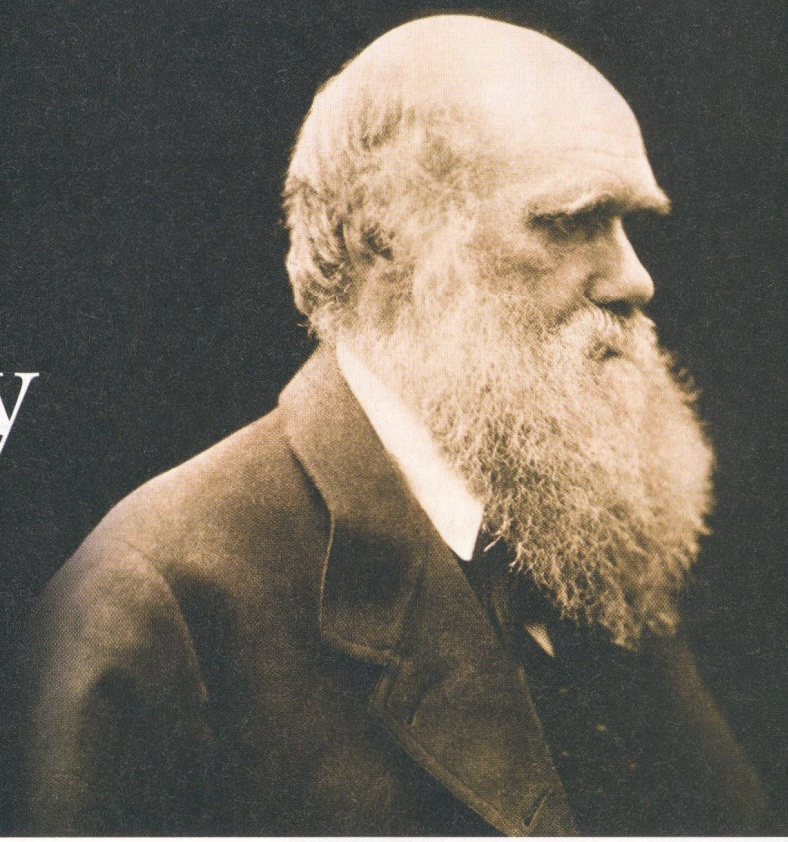
The years of thinking dangerously



Darwin or Galileo: who did most to cut us down to size? **Michael Brooks** and a host of thinkers decide who really deserves 2009's anniversary crown

TALK about a dilemma: next year has been labelled the International Year of Astronomy because it marks the 400th anniversary of Galileo's first use of the telescope. Unfortunately, as it is the 200th anniversary of Darwin's birth, 2009 has also been appropriated as Darwin Year. Both anniversaries have good claims on our attention, so at *New Scientist* we find ourselves unable to decide which year matters most.

It's an unfair question, of course. Galileo and Darwin worked in different fields, in different eras and under different cultural pressures. But never ones to duck a challenge, we put the issue out for peer review.

The question is simple: who has done more to knock humanity off its pedestal? The man who showed humans to be the latest in a long line of animals? No, says Lawrence Krauss: anyone who was looking could have seen that humans were animals. So, then, the man who demonstrated beyond doubt that the Earth is not at the centre of anything? Not for Matt Ridley: "Who cares which ball of rock goes round which?" he asks.

If it were left to Darwin and Galileo to argue their supremacy, there is no doubt that Galileo would come out on top. His house arrest, which lasted his post-publication lifetime, was imposed after he defended his convictions before one of the most formidable authorities in Europe, the Catholic church's Inquisition, in 1633. A great polemicist, Galileo spent much of his energy on vigorous self-justification. Darwin, on the other hand, shrank from controversy, leaving others to argue his cause.

Was Darwin copping out, or letting the work speak for itself? His attitude to public pronouncements about his lost faith gives us a clue. Unwilling to offend his wife and family with his new-found disregard for God, he described his religious position using the newly coined term "agnostic". Darwin was a quiet pragmatist who was unwilling to knock anyone's pedestal from beneath them.

Having said that, Galileo's Catholic faith was completely unshaken by his discovery. Does that count against him when considering our question? Some will see it as a self-imposed "so what?" for the greatest astronomical discovery of all time.

Regardless of what each man believed, Galileo has had more impact in the long term. Far more people believe the Earth goes round the sun than believe people are descended

Lawrence Krauss

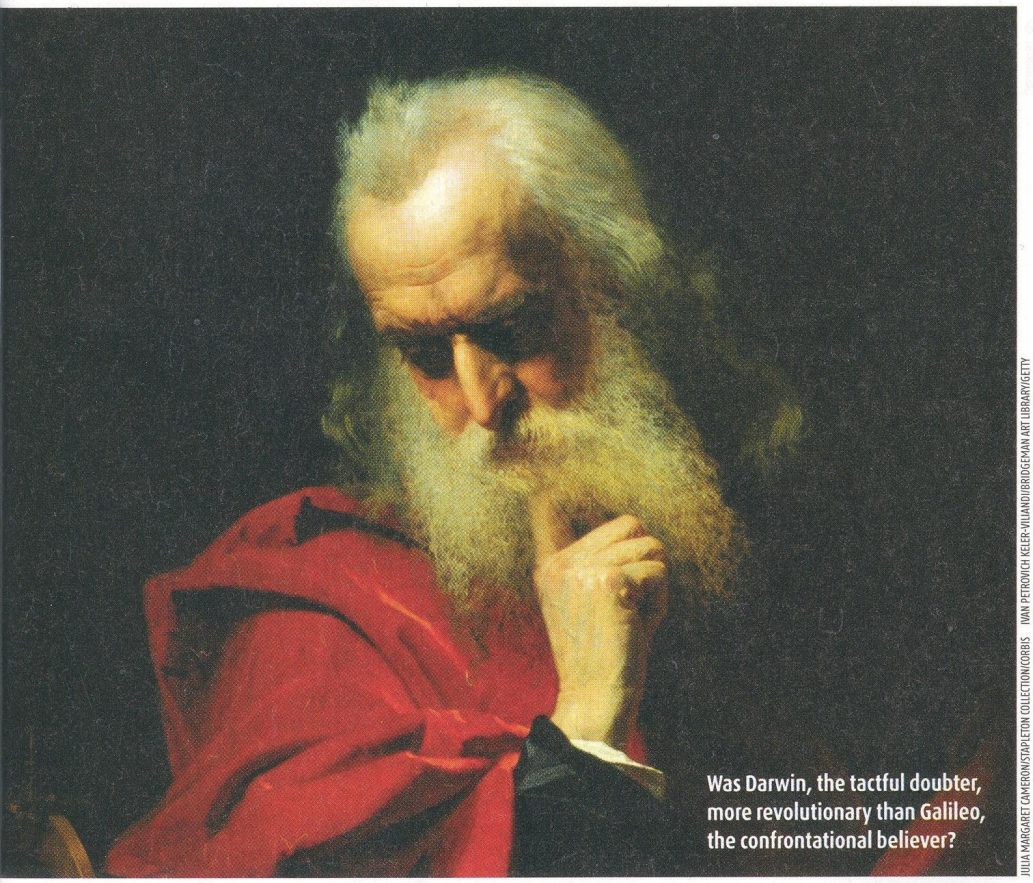
It was clear before Darwin that we share many things with other species. What he did brilliantly was to remove the discontinuity between humans and other animals, and show how unorchestrated laws of nature could produce the diversity of life we observe. But Galileo removed us from the centre of the universe: how much greater a fall could we have? Moreover, he replaced "divinely revealed" knowledge with empirical knowledge. Go Galileo!

Theoretical physicist and cosmologist, Arizona State University, Tempe

Frans de Waal

Which was worse for the crown of creation? To hear from Galileo that he didn't own the castle on the hill or to hear from Darwin that he was born to a pauper family? The latter was the more disturbing message, which is why most people still accept only half of it. While they agree that our species is a product of evolution, there remains immense resistance to the second half, which is that we are continuous with other animals not only in body but also in mind.

Primatologist, Emory University, Atlanta, Georgia



Was Darwin, the tactful doubter, more revolutionary than Galileo, the confrontational believer?

JULIA MARGARET CAMERON/STAPLETON COLLECTION/CORBIS IVAN PETROVICH KELER-VILIANDI/BRIDGEMAN ART LIBRARY/GETTY

from animals via natural selection: in the US, the figures are 80 per cent and 50 per cent respectively. But what is the true measure of scientific achievement? Pats on the back from peers, or a sea change in public perception?

It has to be admitted that Galileo has had an unfair advantage here – an extra couple of hundred years for his ideas to propagate. What's more, Darwin worked harder. Galileo saw the value of the telescope, built the best one in the world and made careful observations. But ultimately, he only used it to confirm what Copernicus had already suggested; Darwin spent years travelling and collecting specimens before he had to sit down and think about what it all meant.

In the end, our panel concluded (with two abstentions) that Darwin has done more to change our view of ourselves. For our rigorous peer reviewers, 2009 is Darwin's year! ●

ONLINE EXCLUSIVE: Read what the rest of our panel think, with contributions from Darwin's great-great-grandson Matthew Chapman, chief NASA historian Steven Dick, philosopher A. C. Grayling and mathematician Marcus du Sautoy

Steve Jones

Despite the amazing physical similarity between humans and other primates, everything that makes us human is unique. Apes ape; they do not teach. No ape eye ever lit up with curiosity, no primate brain struggled with the future beyond the next meal or next sex. Above all, no ape has passed on its heritage through mouth and ears. Darwin put us on a far higher pinnacle: he made us more human than we thought we were. Galileo, however, explained why the sun rises every morning. He wins on pinnacle-knocking.

Geneticist, University College London

Michael Ruse

Darwin or Galileo? For me, this was the fallacy of the complex question – when you must answer a question based on an assumption. Neither of them knocked humans off their pedestal, but showed how remarkable they are. For Darwin's great supporter Thomas Henry Huxley, there was nothing degrading in being modified monkeys rather than modified dirt, as the *Genesis* story has it. But what monkeys, what modification!

Philosopher, Florida State University, Tallahassee

Steven Pinker

I'd say Darwin. The dogma equating the figurative centrality of humans in the moral order with the literal centrality of humans in the physical universe is probably a quirk of medieval church doctrine, not a basic property of naive human belief. It is thus easier to overturn than the idea that complex design requires an animate designer, which is a deep part of the way we make sense of the world.

Psychologist, Harvard University

Paul Davies

They both made disruptive discoveries, but cosmology is far more remote, literally, than biology. The Earth goes around the sun, but how does that affect the price of beer? The church didn't like it, but nobody got depressed or rioted. Darwin, however, struck at the root of what it means to be human. That matters so much that many Americans are still in denial about evolution, preferring to tell lies for God than embrace the truth: human nature is a product of nature, something to celebrate, not fear.

Physicist and cosmologist , Arizona State University

Daniel Dennett

It's a draw. Darwin showed that we are animals, occupying our tiny limb on the tree of life and needing no divine spark to account for our many adaptations. Galileo began the process that showed us we inhabit a tiny speck orbiting a tiny speck, all but lost among billions of specks in a galaxy. They both gave us the best reasons for reconsidering the source of the meanings of our lives: we, using the gifts evolution has blindly granted us, have created and endorsed the meanings we take so seriously.

Philosopher, Tufts University, Boston

Matt Ridley

No contest: Darwin, because the degree to which he knocked man off his pedestal is still sinking in. Even 12 years ago, most scientists thought there were genes that made the human brain special. Now we know our brains are bigger than a mouse's only because we evolved to switch on a bunch of brain-growing genes for a bit longer. The deep commonality of life is astonishing even to those who expect to be astonished. Compared to that, who cares which ball of rock goes round which?

Writer on evolutionary biology