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BlueSci was established in 2004 to provide a student forum for science communication. As the longest running science magazine in Cambridge, *BlueSci* publishes the best science writing from across the University each term. We combine high quality writing with stunning images to provide fascinating yet accessible science to everyone. But *BlueSci* does not stop there. At *www.bluesci.org*, we have extra articles, regular news stories, podcasts and science films to inform and entertain between print issues. Produced entirely by members of the University, the diversity of expertise and talent combine to produce a unique science experience.

SARAH BINNEY

The Wunderkammer: The Dawn of Curiosity in Europe

Hannah Wayment-Steele explores the roots of scientific inquiry

In the late 16th and early 17th century, as European society encountered more of the world through trade and exploration, Europe's nobility, scholars and physicians began to collect the new, strange items that arrived: fossils, giant polyhedral crystals, stuffed birds of paradise, unicorn horns, cats with wings, and more. All these items would be crammed together into one display, uncategorised: each item as astounding and irreducibly complex as the next and intended to dazzle the onlooker. In addition to natural items, collectors would include works of art crafted from nature, such as ivory carvings or statues made from coral. These collections were displayed in cabinets or rooms, such as the Hainhofer cabinet or Ferrante Imperato's famous collection. They became hugely popular with members of the upper class, who travelled far and wide to view them. The collections were known by several names, including the 'Wunderkammer', the 'Cabinet of Curiosities', or the 'Cabinet of the World'.

The age of the Wunderkammer is the predawn before the Enlightenment. Although this practice of disordered collection may seem naïve and unsystematic from today's view, it formed the basis for many aspects of modern science. The Wunderkammer was European society's first glimpse into the wonder and endless variety of nature. It irrevocably aroused our curiosity about the natural world and helped shape a society that values scientific inquiry. Indeed, many aspects of the Wunderkammer have parallels with science today.

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Engraving from Ferrante Imperato's Dell'Historia Naturale (Naples 1599), showing the juxtaposition of many disparate objects typical for a Wunderkammer

In these times, due to the lack of scientific understanding, schemes used for categorising and deriving meaning in the objects differed from those used in modern museums. Displays were sometimes arranged to suggest metaphors beyond the objects themselves, often without scientific basis. For example, the Wunderkammer of Ferrante Imperato, an apothecary in Naples, had alternating rows of fish and starfish on the ceiling. Imperato intended to use the starfish to symbolise celestial bodies and to make reference to the idea that there are as many fish in the sea as stars in the sky.

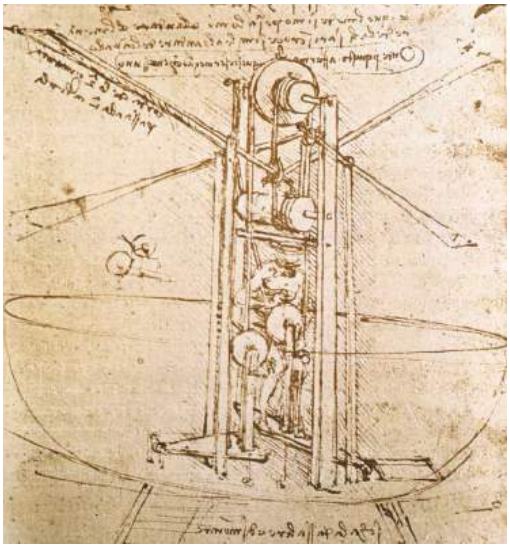
Often aesthetics instead of scientific principles were primarily used to arrange the items. For example, one Wunderkammer had a drawer for 'bones', however, this included everything from an ivory sculpture to the arm bone of an ancestor. A painting by Isidore Leroy de Barde depicts a collection of shells, and although closer to a modern classification scheme, the collection is still arranged primarily on looks: from 'branched items' (coral, driftwood, and a large anemone) to shells categorised only by size. We eventually managed to better understand and categorise shells, but we still have modern-day Wunderkammern, packed with natural objects whose purpose we don't understand. For example, the 3,570 proteins classified as 'unknown function' in the Protein Data Bank. With time and better understanding, these will hopefully become clear to us too.

In addition to categorisation, the Wunderkammer also helped kindle the Western world's aesthetic appreciation of the natural world by blurring the distinction between art and nature. Previously, a

A Wunderkammer on display in the Naturkundemuseum Berlin, dated to the early 18th century

boundary between art and nature had been set by Aristotle. But these new objects challenged this thinking - who was to tell if an intricate piece of coral was sculptured by nature or man? It had previously been thought that nature should be functional and practical, but there were now emerging colourful birds and ornate seashells that at the time appeared to serve no fathomable purpose. They reasoned their function was purely aesthetic and thus artists began using natural objects in their artwork. The old view that random natural variety was a deviation from the true order of things changed as natural variations were seen as artistic and potential sources of inspiration. Since that shift, nature has continually inspired us, not only in art but in technologies as well: from Da Vinci's flying machines, imitating bird wings, to superhydrophobic surfaces that imitate gingko leaves.

In our modern view of science, wonder and curiosity are natural partners, but these two concepts were not linked prior to the invention of the Wunderkammer. Before, curiosity had been a sin in the view of the Catholic Church. Wonder at the natural world was permissible, but to question it and be curious about it was an extension of lust – it was curiosity, after all, that expelled Adam and Eve from Eden. However, the influx of new inexplicable objects created insatiable curiosity amongst the upper class. The new objects seen in the Wunderkammer upended previously held views on the natural world. Was coral a vegetable or mineral? What mysterious process could create the imprint of a fish in stone and leave it on a mountainside? Curiosity thus had to be re-fashioned to be harmless: in 1620, Francis Bacon wrote that God regarded the investigation of nature as an "innocent and kindly sport of children playing at hide-and-seek". As scientific inquiry took off in the Enlightenment, curiosity was regarded as noble and essential to science as shown in a 1751 quotation from the philosopher Samuel Johnson: "Curiosity is, in great and generous minds, the first passion and the last." A look back at the Wunderkammer gives hope that our capacity for curiosity and wonder will enable us to continue solving our mysteries.



Leonardo Da Vinci drew inspiration from nature for the design of his famous flying machines

Hannah Wayment-Steele is an MPhil student in the Department of Chemistry.

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