Scientists put a date on world's "strangest" book

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Courtesy of the University of Arizona
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As enthusiasts across the world pore over the Voynich manuscript—penned by an unknown author in an utterly baffling language—researchers say they've solved one of its key mysteries.

When was it made?

Researchers led by University of Arizona physicist Greg Hodgins have determined that the parchment pages date to the early 1400s, making the book a century older than scholars had previously thought.

Pages from the Voynich Manuscript. (Courtesy Beinecke Rare Book and Manuscript Library, Yale U.)

Called the world's most mysterious manuscript, the tome is packed with drawings and writings nobody has been able to decipher. It makes the "DaVinci Code" look downright bland: rows of text scrawled on old parchment, flowing around intricate drawings of plants, astronomical charts and human figures bathing in – perhaps – a fountain of youth.

Alien characters, some resembling Latin letters, others unlike anything used in any known language, are arranged into what seem like words and sentences, but their meaning stubbornly defies the most seasoned experts.

Hodgins, whose team used a technique called radiocarbon dating to estimate the age, is fascinated. "Is it a code, a cipher of some kind? People are doing statistical analysis of letter use and word use – the tools that have been used for code breaking. But they still haven't figured it out."

Now owned by Yale University's Beinecke Rare Book and Manuscript Library, the manuscript was discovered in the Villa Mondragone near Rome in 1912 by antique book dealer Wilfrid Voynich while sifting through a chest of books being sold by the Jesuit religious order.

Voynich dedicated his remaining 18 years of life to trying to deciper the book, in vain.

In 2009, in the basement underneath the University of Arizona Physics and Atmospheric Sciences building, Hodgins and a crew of scientists, engineers and technicians stared at a computer screen displaying graphs and lines. The humming sound of machinery filled the room. This location is the heart of a massive instrument capable of sniffing out traces of the element carbon-14 in objects, giving scientists clues about the age of the samples.

Carbon-14 is a rare, radioactive form of carbon. In nature, only one in a trillion carbon atoms are Carbon-14, the rest being the more common carbon-12. However, animals accumulate an appreciable amount of carbon-14 in their tissues throughout life, obtaining it from plants that in turn get it from the air. When a plant or animal dies, the level of carbon-14 in it drops at a predictable rate, and thus can be used to calculate the amount of time that has passed since death.

What's true of plants and animals is also true of products made from them. Because the Voynich Manuscript's pages are made from animal skin, they can be radiocarbon-dated. To carry out the process, Hodgins and colleagues extracted tiny samples of carbon from the book and placed them into an "ion source," part of an instrument called a mass spectrometer. "This causes the atoms in the sample to be ionized… meaning they now have an electric charge and can be propelled by electric and magnetic fields," he said.

Ejected from the ion source, the carbon ions are formed into a beam that races through the instrument at a fraction of the speed of light. Focusing the beam with magnetic lenses and filters, the mass spectrometer then splits it up into several beams, each containing only one variant, or isotope, of carbon. "Carbon-14 is heavier than the other carbon isotopes," Hodgins said. "This way, we can single out this isotope and determine how much of it is present in the sample. From that, we calculate its age."

To get the sample from the manuscript, Hodgins traveled to Yale. "I sat down with the Voynich manuscript on a desk in front of me, and delicately dissected a piece of parchment from the edge of a page with a scalpel," Hodgins said. Next, the sample

was burnt, leaving behind only its carbon content.

“In radiocarbon dating, there is this whole system of many people working at it,” he said. “It takes many skills to produce a date. From start to finish, there is archaeological expertise; there is biochemical and chemical expertise; we need physicists, engineers and statisticians.” The team was able to push back the presumed age of the Voynich manuscript by 100 years, a discovery that they said killed some of the previously held hypotheses about its origins.

Elsewhere, experts analyzed the inks and paints that makes up the manuscript’s strange writings and images. “It would be great if we could directly radiocarbon date the inks, but it is actually really difficult to do, “ Hodgins said.

The meaning of the manuscript remains opaque. Is it a fountain of secret wisdom? A monk’s old practical joke? “The text shows strange characteristics like repetitive word use or the exchange of one letter in a sequence,” Hodgins said. “Oddities like that make it really hard to understand the meaning.”

“There are types of ciphers that embed meaning within gibberish. So it is possible that most of it does mean nothing. There is an old cipher method where you have a sheet of paper with strategically placed holes in it. And when those holes are laid on top of the writing, you read the letters in those holes.”

“Who knows what’s being written about in this manuscript, but it appears to be dealing with a range of topics that might relate to alchemy,” a medieval practice incorporating elements of science and mysticism. “Secrecy is sometimes associated with alchemy,and so it would be consistent with that tradition if the knowledge contained in the book was encoded. What we have are the drawings. Just look at those drawings: Are they botanical? Are they marine organisms? Are they astrological? Nobody knows.”