

## Renaissance Alchemy

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### Part II - The Roots of Chemistry

Alchemy quickly became one of the medieval age's growth industries, with everyone from popes and kings to peasants practicing the art and trying to change base metal into gold. During this quest for riches, alchemy became notorious for attracting tricksters and fraudsters, the Acai berry salespeople of their day, and authors such as Chaucer and Dante were happy to reinforce this common stereotype.

Renaissance Alchemy - The Roots of Chemistry Part I



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## Renaissance Alchemy – Tricksters, Hucksters and Charlatans

Many so-called alchemists claimed that they had produced gold from base metals, as a means to attract sponsorship or court favor, but most used magician's tricks and misdirection to switch base metals with gold. Many alchemists claiming to be able to produce gold were imprisoned, tortured, or executed when they failed to deliver, and some were punished for witchcraft and devil worshipping, usually in extremely gruesome ways. The philosopher's stone

[1] was not the only pursuit of the alchemist, and many scholars devoted themselves to

medicine, believing that every ailment had a chemical cure. Sadly, many of these 'cures' probably killed more people than the disease itself, further reinforcing the idea of alchemists as fraudsters.

## Alchemy, Paracelsus and the Ecstasy of Gold



Paracelsus (Public Domain)

One of the most famous alchemists of all time, the scholar who defined the discipline throughout the Renaissance and displayed the good and bad points, was Paracelsus (1498–1541). He was a colorful character; a flawed genius who began the process of developing alchemy into the true science of chemistry but also displayed some of the traits of fraud and trickery. Paracelsus was the son of a physician, so it is likely that this early exposure to medical science influenced his obsession with alchemy, although he also became fixated upon the Philosopher's Stone. He travelled extensively during his quest for knowledge and worked as a military surgeon, but he also sold dubious medical remedies and told fortunes, shamelessly stating that he was imbued with magical power. Paracelsus studied metallurgy and used metals for healing purposes, his cures raising his profile and bringing him to the attention of nobility who showered him with riches; eventually, he was appointed as the Professor of Medicine and Natural Philosophy in Basel. Sadly, for Paracelsus, he gained a reputation as a charlatan and quack, so his reputation took a dive and, unable to give up the carefree lifestyle, he died at the age of 48, probably from alcoholism. It would be easy to write the man off as a fraudster, but he is rightly lauded as a founder of chemistry, an observation based around some subtle observations and ideas lying behind the larger than life image. Paracelsus' discoveries certainly contributed to improved medical care; for example, he found that the compounds in opium dissolved in alcohol very easily, so he created an opium tincture including powdered pearl, amber, musk and nutmeg, a substance called laudanum. This relieved pain for countless patients and a version is still used today for pain relief and for dealing with infant heroin withdrawal for babies born to heroin-addicted mothers. He also railed against the medial paradigm based around the works of Galen, entreating alchemists and physicians to look at alternatives and try cures and ways of attacking diseases. Of course, he still promoted some inaccuracies, such as believing that gold was the key to curing many diseases, but it was a new mindset that defined his approach and would influence later alchemists. Paracelsus also looked at the bond between body and mind, firmly believing that

a healthy mind could help to maintain a healthy body and vice versa, a factor that modern medicine is starting to rediscover, although Eastern medical practitioners have practiced this for centuries. Paracelsus made some observations about how the digestive system works, proposing that food was somehow transformed into the organs of the body, although his answer was that a spirit inhabited the stomach and ensured the correct balance of food!

## The Successors of Paracelsus: From Protoscience to Science

However, his followers took this idea a step further and saw spirits in everything, from trees to rivers that kept and maintained the balance of nature. This was yet another example of where alchemists came very close to the truth with astute observations, but slipped into the occult and spirituality, a charge that dogged the discipline for centuries. Alchemists correctly observed phenomena but their proposals as to what lay behind these proposals were wide of the mark. This idea of seeking balance sadly led them down incorrect paths and they tried to treat ailments by administering metals, including mercury and lead, making the cure worse than the disease. Many alchemists proposed a drinkable gold, aurum potable, as the universal cure, and many rich and influential patrons began to sponsor alchemists actively in their quest for improved medicines throughout the late 16<sup>th</sup> and early 17<sup>th</sup> centuries. Medicine and pharmacology were born at this time and this development of alchemy threw aside the occult aspect, which was left to a few scholars at the fringes of the discipline. Perhaps, this was a sign of the imminent removal of the divine from science as Europe moved towards a scientific and industrial revolution. Alchemy was no longer a quick way to become rich but a discipline that tried to find out how the universe worked, as much physics, natural science, or geology. The work of Paracelsus was, possibly, the point at which alchemy began to take a different direction and move towards science, a process personified by the great Robert Boyle who can, quite legitimately, lay claim to being the first true chemist. Of course, the legacy of the alchemists also influenced medicine, although it might be fairer to say that it was a type of proto-pharmacology, shifting the administration of cures away from herbalism and mysticism, religion, and theology. This split would not be complete until the great philosopher scientists of the Enlightenment.

## The Contribution of Early Renaissance Alchemists

Initially, Renaissance alchemists recycled the knowledge of the Greeks and the Islamic scholars, using the same idea of four elements and chasing the Philosopher's Stone and the Elixir of Life. These pursuits saw alchemists attract a great deal of funding from the nobility, explaining the proliferation of 'Hedge Alchemists,' amateurs trying to make their fortune quickly. Alchemy was placed alongside mathematics, philosophy, medicine and astronomy as a noble pursuit, worthy of the attentions of the finest minds, with notaries such as Newton and John Dee dabbling in the art. We tend to look at alchemy as a non-science, but Renaissance scholars did not have any basis to believe otherwise and, without the lens of history, happily combined alchemy with other sciences. This idea of alchemy and the four elements fitted in with the idea of the universe operating upon the principles of perfection, reflecting the theological and ontological foundation of most scientific work during the Renaissance. Certainly, despite the crossing of boundaries and the blending of alchemy with 'Magick,' it was largely empirical and alchemists rigorously tested their ideas, meticulously documenting their findings and using a proto-hypothetico-deductive method [2]. They generated a hypothesis [3]

and tested it; if it did not work, they refined their ideas and retested, a process intimately familiar to most modern scientists. This practice also reflects the shift towards empiricism; while the Renaissance scientists harked back to the age of the Greeks and looked to replicate much of their work, they moved away from uncovering knowledge for the sake of knowledge. While trying to understand the nature of creation was still important, the alchemists were mainly driven by practicality, seeking knowledge that was useful and practical. Self-interest certainly played its part, as did the chase for riches, but it also captured the underlying philosophical changes in Renaissance Europe, where questioning the established order became common as part of a theological and metaphysical assault on the church and dogmatic thought. Certainly, the alchemists embraced Ancient Greek philosophy and most adhered to the principles of Aristotle, tying together the real world and the divine in an attempt to develop a holistic view of the universe. This adherence to Aristotle's empiricism probably contributed to the development of alchemy alongside the occult, because Aristotle strongly believed in an astrological basis to the laws of the universe. He also believed that everything, organic and inorganic, strove for perfection, such as a seed striving to become a plant, or base metals striving to become gold, a process that guided Renaissance alchemists, albeit down a dead end. However, the work of Paracelsus and his successors saw a subtle shift that would see alchemy influence metallurgy, medicine, chemistry and physics, ultimately forming the basis of the Industrial Revolution.

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#### **Links**

[1] <https://explorable.com/alchemy>

[2] <https://explorable.com/hypothetico-deductive-method>

[3] <https://explorable.com/research-hypothesis>