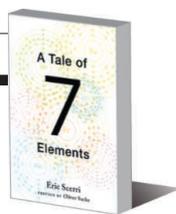


A Tale of Seven Elements

Eric Scerri

Oxford University Press,
2013. 304 pp.



fice of science? In *A Tale of Seven Elements*, philosopher of science Eric Scerri provides an expert perspective on the history of the periodic table, focusing principally on the last seven naturally occurring elements to be discovered.

Scerri opens the book by setting the discoveries in their historical context, the era of active science between the first and second world wars. While noting the difficulties faced by women entering the physical sciences, he points out that several of the seven elements (protactinium, hafnium, rhenium, technetium, francium, astatine, and promethium) were discovered by women, whose key contributions had often been overlooked.

The author's concise and meticulous account blends philosophy, history, and science, presenting the deep, although not immediately obvious, connections among them. He provides an informative history of the classification of chemical elements, from Dalton's atomic weights to Mendeleev's periodic table. In addition to introducing concepts such as radioactivity and isotopes, Scerri expounds on the far-reaching consequences of quantum theory for chemistry (including Bohr's deduction of atomic structure).

As Scerri notes, his seven focal elements are all "rather exotic." Many are radioactive, and they are generally of low abundance. The book's overarching theme highlights how the discoveries shaped history and how historical and social pressures shaped them. This is exemplified by the priority dispute over hafnium, in which wartime alliances stifled the acceptance of a correct claim. Scerri quotes a British journal editor's response to an article submitted in the early 1920s: "We adhere to the original word celtium given to it by Urbain as a representative of the great French nation which was loyal to us throughout the war." Scerri also notes the impact of competition for personal prestige and resources, aspects that are often overlooked in textbook accounts of the discoveries of elements.

The holistic accounts largely succeed at guiding the reader through the complex connections and numerous priority claimants, although in places the narrative can be difficult to follow. Scerri intended the book for "readers interested in digging a little deeper into the science of the elements and the periodic table." *A Tale of Seven Elements* proves his aim true.

10.1126/science.1255968

EXTINCTION

Our enduring legacy?

By Kendra Smyth

A thought-provoking work of scientific journalism, Elizabeth Kolbert's *The Sixth Extinction* tackles the sobering reality of the large-scale loss of biodiversity happening before our eyes. Although the fossil record documents five previous great extinctions, this time the driving catalyst is neither asteroid nor volcanic eruption but a single inhabitant of Earth: us. For millennia, humans have succeeded extravagantly to the detri-

as a concept. In the mid-18th century, the prevailing view was that species were immutable, decreed by God. When mysterious bones were unearthed in present-day Kentucky, scientists rationalized that they were remnants of elephants or hippos that had wandered astray. As Thomas Jefferson put it, "Such is the economy of nature that no instance can be produced of her having ... formed any link in her great work so weak as to be broken." Then in 1796 the French naturalist Georges Cuvier argued that life had a history, one "marked by loss and punctuated by events too terrible for human imagining." The concept of extinction was born, although not readily accepted for decades.

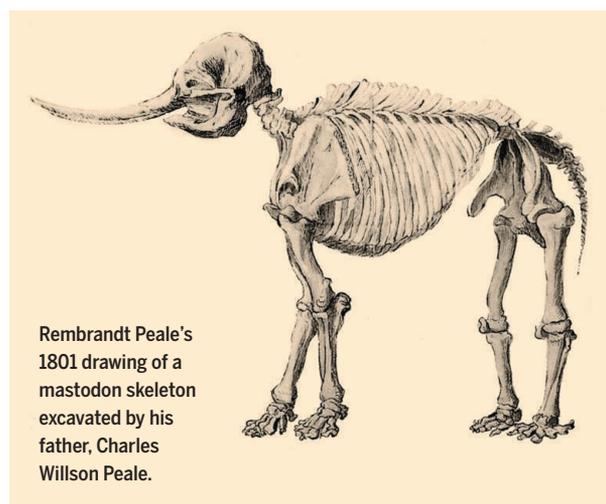
Today, we struggle to grasp a different concept of extinction: humans are responsible for transforming the biosphere. Despite desperate searches for alternative explanations, the evidence Kolbert presents is undeniable: at warp speed, humans have altered the composition of the atmosphere, acidified the oceans, hunted and fished large species to their brink, and destroyed ecosystems. "Right now," she writes, "... we are deciding, without quite meaning to, which evolutionary pathways will remain open and which will forever be closed. No other creature has ever managed this, and it will, unfortunately,

be our most enduring legacy." The implications are haunting.

In pushing other species to extinction, what happens to us? Ecologist Paul Ehrlich warns "humanity is busy sawing off the limb on which it perches." Kolbert, halfheartedly optimistic, observes that we should not underestimate human ingenuity. Nonetheless, she gives scant reference to possible solutions, such as scattering sulfates or water droplets into the atmosphere to reflect sunlight or brighten clouds. Although her attempt to conclude on an upbeat note falls flat, it is not wholly misguided. Instead, we are left with an appreciation of the diversity and complexity of life, a desire to transition to a more sustainable world, and a reminder that every ending is a chance for a new beginning. The sixth extinction might be the end of the world we know, but it will not be the end of life.

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Rembrandt Peale's 1801 drawing of a mastodon skeleton excavated by his father, Charles Willson Peale.

ment of other species. "Though it might be nice to imagine there once was a time when man lived in harmony with nature," Kolbert notes, "it's not clear that he ever really did."

Through masterful field reporting, Kolbert transforms a collection of daunting facts into an entertaining and enlightening journey of scientific discovery, accessible to scientists and laymen alike. She takes readers along as she visits over a dozen scientists at field stations and laboratories around the world: herpetologists in Panama, marine biologists in Australia, botanists in the Andes, paleontologists in New Jersey, and anthropologists in Germany. Intermixed with these scientific reports and personal narratives is an intriguing historical account of the origin of extinction

The Sixth Extinction An Unnatural History

Elizabeth Kolbert

Henry Holt, 2014. 335 pp.

