

“I know of no other book that has argued with such brilliance and historical breadth against the automatic pessimism that prevails in intellectual life. Where history, philosophy, economics, and biology meet, Matt Ridley has made his own rich territory, and he is its own enthralling guide. How wealth—mental as well as material—evolves and spreads is a fundamental question for our times, and *The Rational Optimist* teems with challenging and original ideas.”

—IAN McEWAN

THE
RATIONAL
OPTIMIST

HOW PROSPERITY EVOLVES

MATT RIDLEY

NEW YORK TIMES BESTSELLING AUTHOR OF *GENOME*

THE
**RATIONAL
OPTIMIST**

HOW PROSPERITY EVOLVES

MATT RIDLEY

 HarperCollins e-books

For Matthew and Iris

This division of labour, from which so many advantages are derived, is not originally the effect of any human wisdom, which foresees and intends that general opulence to which it gives occasion. It is the necessary, though very slow and gradual, consequence of a certain propensity in human nature which has in view no such extensive utility; the propensity to truck, barter, and exchange one thing for another.

ADAM SMITH
The Wealth of Nations

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Prologue

When Ideas have Sex

In other classes of animals, the individual advances from infancy to age or maturity; and he attains, in the compass of a single life, to all the perfection his nature can reach: but, in the human kind, the species has a progress as well as the individual; they build in every subsequent age on foundations formerly laid.

ADAM FERGUSON

An Essay on the History of Civil Society



On my desk as I write sit two artefacts of roughly the same size and shape: one is a cordless computer mouse; the other a hand axe from the Middle Stone Age, half a million years old. Both are designed to fit the human hand – to obey the constraints of being used by human beings. But they are vastly different. One is a complex confection of many substances with intricate internal design reflecting multiple strands of knowledge. The other is a single substance reflecting the skill of a single individual. The difference between them shows that the human experience of today is vastly different from the human experience of half a million years ago.

This book is about the rapid, continuous and incessant change that human society experiences in a way that no other animal does. To a biologist this is something that needs explaining. In the past two decades I have written four books about how similar human beings are to other animals. This book is about how different they are from other animals. What is it about human beings that enables them to keep changing their lives in this tumultuous way?

It is not as if human nature changes. Just as the hand that held the hand axe was the same shape as the hand that holds the mouse, so people always have and always will seek food, desire sex, care for offspring, compete for status and avoid pain just like any other animal. Many of the idiosyncrasies of the human species are unchanging, too. You can travel to the farthest corner of the earth and still expect to encounter singing, smiling, speech, sexual jealousy and a sense of humour – none of which you would find to be the same in a chimpanzee. You could travel back in time and empathise easily with the motives of Shakespeare, Homer, Confucius and the Buddha. If I could meet the man who painted exquisite images of rhinos on the wall of the Chauvet Cave in southern France 32,000 years ago, I have no doubt that I would find him fully human in every psychological way. There is a great deal of human life that does not change.

Yet to say that life is the same as it was 32,000 years ago would be absurd. In that time my species has multiplied by 100,000 per cent, from perhaps three million to nearly seven billion people. It has given itself comforts and luxuries to a level that no other species can even imagine. It has colonised every habitable corner of the planet and explored almost every uninhabitable one. It has altered the appearance, the genetics and the chemistry of the world and pinched perhaps 23 per cent of the productivity of all land plants for its own purposes. It has surrounded itself with peculiar, non-random arrangements of atoms called technologies, which it invents, reinvents and discards almost continuously. This is not true for other creatures, not even brainy ones like chimpanzees, bottlenose dolphins, parrots and octopi. They may occasionally use tools, they may occasionally shift their ecological niche, but they do not ‘raise their standard of living’, or experience ‘economic growth’. They do not encounter ‘poverty’ either. They do not progress from one mode of living to another – nor do they deplore doing so. They do not experience agricultural, urban, commercial, industrial and information revolutions, let alone Renaissances, Reformations, Depressions, Demographic Transitions, civil wars, cold wars, culture wars and credit

crunches. As I sit here at my desk, I am surrounded by things – telephones, books, computers, photographs, paper clips, coffee mugs – that no monkey has ever come close to making. I am spilling digital information on to a screen in a way that no dolphin has ever managed. I am aware of abstract concepts – the date, the weather forecast, the second law of thermodynamics – that no parrot could begin to grasp. I am definitely different. What is it that makes me so different?

It cannot just be that I have a bigger brain than other animals. After all, late Neanderthals had on average bigger brains than I do, yet did not experience this headlong cultural change. Moreover, big though my brain may be compared with another animal species, I have barely the foggiest inkling how to make coffee cups and paper clips, let alone weather forecasts. The psychologist Daniel Gilbert likes to joke that every member of his profession lives under the obligation at some time in his career to complete a sentence which begins: ‘The human being is the only animal that ...’ Language, cognitive reasoning, fire, cooking, tool making, self-awareness, deception, imitation, art, religion, opposable thumbs, throwing weapons, upright stance, grandparental care – the list of features suggested as unique to human beings is long indeed. But then the list of features unique to aardvarks or bare-faced go-away birds is also fairly long. All of these features are indeed uniquely human and are indeed very helpful in enabling modern life. But I will contend that, with the possible exception of language, none of them arrived at the right time, or had the right impact in human history to explain the sudden change from a merely successful ape-man to an ever-expanding progressive moderniser. Most of them came much too early in the story and had no such ecological effect. Having sufficient consciousness to want to paint your body or to reason the answer to a problem is nice, but it does not lead to ecological world conquest.

Clearly, big brains and language may be necessary for human beings to cope with a life of technological modernity. Clearly, human beings are very good at social learning, indeed compared with even chimpanzees humans are almost obsessively interested in faithful imitation. But big brains and imitation and language are not themselves the explanation of prosperity and progress and poverty. They do not themselves deliver a changing standard of living. Neanderthals had all of these: huge brains, probably complex languages, lots of technology. But they never burst out of their niche. It is my contention that in looking inside our heads, we would be looking in the

wrong place to explain this extraordinary capacity for change in the species. It was not something that happened within a brain. It was some thing that happened between brains. It was a collective phenomenon.

Look again at the hand axe and the mouse. They are both ‘man-made’, but one was made by a single person, the other by hundreds of people, maybe even millions. That is what I mean by collective intelligence. No single person knows how to make a computer mouse. The person who assembled it in the factory did not know how to drill the oil well from which the plastic came, or vice versa. At some point, human intelligence became collective and cumulative in a way that happened to no other animal.

Mating minds

To argue that human nature has not changed, but human culture has, does not mean rejecting evolution – quite the reverse. Humanity is experiencing an extraordinary burst of evolutionary change, driven by good old-fashioned Darwinian natural selection. But it is selection among ideas, not among genes. The habitat in which these ideas reside consists of human brains. This notion has been trying to surface in the social sciences for a long time. The French sociologist Gabriel Tarde wrote in 1888: ‘We may call it social evolution when an invention quietly spreads through imitation.’ The Austrian economist Friedrich Hayek wrote in the 1960s that in social evolution the decisive factor is ‘selection by imitation of successful institutions and habits’. The evolutionary biologist Richard Dawkins in 1976 coined the term ‘meme’ for a unit of cultural imitation. The economist Richard Nelson in the 1980s proposed that whole economies evolve by natural selection.

This is what I mean when I talk of cultural evolution: at some point before 100,000 years ago culture itself began to evolve in a way that it never did in any other species – that is, to replicate, mutate, compete, select and accumulate – somewhat as genes had been doing for billions of years. Just like natural selection cumulatively building an eye bit by bit, so cultural evolution in human beings could cumulatively build a culture or a camera. Chimpanzees may teach each other how to spear bushbabies with sharpened sticks, and killer whales may teach each other how to snatch sea lions off beaches, but only human beings have the cumulative culture that goes into the design of a loaf of bread or a concerto.

Yes, but why? Why us and not killer whales? To say that people have

cultural evolution is neither very original nor very helpful. Imitation and learning are not themselves enough, however richly and ingeniously they are practised, to explain why human beings began changing in this unique way. Something else is necessary; something that human beings have and killer whales do not. The answer, I believe, is that at some point in human history, ideas began to meet and mate, to have sex with each other.

Let me explain. Sex is what makes biological evolution cumulative, because it brings together the genes of different individuals. A mutation that occurs in one creature can therefore join forces with a mutation that occurs in another. The analogy is most explicit in bacteria, which trade genes without replicating at the same time – hence their ability to acquire immunity to antibiotics from other species. If microbes had not begun swapping genes a few billion years ago, and animals had not continued doing so through sex, all the genes that make eyes could never have got together in one animal; nor the genes to make legs or nerves or brains. Each mutation would have remained isolated in its own lineage, unable to discover the joys of synergy. Think, in cartoon terms, of one fish evolving a nascent lung, another nascent limbs and neither getting out on land. Evolution can happen without sex; but it is far, far slower.

And so it is with culture. If culture consisted simply of learning habits from others, it would soon stagnate. For culture to turn cumulative, ideas needed to meet and mate. The ‘cross-fertilisation of ideas’ is a cliché, but one with unintentional fecundity. ‘To create is to recombine’ said the molecular biologist François Jacob. Imagine if the man who invented the railway and the man who invented the locomotive could never meet or speak to each other, even through third parties. Paper and the printing press, the internet and the mobile phone, coal and turbines, copper and tin, the wheel and steel, software and hardware. I shall argue that there was a point in human pre-history when big-brained, cultural, learning people for the first time began to exchange things with each other, and that once they started doing so, culture suddenly became cumulative, and the great headlong experiment of human economic ‘progress’ began. Exchange is to cultural evolution as sex is to biological evolution.

By exchanging, human beings discovered ‘the division of labour’, the specialisation of efforts and talents for mutual gain. It would at first have seemed an insignificant thing, missed by passing primatologists had they