

# Life Ascending

The Ten Great Inventions of Evolution

Epilogue

**Nick Lane**

Biochemist and writer

# About

**Dr Nick Lane** is a British biochemist and writer. He was awarded the first Provost's Venture Research Prize in the Department of Genetics, Evolution and Environment at **University College London**, where he is now a Reader in Evolutionary Biochemistry. Dr Lane's research deals with evolutionary biochemistry and bioenergetics, focusing on the origin of life and the evolution of complex cells. Dr Lane was a founding member of the UCL Consortium for Mitochondrial Research, and is leading the UCL Research Frontiers Origins of Life programme. He was awarded the 2011 BMC Research Award for Genetics, Genomics, Bioinformatics and Evolution, and the 2015 Biochemical Society Award for his sustained and diverse contribution to the molecular life sciences and the public understanding of science.



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In one of the most arresting sequences ever screened on TV, Jacob Bronowski paced through the marshes at Auschwitz, where the ashes of 4 million people had been flushed, including some of his own family, and talked to camera in the way that only he could. Science, he said, does not dehumanise people and turn them into numbers. Auschwitz did that. Not by gas, but by arrogance. By dogma. By ignorance. It happens, he said, when people aspire to the knowledge of gods, and have no test in reality.

Science, in contrast, is a very human form of knowledge. Bronowski put it beautifully: 'We are always at the brink of the known; we always feel forward for what is to be hoped. Every judgement in science stands on the edge of error, and is personal. Science is a tribute to what we can know although we are fallible.'

This scene, from *The Ascent of Man*, was screened in 1973. The following year, Bronowski died of a heart attack, as humanly fallible as science itself. But his inspiration lives on, and I know of no better testament to the spirit of science. And in this spirit, and in a title that pays oblique homage, this book has walked the brink of the known. It is full of judgements that stand on the edge of error. It is a tribute to what we can know although we are fallible.

But where is this line between fallacy and truth? Some scientists may disagree with details in this book; others will agree. Disagreements happen on the edge of error, and it is easy to fall over the brink. But if the details are shifting or wrong, does that make the larger story wrong too? Is scientific knowledge relative, especially when applied to the deep past? Can it then be challenged, as it is every day by those who prefer the comfort of dogma? Or is the science of evolution just one more dogma, refusing to countenance challenge?

The answer, I think, is that evidence can be at once fallible and overwhelming. We can never know the past in all its detail, for our interpretations are always fallible, always open to more than one reading. That's why science can be so controversial. But science has a unique power to settle scores through experiment and observation, through tests in reality, and the countless details give rise to something bigger, just as, with the right distance, innumerable pixels paint a compelling picture. To doubt that life evolved, even if some of the details described in this book may yet prove wrong, is to doubt the convergence of evidence, from molecules to men, from bacteria to planetary systems. It is to doubt the evidence of biology, and its concordance with physics and chemistry, geology and astronomy. It is to doubt the veracity of experiment and observation, to doubt the testing in reality. It is, in the end, to doubt reality.

I think that the picture painted in this book is true. Life most surely evolved, along the lines described here. That is not dogma, but evidence tested in reality and corrected accordingly. Whether this grand picture is compatible with faith in God, I do not know. For some people, intimately acquainted with evolution, it is; for others, it is not. But whatever our beliefs, this richness of understanding should be a cause for marvel and celebration. It is a most wonderful thing to share so much with the life around us on this blue-green marble, floating through the bleak infinity of space. There is more than grandeur in this view of life. There is fallibility and majesty, and the best human eagerness to know.

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