image' in its broadest sense is one that this volume directly responds, and contributes, to, with contributions addressing not only images themselves but visual language also. Alchemical language is a mercurial beast, with several lexicographers, such as Gerhard Eis, arguing that it should be understood as its own expert language due to the prevalence of *decknamen* within alchemical texts.[12] Alongside these

[6] Jennifer M. Rampling, 'Depicting the medieval alchemical cosmos: George Ripley's *Wheel* of inferior astronomy', *Early Science and Medicine* (2013) 18(1–2), pp. 45–86.

[7] Ute Frietsch, 'Robert Fludd's visual and artisanal episteme: a case study of Fludd's interaction with his engraver, his printer–publisher, and his *Amanuenses*', *Ambix* (2002) 69(4), pp. 341–73.

[8] Juliane Müller, 'The alchemical symbols in the manuscripts of "The Mirror of Wonders" (*Mir'āt al-'ajā'ib*)', *Asiatische Studien/Etudes asiatiques* (2021) 75(2), pp. 685–722.

[9] Jennifer M. Rampling, 'Art and representation: the alchemical image in the Islamic and Christian Middle Ages', in Sébastien Moureau and Charles Burnett (eds.), *A Cultural History of Chemistry in the Middle Ages*, London: Bloomsbury, 2023, pp. 149–78.

[10] Peter J. Forshaw, *The Mage's Images: Heinrich Khunrath in His Oratory and Laboratory*, 4 vols., Leiden: Brill, 2024–5.

[11] Peter J. Forshaw, 'Alchemical images', in Dana Jalobeanu and Charles T. Wolfe (eds.), *Encyclopedia of Early Modern Philosophy and the Sciences*, Cham: Springer Nature, 2022, p. 33–41.

[12] Gerhard Eis, 'Von der Rede und dem Schweigen der Alchemisten', in R. Herllinger and K.E. Rothschuch (eds.), *Vor und nach Paracelsus: Untersuchungen über Hohenheims Traditionsverbundenheit und Nachrichten über seine Anhänger*, Stuttgart: Gustav Fischer, 1965, vol. 8, pp. 51–73.

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cover names were a veritable cornucopia of allegories, metaphors and illusions, many of which informed the rich and diverse illustrations discussed above. This visual language could be used to explain certain processes, elucidate the tokens an alchemist should expect to witness – for instance, colour changes, sounds and scents – or offer clues as to the ingredients that should be used. The green lion, for instance, typically denotes vitriol – an iron sulfate with a green hue sometimes described as copperas. The marriage of the Sun and Moon, meanwhile, represents the union of two opposing substances, one hot and dry (sulphur, or Philosophical Gold), the other cold and moist (mercury, or Philosophical Silver). Certainly, these ideas were expressed pictorially, but they were also notions conveyed in words, summoning vivid images in the mind if not on the page. We propose in this volume that this linguistic imagery, formed through allegory and metaphor, is as vital a part of the broader corpus of alchemical imagery as its pictorial counterparts, extending the scope of existing schema for categorizing alchemical imagery to account for this duality of word and image.

Use and function

Following Rampling's suggestion that the typology of alchemical imagery should revolve around its use rather than merely its contents, several of the papers in this volume consider the creation and interpretation of alchemical images, exploring not only their visual elements but also their function and meaning. Extending their scope beyond Rampling's notions of use in alchemical contexts, these articles also consider the wider cultural symbolism intertwined with chymical meanings, demonstrating that alchemical images could have local significances as much as they could have universal appeal. In particular, these articles address the interplay between this visual coding and wider religious and technical contexts. Thomas Wood's contribution centres on the alchemical dragon, exploring the place of this beast in the chymistry of early modern Germany. Though the chymical meaning of such dragons has been commented on by several scholars, Wood instead considers cultural, religious and natural-philosophical significance to unpack what their representation meant to a specifically German audience. He comments, for instance on the Reformation images that inspired alchemical dragons, reinforcing the need to consider not only what chymical meanings alchemical images are trying to convey, but also which cultural contexts they sit within.

Sergei Zotov also considers the religious contexts in which early modern German alchemy was situated, whilst simultaneously assessing its relation to mining. Zotov argues that the unique alchemical iconography created by mining theorist Martin Sturtz drew upon a combination of metallurgical and religious images, combining his own experiences of mining with influences taken from the likes of fifteenth-century artist Paul Lautensack to situate his imagery in both a technical and a Christian context.

Space

Several papers in this volume also consider the concept of space, both physical and imagined, exploring the role of visual language and symbolic interpretation. Also addressing the interplay between religious imagery and alchemy, the articles of myself and Tom Fischer explore the uses of religious spaces to decrypt alchemical works. In my own contribution, I explore the ways in which alchemical vessels were likened to religious spaces in early modern England, arguing that these visual analogies offered clues that could be used to understand the transformations alchemists were generating in their substances. At a time of religious turmoil, however, this imagery – and indeed its interpretation – was neither stable nor consistent, and thus an analysis of it can help us to understand

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how alchemists were responding and reacting to the Reformation through the figurative and metaphorical descriptors they were employing. In this way, then, the article underpins the importance of exploring alchemical texts and images within their broader sociocultural contexts, revealing the ways in which alchemical images were subject to wider change.

Whilst the imagery I draw upon conjures imagined religious spaces, Tom Fischer's article instead considers the opposite – alchemical imagery read into real religious spaces. Although, as Adrian Holme has argued, chymistry came to be gradually stripped of its rich visual culture as it was transmuted into chemistry during the Enlightenment, alchemical imagery, artists and authors continue to incorporate alchemical symbology into their works today, encouraging a continued engagement with such imagery, both visual and lexical.[13] Additionally, as Fischer argues in his contribution to this volume, interests in Western esotericism that began in the late eighteenth century but flourished in the nineteenth and beyond encouraged individuals to return to alchemical texts, images and interpretations, repopularizing figures such as seventeenth-century alchemist Esprit Gobineau de Montluisant and ensuring that alchemical symbology continued to form part of wider cultural discourses. Esprit Gobineau de Montluisant produced in the early seventeenth century a thesis in which he proposed that the sculptures adorning the main facade of Notre-Dame de Paris contained alchemical allusions, interpreting religious iconography in light of chymical theory. This thesis, Fischer argues, went on to shape discourses of the iconography of Notre-Dame de Paris; several art-historical studies, guidebooks and even works of popular fiction, such as Victor Hugo's *Hunchback of Notre-Dame*, for example, all drew on Gobineau de Montluisant's interpretations.

Georgiana Hedesan's contribution, on the other hand, uses the lens of space to critically examine the site of chymical experimentation depicted in Johannes Stradanus's painting titled *The Alchemist's Laboratory* (1570), said to be based on the laboratory of the Palazzo Vecchio which had been established by Cosimo I, first Grand Duke of Tuscany. Hedesan examines this painting in light of prevailing quintessence theory in order to determine how realistic a depiction it is, drawing on other contemporary examples to aid her analysis.

Accidental qualities

The visual imagery of alchemy, however, was not confined to illustrations, diagrams and works of art. As such, two papers in this volume consider the accidental quality of colour, noted by Obrist as one of the central focuses of alchemical imagery, exploring the ways in which alchemical colour theory influenced, and was influenced by, the broader scientific fields of medicine and optics. In the first, Elisabeth Moreau explores the symbology of colour as it existed at the crossroads of humoral medicine and chymistry in the late European Renaissance. Here, Moreau argues, visual language played a crucial role in denoting colour changes in the alchemical work, with this language being taken directly from prevailing humoral medicine prior to the advent of Paracelsianism. Visual language was thus a key interconnective thread between the two interrelated disciplines. However, the rise of Paracelsian approaches generated a reappraisal of this language, with practitioners such as Petrus Severinus, Joseph Du Chesne and Daniel Sennert instead using the language of principles and seminal powers to shape their figurative language.

In the second, Giulia Simonini explores the place of alchemical vermillion and primary red in the context of trichromacy, exploring the debates and interpretations surrounding

[13] Adrian Holme, 'Alchemy, image and text: the waning of alchemy and the decline of visual discourse in the late Renaissance', *Journal of Illustration* (2014) 1(2), pp. 189–209.

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this visual key. Alchemical texts which used the symbology of colour and colour sequences to describe the visual tokens a practitioner should expect to encounter when making vermillion – as well as clues as to the nature of the transformations they wrought – played, as Simonini demonstrates, an essential role in instigating the first identification of simple red with vermillion. This paper thus offers a crucial insight into the interplay between alchemy, craft knowledge and optics, with both visual change itself and representations of this process shaping prevailing colour theories.

Visual language

This volume considers not only the alchemical images conjured with ink and paint, however, but also those created with words, arguing that the metaphorical and allegorical images used by alchemists are as revealing of the 'inwardness' of their work as are their pictorial counterparts. A veritable menagerie of symbols, images, metaphors and allegories burst forth from the pens of alchemical authors, with tales of fantastical creatures, marriages and hermetic children, for instance, abounding in alchemical treatises. Though these ideas could form the basis of illustrations, as Wood and Zotov demonstrate, words could also stand on their own, producing images in the mind that are not expressed pictorially.

In addition to my own contribution, two further papers consider the images wrought through words, examining not only their construction and meaning but also their place in the textual genetics of alchemy and alchemical language. Sara Norja's article uses the metaphor of family life to explore textual cohesion in a fifteenth-century text described as *The Gracious Work*. In this work, Norja argues, the imagery of key events of family life, such as weddings and parenthood, knits together an otherwise fragmentary text, enabling readers to determine its meaning through their understanding of familial metaphors.

Emily Rowe's article, meanwhile, considers the place of alchemical imagery in shaping the language of early modern England. Within the context of the inkhorn controversy, which drew into question the use of excessive terminology and neologisms in Elizabethan England, Rowe examines the imagery of alchemical 'puffing', demonstrating the ways in which this linguistic imagery contributed to the controversy whilst simultaneously shaping and directing English language use.

A further article by Yusuf Tayara explores the extensive use of *rumūz* – symbols and ciphers – in the Islamicate alchemical tradition. These ideograms and logograms have sparked much interpretive debate. However, Tayara advocates for an approach which compares *rumūz* with alchemical treatises, literary works and pedagogical encyclopedias, arguing that by doing so a fresh perspective on the scholarly practices, teaching methods and thought of Mamlūk-period alchemists may be gleaned. Like several other papers in this volume, Tayara also considers the place of these symbols within the wider literary culture of the Mamlūk period, exploring their intersection with reading practices and knowledge transmission.

Conclusion

As increasing attention is paid to alchemical imagery, this volume encourages a broad approach, considering not only pictures and diagrams but also imagined images summoned through words, and colour theory. The breadth of topics covered in this volume – in terms of both geography and time, but also subject matter and form – are reflective of the multitudinous ways in which alchemical images were used to shape interpretation and

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understanding, being products of cultural contexts whilst simultaneously playing an active role in their development.

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