

faith, Maxwell sought to reconcile the idea of free will with “a universe heading inexorably towards an inert, lifeless state.” In 1867, he sketched a theory in which unseen devices, later called “demons,” would decrease the overall entropy of the universe.

The book also captures how fantastical concepts molded a path for science to take form. For instance, in chapter 2, Ball introduces the occult forces known as vortices and vectors, which would later become known as electricity and magnetism. This blurred line between magic and science continued to exist even into the early 1900s, when Guglielmo Marconi and Thomas Edison “professed to be investigating devices that would make electronic contact with the dead” via radio technology. Ball presents such a captivating fusion of fiction and nonfiction that the reader must analyze the transcendental nature of science, religion, and magic and is left with a sense of uncertainty about the fabric of today’s science.

Invisible exemplifies Ball’s compelling craft of narrative, providing a seamless assembly of historical, cultural, and scientific tales, thus synthesizing a compendium of knowledge about invisibility. Despite Plato’s warnings, it seems nothing will prevent humans from pursuing the feat of the unseen.

10.1126/science.aab2187

The Last Unicorn

Reviewed by **David W. Redding**

An expedition to find a live unicorn would certainly seem foolhardy. Fortunately, in his latest book, *The Last Unicorn: A Search for One of Earth’s Rarest Creatures*, William deBuys attempts a slightly more achievable aim: accompanying conservation biologist William Robichaud to the Annamite Mountains on the Laos-Vietnam border in search of the elusive saola. This recently discovered species is most straightforwardly described as an ox that looks like an oryx, or an antelope-like cow. It is a ghostlike animal with two curving, sabre-like horns and a natural history that we know practically nothing about.

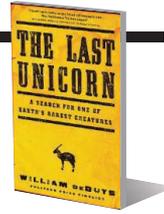
The book reads like a gripping travelogue, but it also operates at a deeper level, leading us to question how we choose which species to conserve, how growing human populations can fit into a fracturing landscape, and how to value nature in the light of widespread poverty. A desire to conserve the natural world is one shared by many, but the underlying reasons for such

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The Last Unicorn A Search for One of Earth’s Rarest Creatures

William deBuys

Little, Brown, 2015. 363 pp.



a perspective stubbornly resist attempts to be rationalized: Some see nature as providing irreplaceable services, others see it as housing as-yet-undiscovered biological innovations, and still others believe that the aesthetics of the natural world alone endow it with great value. Although deBuys addresses these arguments directly in his writing, it is telling that we learn so much about how humans interact with nature during the incidental moments of despair, awe, and hope that bubble up throughout the expedition’s narrative.

So why look to protect the saola? It is certainly in need, as it is critically threatened by both hunting and the loss of its natural habitat. Another potential reason is that it has, over time, become isolated from its closest relatives (bison and buffalo) and represents a long, unique evolutionary path—a rare event in nature reserved for the likes of the platypus, the horseshoe crab, and the coelacanth. We know little about evolutionarily isolated species and their specific roles within the ecosystem, and until we know more, their conservation would seem prudent.

But moving from a desire to protect toward effective action is often fraught with problems. Indeed, this book offers valuable insights into the wholly compromised and often chaotic world of field surveying and the reality of conservation in a remote en-



“How do you save a ghost if you are not sure it exists?” asks William deBuys

vironment. The central chapters are replete with lost trails, diminishing rations, and the increasingly conflicting needs and expectations of the crew and local communities.

When describing those living at the coalface of biodiversity loss in the tropics, there is a temptation for condescension: pitting enlightened westerners against the benighted locals. De Buys does not fall into

this trap, remaining both pragmatic about the livelihoods of indigenous populations and horrified by the unbridled extraction of the forest’s rich biological resources. He soberly notes that areas such as the Annamite Mountains “have so much further to fall” in terms of biodiversity that could be lost than, for example, the temperate forests of his childhood in the United States.

Part action adventure, part an exploration of loss, this book is a journey for both the heart and the mind.

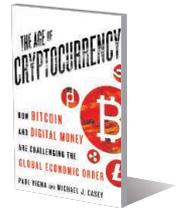
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The Age of Cryptocurrency How Bitcoin and Digital Money Are Challenging the Global Economic Order

Paul Vigna and

Michael J. Casey

St. Martin’s, 2015. 367 pp.



The Age of Cryptocurrency

Reviewed by **Marie Vasek**

Given the narrow lens through which the online payment system known as Bitcoin is typically presented, casual observers could be forgiven for mistaking it for a white, libertarian cult revolving around the idol Satoshi Nakamoto. Much of the media coverage of the digital currency phenomenon can be summarized as either an elaborate musing on the real-life identity of Nakamoto or something that reads like a multilevel marketing scheme.

The Age of Cryptocurrency is a welcome break from this tradition. The first part of the book discusses how Bitcoin works technically, as well as some history behind the centralized digital currencies that predated it. It begins with a tale about Afghani women, empowered through Bitcoin to earn and save their own money. (Although traditional banking systems in Afghanistan do not serve women, using Bitcoin only requires one to have computer access.) The book goes on to tell other stories about the Bitcoin user base, taking the reader from a hacker cooperative in San Francisco, California, that is building the next generation of Bitcoin applications to a money changer in Barbados who is using Bitcoin to avoid currency controls. The

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Oliver Sacks, 1956

general theme stays the same despite the situation: Bitcoin subverts the mainstream banking system, affording the user more control over his or her money.

Technical details are interwoven with stories about the people behind the enabling technology. We are introduced to the “cypherpunks,” a mailing list of cryptography-inclined people who write code to incite social change, of which Nakamoto is a part. Here, the authors cannot resist musing about the identity of the mysterious, pseudonymous Bitcoin creator. Many of the important people involved in this movement are subjected to an analysis of why they may or may not be Nakamoto, and we are left to wonder whether he or she is an influential cryptographer, a designer of a centralized digital currency, or perhaps even a group of individuals from these communities.

Although most of the book is dedicated to the (arguably) good things that Bitcoin enables, the authors also delve into the troubles facing the digital currency movement. We mourn the demise of the first major Bitcoin exchange, Mt. Gox, which was launched in July 2010 in Tokyo and handled 70% of all Bitcoin trading by 2013. After being hacked numerous times, it finally collapsed in early 2014. We also learn about a mysterious entrepreneur known by the pseudonym “Dread Pirate Roberts” and the online marketplace he created, known as the Silk Road. Shut down in late 2013, the Silk Road exclusively accepted Bitcoin (and predominantly sold drugs). The authors cite it as a key player in the introduction of Bitcoin to the masses. In

October 2013, Roberts was identified as Ross Ulbricht, a Texas native living in San Francisco. On 29 May 2015, Ulbricht was sentenced to life in prison for his role in operating the Silk Road.

The book ends on an optimistic note. We are left with a vision of the future as a peer-to-peer world, where the ideologies of Bitcoin are not just confined to payments but spread across other industries. As the authors proclaim, “[w]e may well be on the verge of a profound societal upheaval, perhaps the most significant since the sixteenth century.” We might. Or perhaps Bitcoin will go the way of peer-to-peer music file sharing on Napster, which gave way to the centralized iTunes service. Only time will tell.

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On the Move

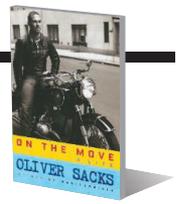
Reviewed by **Benjamin Combs**

A schoolmaster once wrote that Oliver Sacks, then a 12-year old student, “will go far, if he does not go too far.” These words proved prescient, as that child grew into a preeminent neurologist and widely read author, who often struggled to stay within the professional and personal expectations held by others. Sacks, who recently announced that he has terminal cancer (1), looks back at an exceptional life and career in his captivating new autobiography, *On the Move*.

Readers of Sacks know he is no stranger to writing about himself, having previously written several books detailing his encoun-

On the Move A Life

Oliver Sacks
Knopf, 2015. 442 pp.



ters with patients displaying unusual neurological conditions (2, 3). Here, however, he reflects eloquently, and with a more direct focus, on his own past, detailing how his love of writing and discovery has influenced his personal and professional life. Sacks refers to himself as “a storyteller, for better or worse” and one who finds his greatest joy through writing. This passion for storytelling is what compelled him to help revive the lost art of the anecdotal case study in medical literature. The style was not always well received by many in the medical community, but Sacks remained true to it, believing that a greater understanding of the condition was possible through detailed descriptions of a patient’s life as well as their symptoms.

Sacks also applied this method to explain the inner workings of the human mind. At one point, he discusses Gerald Edelman’s theory of consciousness, which posited that consciousness is purely a biological phenomenon, arising from complex cellular processes within the brain. He felt that the theory was revolutionary but was frustrated at Edelman’s dense writing style,

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