

Alchemy and University – Alchemie und Universität

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The history of alchemy tends not to be under-researched in the past decades. Nowadays the historiography of alchemy offers a wide range of approaches, from philological and socio-historical to ones of history of science, history of technology, and history of ideas. All the more important to stress areas of research that have hardly been studied yet. One of them is the relation between alchemy and early modern universities. This subject lacks new editions of source texts, as for example alchemical *disputationes*, as well as intensive analysis: In early modern times close but difficult relations between faculty chairs and alchemical knowledge existed that were long-time overlooked by research.

The conference held at the Herzog August Bibliothek Wolfenbüttel intended to cover these issues. 15 conference-speakers and about 30 colleagues of various academic backgrounds from all over the world gathered to exchange knowledge of the connections between alchemy and university in analyzing selected cases of the 16th to 18th centuries.

BRUCE T. MORAN (Reno) gave a keynote speech on alchemy as an instrument of creating networks of knowledge among courts, universities and intellectuals. We know about alchemical recipes and experiments of creating chemical medicines in the circle of William IV (1567-1592) and his son Maurice (1572-1632), Landgraves of Hesse-Kassel. These noblemen established an alchemical network that involved many significant Paracelsians, such as Johannes Hartmann (1568-1631) and Jacob Mosanus (1564-1616). The first professors of chymistry, Johannes Hartmann and Heinrich Petraeus (1589-1620), tried to find a compromise between their Hermetic alchemy and the Galenic medicine, thus integrating

alchemy into the medical faculty. Moran nonetheless emphasized that calling them the first professors of chemistry wouldn't be correct. As Andreas Libavius (c. 1555-1616) had rightly excoriated, the capacity of making things alone didn't make an academic discipline.

UTE FRIETSCH (Wolfenbüttel/Berlin) concentrated on the University of Helmstedt. Duke Julius of Brunswick-Lüneburg, its founder, as well as his son, Duke Henry Julius, its first rector, are good examples of powerful regents involved in alchemy and Paracelsism. Even with their support however it was complicated to establish the controversial subject officially as an academic topic. Some professors, such as Franciscus Parcovius (1560-1611) or Jacob Horst (1537-1600), built a network of alchemical contacts. Though modern chemistry in fact was established on empirical grounds, older positions of alchemy nonetheless deteriorated. Thereby Gottfried Christoph Beireis (1730-1809), who claimed to be a possessor of the philosophers' stone, became a symbol of the alleged scientific failure of Helmstedt University. Frietsch concluded that early modern university had to change as much as chymistry did in order that both could come to terms with one another and that both eventually ended with one another.

VOLKHARD WELS (Berlin) described that in the early modern period, logical knowledge was more important than empirical data, and science was based on logic as a methodology of knowledge. Thus, chemistry, before the 17th/18th century, was not considered as a true science, but as something mere supplementary. After Francis Bacon's *Novum organum scientiarum* (1620), chemistry became more important and incorporated into the university life. Therefore, we can understand the famous dispute about Paracelsus at the University of Basel as a struggle between two opposing paradigms, logical and experimental. Alchemists as Johann Kunckel (1630-1703) and Leonhard Thurneysser (1531-1596), however, modified the secret language of alchemy making secret recipes transparent and public. Despite the fact that this was largely done for commercial purposes (in order to sell their books at a better price), these

processes stimulated the alchemical knowledge and integrated it into academia.

DIDIER KAHN (Paris) discussed the flourishing alchemical tradition of French and Italian early modern universities. He presented Parisian scholars interested in alchemy: Pierre Paulmier (1568-1610), doctor of the faculty of medicine of Paris, Jean Ribit de la Rivière (1546-1605), first physician of King Henry IV, Joseph du Chesne (1546-1609) and Theodore Turquet de Mayerne (1573-1665), physicians-in-ordinary, and others. Some of them were against chemical medicines; others, however, produced them for the king's court. Even after the prohibition of Paracelsian medicine, they continued to do alchemical experiments and, moreover, addressed the theory of the *tria prima* as well as hermetic remedies in their books. Parisian Paracelsians tried to establish iatrochemistry beyond the books of Galen and Aristotle and introduced completely new theories. Some scholars, such as Étienne de Clave (1587-1645), even delivered university courses on alchemy and chemistry in Paris.

THOMAS HOFMEIER (Basel) demonstrated the connection between university and alchemy in 16th century Basel. Besides Paracelsus, who taught as a professor at the University of Basel in 1527/28, there was a big alchemical community in the city. Felix Platter (1536-1614) was elected six times rector of the university. He didn't practice alchemy and officially disapproved transmutation, but in fact provided unprecedented support to his alchemist friends. One of them, Theodor Zwinger (1533-1588), was professor of medicine in Basel, and not only practiced alchemy, but even openly taught courses on alchemy and Paracelsism. He illegally helped in obtaining doctorates to alchemist friends – with secret and private defenses of doctoral theses on alchemy. Among them were Joseph du Chesne (doctorate in 1575), Hieronymus Reusner (1581/82), Heinrich Khunrath (1588), Andreas Libavius (1588) and Michael Maier (1598).

ELISABETH MOREAU (Princeton) gave an overview of the history of the chair of chemistry in Marburg, where the tradition of new Paracelsian alchemy had flourished. The chair was led by Johannes Hartmann and

financed by Landgrave Maurice of Hesse-Kassel. Due to him and his followers unprecedented academic experience was created: a cutting-edge program dedicated to the preparation of drugs in laboratories. It resulted in a brand-new culture of alchemical therapeutics. Other scholars criticized Hartmann: Galenist physician Petrus Severinus (1542-1602) also promoted the institutionalization of alchemy and the creation of laboratories, but criticized the religious approach of Hartmann and his Paracelsian ideas. Andreas Libavius and Daniel Sennert (1572-1637) considered Paracelsian philosophy merely as a source for the preparation of chemical medicaments. The chair in Marburg went through financial troubles until its closure in 1620.

HIRO HIRAI (New York) discussed the alchemical views of Daniel Sennert, professor of medicine at the University of Wittenberg. Sennert considered alchemy and Paracelsian philosophy not as a science, but as an art of making medicines and refinement of metals. He relied on the positions of Joseph du Chesne, Petrus Severinus, Andreas Libavius, and Thomas Erastus (1524-1583). He believed that the *tria principia* were established by God through the mixing of the four elements. Johannes Freitag (1581-1641), professor of medicine in Groningen, argued against Sennert in favor of Aristotelians and Galenists. In spite of Sennert's distance to Paracelsus in language and philosophy, they considered him as a follower and called him heretic.

KASPAR VON GREYERZ (Basel) focused on 17th century English translations of Sennert's works. In 1637, the year of his death, the first translation in English was published, and in 1662, Sennert's fundamental works on practical medicine were translated and published. These books were popular among physicians who did not know Latin, but were well educated and partly interested in hermetic knowledge.

GEORGIANA HEDESAN (Oxford) placed the alchemical philosophy of Jan Baptist van Helmont (1580-1644) in the context of university teaching in Leuven. Cornelius Gemma (1535-1577), professor of medicine in Leuven, formed van Helmont's view on Paracelsus. As a Neoplatonist and follower of Severinus,

Gemma believed that Paracelsus had revived the true medicine of Hippocrates. In the Jesuit College in Leuven, van Helmont attended lectures of the prominent theologian Martin Delrio (1551-1608) who discussed the topics of magic and witches. For Delrio, magic was demonic, but alchemy was natural and therefore not forbidden. Van Helmont tried to visit every alchemical experiment that was held in the city and studied Paracelsism from every available source he could find.

ANETTE MARQUARDT and BETTINA WAHRIG (both Braunschweig) described the Schneider Collection that was founded by Wolfgang Schneider (1912-2007), chemist, pharmacist and historian at the Technical University of Braunschweig. The collection was partly dedicated to chemicals that were produced by alchemical methods and used in medical alchemy and shows some materials mined at the local mining industry of Rammelsberg, also used as medicinals, such as sulphur, vitriol, lapis calaminaris, green, blue and white atramentum, tutia, nihil album (zinc oxide), etc. Metallic treatments were actively used by physicians before the 16th century and – with renewed vigor – after Paracelsus. Schneider's most important work *Encyclopedia on History of Medicinal Substances* in seven volumes is still unknown outside Germany, as well as his *History of Pharmaceutical Chemistry*.

LAWRENCE M. PRINCIPE (Baltimore) focused on the 17th century chair of chymistry at the University of Jena. Zacharias Brendel (1592-1638), professor in Jena, taught regular courses on chemistry and published a book on this topic. For him, chymistry was the most holy art, and he wanted to use it to cure people. His book on chymistry was published for the second time by Werner Rolfinck (1599-1673), professor and director of chemical exercises in Jena. He wanted to correct the book of his teacher and added many of his own ideas. Rolfinck was rather a scholastic researcher and wrote chiefly about philological or theoretical sides of alchemy and chymistry. Georg Wedel (1645-1721), professor of medicine in Jena, also discussed the importance of chymistry for medicine and gave an overview of chemical knowledge. This continuous tradition of chymistry at the Univer-

sity of Jena gives us a wonderful example of a successful establishment of this science in the academic environment.

MARIEKE HENDRIKSEN (Utrecht) presented the chemistry of Herman Boerhaave (1668-1738) at the University of Leiden. Boerhaave didn't deny alchemical transmutation, but was against alchemical interpretations of the Bible or alchemical panaceas such as the elixir of immortality. He considered that the true meaning of alchemy consisted in changes of natural bodies. He and his circle opposed to the popular image of the alchemist as a goldmaker, magician and crook. That is why Boerhaave advised his Dutch students to keep an oven at home for making real experiments, especially concerning the production of medicaments.

KEVIN CHANG (Taipei) discussed why Georg Ernst Stahl (1659-1734), a prominent German physician and chemist, changed his views from alchemical to anti- or non-alchemical. Stahl studied at the University of Jena, wrote several books on transmutation alchemy and obtained a good position as royal physician at the Prussian court. There he witnessed the sorrowful fate of some goldmakers. Johann Friedrich Böttger (1682-1719) was arrested after having carried out a fake transmutation in Berlin. Domenico Caetano (1670-1709) did fake transmutations in front of the king, fled several times, but finally was caught and executed in Berlin in 1709. In consequence of these events, Stahl changed his position: In his book *De metallorum* (1703) he claimed that alchemy was too risky for rulers. In 1726, he stigmatized alchemy as a completely false science. Thus, Stahl's career at court was more important for him than supporting alchemy.

CHRISTOPHER HALM (Regensburg) spoke about professor Johann Wallerius (1709-1785) of Uppsala University and his impact on improvement of agriculture with partly alchemical means. Throughout his career, Wallerius published 86 doctoral theses, and some of them were connected with alchemy. Agriculture was a very important science in the age of global wars, because a huge army demanded an appropriate amount of food supplies. The importance of fertilizers grew, but no one knew exactly

why the soil was fertile. Wallerius discovered some specific substance that was allegedly responsible for soil fertility.

The conference offered the opportunity to researchers from different countries and of different approaches to meet and to take a fresh look at their subject. A vivid exchange of knowledge on alchemy and academia between distinguished researchers and young students, as well as between historians and chemists, made it possible to bridge significant gaps in the history of alchemy and the history of science. This international collaboration has encouraged further work and publications on the topic of alchemy and university.

Conference overview:

Session 1

Bruce T. Moran (Reno): Alchemy and the German Schools in the Early Modern Era

Session 2

Ute Frietsch (Wolfenbüttel/Berlin): A Desideratum of Research: The Relationship between Alchemy and University

Volkhard Wels (Berlin): Formatting Chemical Knowledge. Some Introductory Remarks

Didier Kahn (Paris): The First Public/Private Courses of Chemistry in Paris up to William Davisson

Thomas Hofmeier (Basel): Alchemy at the University of Basel in Sixteenth Century

Session 3

Elisabeth Moreau (Princeton): Physiology and the University of Marburg

Hiro Hirai (New York): Daniel Sennert and Theological Debates at Wittenberg University

Kaspar von Greyerz (Basel): Seventeen-Century English Translations of Daniel Sennert's Works

Georgiana Hedesan (Oxford): The Alchemical Philosophy of Jan Baptist Van Helmont in the Context of University Teaching in Leuven (Louvain)

Anette Marquardt and Bettina Wahrig (both Braunschweig): The Schneider Collection

Session 4

Lawrence M. Principe (Baltimore): The Changing Visions of Chemistry at Seventeenth-Century Jena: Brendel, Rolfinck, Wedel and Others

Marieke Hendriksen (Utrecht): Boerhaave and Alchemy at Leiden University

Session 5

Kevin Chang (Taipei): From University to Court: The Shift of Stahl's Positions on Alchemy

Christopher Halm (Regensburg): Johan Gottschalk Wallerius and the Conception of Agricultural Alchemy at Uppsala University

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