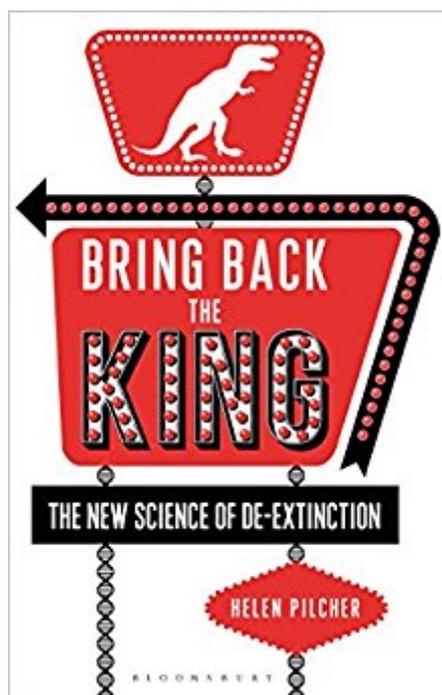


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# Bring Back The King: The New Science Of De-extinction



## Synopsis

Helen Pilcher is uniquely qualified to explain the cutting-edge science that makes the resurrection of extinct animals a very real possibility, while acknowledging the serious and humorous aspects of giving a deceased animal a second chance to live. If you could bring back to life a person or animal, what would you choose? Pilcher highlights her own choices from eras gone, including the King of the Dinosaurs, Tyrannosaurus rex, and the King of Rock 'n' Roll, Elvis Presley. From dinosaurs to dodos and Neanderthals, *Bring Back the King* reveals how the burgeoning field of DNA science is being used to help resurrect individual animals (did your beloved Fido die before siring offspring?) and entire species from their stony graves. Pilcher describes current initiatives and future plans to restore deceased animals, and uses both science and willful irreverence to assess the ramifications of how these genetic Lazaruses might fare in their brave new world. Could a pet dinosaur be trained to roll over? Would Neanderthals enjoy opera? Could a returning dodo seek vengeance upon humanity? Blending the very latest de-extinction technology with cloning, and hard-core popular science with levity, *Bring Back the King* will generate a lot of thoughtful discussion and a chuckle or two.

## Book Information

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## Customer Reviews

"[Pilcher] asks provocative questions about both the nature of science and what it means to be human. Pilcher uses humor effectively to keep readers engaged, and there is a great deal here to entertain and educate them." - Publishers Weekly "A unique perspective on our responsibility to

preserve the chain of being of which we are only a part." - Kirkus Reviews"With humour and accuracy, Helen Pilcher surveys the wondrous array of wildlife de-extinction and preservation projects that employ current breakthroughs in genomic technology. (Plus Elvis, who was a different kind of wild.)" - Stewart Brand author of *WHOLE EARTH DISCIPLINE* and co-founder of Revive & Restore"Lighthearted but informative read . . . buy this title as a great insight into modern biology and a more accessible look at de-extinction." - Henrietta Verma, Booklist"A friendly tour of genetics and cloning, with a bit of history thrown in." - Brian Switek, *The Wall Street Journal*"Entertaining and harrowing . . . offer[s] many of popular science's deep and trivial brainy pleasures." - John Williams, *The New York Times*

Helen Pilcher is a professional science writer with a Ph.D. in stem-cell biology. A former journalist for *Nature* online, she also worked as a senior scientist for a biotechnology company, engineering a series of human stem-cell lines for transplantation into damaged human brains. She is also a stand-up comedian who has performed at the Edinburgh Comedy Festival and in clubs across Britain. She lives in Warwickshire, UK.

Ever since Michael Crichton wrote "Jurassic Park" and Steven Spielberg turned the novels into movies (at least, he did the good ones), many of us have wondered about the science of "de-extinction." Can you take dino blood from an ancient mosquito trapped inside a blob of amber, combine missing DNA with that of a frog, say -- and recreate a world lost for 65 million years? Helen Pilcher asks that and a lot more in this fact-packed non-fiction book. She is a stem cell researcher herself, and explores her questions while unveiling the history and cutting edge science of de-extinction. It's a lot more complex than the novels and movies make the process out to be -- which is only to be expected in a real world where much can go wrong with gathering, mapping, and ultimately, reassembling DNA. The subject matter could be dry as the dust on an old dino bone, but we're saved from that by the author. She brings a lively mind to the investigation, and delivers her material with wit and humor. In Crichton's novel, we're asked to make the leap of imagination from a single drop of dino blood, to an island teeming with the whole host of different species of dinosaurs. It's fiction of course -- a fun fantasy -- but also raises the serious question, should we ever bring back such massive, hungry hunters as the King of the Dinos, T-Rex? (Pilcher's answer in this case is a firm "no"). Here's how the book works: Helen picks the "king" of extinct species and devotes a chapter to the attempt to breathe life into each one of them. What has been done by scientists so far, and what's on the horizon? After the King of the Dinos, Helen zooms forward several million

years to the King of the Caveman -- the Neanderthal. The research is gripping. Did you know our DNA (assuming me writing, and you reading, are both homo sapiens) is 99% the same as the Neanderthal? In fact, on average, within your body is actual Neanderthal DNA -- on average, about 2.7%. (The author was tested and she discovered, she's actually 3% caveman. This explains why, she says, "There isn't enough wax in the world to tackle my bikini line," and concludes, "I'm honored to be part Neanderthal and will never wax my legs again"). This is followed by the King of the Ice Age -- the woolly mammoth (and a real candidate for de-extinction). Next comes King of the Birds (Dodo), King of Down Under (the Tasmanian Tiger), and finally, the King of Rock n Roll -- Elvis Presley himself (the author points out that you don't really "de-extinct" Elvis. He's dead, not extinct, so in this case she's talking about cloning the King). There's quite a lot of Presley DNA available, from locks of his hair, to a wart Elvis had removed (and which exists in a test tube), to an errant toenail clipping plucked from the shag carpet of Graceland. "Bring back the King" is not a scientific journal. It's written for the general reader, which means you don't have to have a degree in genetics to follow her story. I found the read to be thought provoking, and entertaining on many levels. Recommended!

I had hoped that the author would address, if not indeed thoroughly explore, some of the important and vexing questions about what 'de-extinction' is, and whether, indeed, it is correct to treat it as one clear idea. Some of the questions that come up are quickly seen to be both germane and obvious. E.g., what do we mean when we say that a SPECIES has gone extinct....rather than that none of the INDIVIDUALS of that species are now living and breeding? Trying to answer that--or even to make the issues clear enough to try to untangle--immediately raises questions about what we think the connections/relations are between SPECIES and ECOSYSTEMS. E.g., if the ecosystem in which the organisms lived has been hugely altered, and thus the conditions of life of de-extincted animals would be radically different than that of their pre-extinct (!) DNA brethren, is de-extinction possible, or even a coherent concept? (Some of these questions are addressed, accessibly, in discussions of the Netherlands 'pre-historic park' undertaking.) And: why suppose that sharing the DNA of the extinct animal is sufficient for us to see the de-extincted animal as the SAME/a continuation of the the extinct animal's species...rather than (if it survives, and can adapt to the new ecosystem) an animal that shares DNA with the extinct animal? Moreover, since as the author eventually gets around to mentioning, identity is not constituted by sameness of DNA, shouldn't there have been a careful discussion of cloning and of the importance of epigenetics at the start of the book? It takes the author to page 201 even to mention epigenetics. And we are never

supplied with a careful or nuanced discussion of how epigenetics is different from (just) environment or of the (profound, wide) implications of the fact that focusing just on DNA in talking about de-extinction is profoundly misleading. And then there is that little confusion about de-extinction and resurrection, which--sadly--is even more muddled in the chapter discussing de-extincting/resurrecting Elvis. It is possible to produce science writing that is at once accessible and not grossly, misleadingly oversimplified, or painfully condescending. (Examples abound, and are familiar, so I will just mention one of my favorite writers, Robert Sapolsky.) But I found this book to be a largely unenjoyable and unenlightening read. In addition to glossing over, over-simplifying, and/or misrepresenting the science, the author was excessively cutesy throughout, and her prose was heavily adjective-laden.

I love to read popular science, but frankly, I am science-impaired. The science of DNA is quite interesting to me as well as completely complicated. And when it comes to cloning, de-instincting, resurrecting, and any other possibilities, it's all a mystery to me. *Bring Back the King* is an accessible and funny book about those subjects in which Helen Pilcher defines, describes, and discusses what is possible, what isn't possible, what may someday be possible, and what are the ramifications. It's a huge topic, so this is just the tip of the iceberg, but it's a good introduction to a complex subject. So many facets to the topic -- for example, when we think of cloning extinct creatures such as dinosaurs or mammoths, among the many things to consider is whether a being that evolved to live in another era would be able to survive in another era complete with different bacteria, food sources, diseases, etc.

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