They’re talking ’bout an evolution

The most powerful and the most comprehensive idea that has ever arisen on Earth

Malcolm Holland

IT IS, to many, the most important idea ever. And the explanation of where we came from still provokes violent, base emotions from those who say it threatens religious belief. This Thursday marks the 200th anniversary of Charles Darwin’s birth and this year is the 150th anniversary of the publication of his book, The Origin Of Species By Means Of Natural Selection.

His book revealed evidence of natural selection as the explanation for evolution. Darwin did not come up with the idea of evolution; that premise had been around since the ancient Greeks.

But the Englishman was the first evolutionary biologist. For two decades he collected evidence and the theories and thoughts of others to support natural selection, or “survival of the fittest”, as the process that led from amoeba to humans. Natural selection was the way organisms adapted to survive and made them more likely to reproduce. An example is Galapagos Island finches, whose beaks are adapted to hunt for different foods.

Biologist Sir Julian Huxley later wrote that Darwin’s theory was “the most powerful and the most comprehensive idea that has ever arisen on Earth. It helps us understand our origins ... we are part of a total process, made of the same matter and operating by the same energy as the rest of the cosmos, maintaining and reproducing by the same type of mechanism as the rest of life”.

But some religious leaders say it is an abomination to disbelieve that life was made by creation. Six Australians — scientists, naturalists and a man of God — explain what Darwin’s work means to them.

The Australian Museum celebrates Charles Darwin’s 200th birthday with a dinner/debate on Wednesday, February 11 in Sydney, hosted by Jennifer Byrne. Call 9320 6389 for bookings
WHAT would Charles Darwin have made of global warming and the economic meltdown? I think he might have surmised that humans of “developed” Western economies who got us into this mess were exhibiting characteristics that render them less likely to survive in the long term. Natural selection might rid Homo sapiens of the sub species of investment bankers and “smokestack” industrial moguls. Trouble is, there is a chance the rest of us may become collateral damage in this cleansing.

Darwin’s theory gives many insights. As a fair-skinned, Anglo-Irish person I know I am, and those like me are, not adapted to sunny climates. The freedom of thought that led Darwin to see the world through evolutionary eyes should have enabled us to break free of dogmatic and restrictive views of the natural world and to see humans as part of it, not as its owners or exploiters. The biggest battle that he had was with religious dogmatism, which saw humans as separate to the natural world. Too many of us see humanity as special and with a divine right to rule the world. We could change that view.

CHARLES Darwin never suggested that it is only the strongest of species that will survive; rather it is the species most responsive to change. It shocked me, as a Year 10 science student, to learn that flexibility, not strength, was my most important asset in survival.

Eight years on from this epic moment, I have discovered that Darwin’s words have a more pertinent contemporary meaning, given that the human species is currently playing Russian roulette with the Earth’s fragile climate.

Humans have come a long way since Darwin’s era and have shown an amazing ability to inspire dramatic changes. If Darwin could see the rapid change in opinion regarding climate change, I think he would still agree with his quote “believing that man in the distant future will be a far more perfect creature than he now is, it is an intolerable thought that he and all other sentient beings are doomed to complete annihilation”, but he may be surprised at how far we have pushed the limits and how little time remains to wrest back control.
ANIMALS have their uses. They pollinate plants and spread seed, but life is about plants. They provide us with oxygen, food and shelter. Darwin understood this. He studied barnacles, worms and finches, yet spent most of his life on plants.

His garden was his laboratory and on The Beagle he knew “a traveller should be a botanist, for in all views plants form the chief embellishment”.

His theory was persuasive because it was based on observation and data, most from plants.

Darwin served his insect-eating plants roast beef, vegetables and boiled eggs. He deduced that these plants have digestive juices like us.

In The Origin Of Species, Darwin demonstrates “natural selection” by describing how a flower that produces nectar will be more attractive to insect visitors.

Plants producing lots of nectar are more likely to reproduce successfully. Darwin said that this is what evolution and life is about; successfully mixing our genes.

Plants were critical to his theory and sustain us and generate ideas today.

CHARLES Darwin changed the way that we see the natural world and ourselves.

He would find the world and the environmental changes that we face because of climate change exciting. Evolution is about change, how species respond to change. Circumstances are changing faster than they have for millions of years. Species are responding by changing behaviour, adapting physiology, changing distribution, evolving in a “normal” Darwinian way and in unexpected ways.

How well biodiversity copes with climate change and our intense use of the landscape is unknown. Some argue that climate change is the greatest threat to biodiversity. If we take a less conservative approach to conservation we have little to lose. It requires evolution of government bureaucracies and conservationists. It requires solutions like moving species beyond their traditional range (assisted colonisation).

We need novel opportunities for threatened species, which is the New Zealand approach – not monitoring to extinction.
WHY is a climate scientist like me having anything to do with celebrations of Darwin’s 200th birthday?

Are global warming and Darwin’s theory of evolution connected? It seems to me they are. Evolution is the fundamental creative force shaping the world, not only its biota and ecosystems but also societies, cultures and economic systems.

This creative force works by a very simple recipe: diversify and then winnow, over and over again. In the right conditions this process leads to the amazing complexity of life and societies we see all around us. But the process is not foolproof, as evolution needs many cycles of diversification and selection to work. If environmental conditions change too fast, evolution can’t keep up and species or systems go extinct.

Here is the link with climate change. We are all now part of an evolving earth facing such rapid climate and environmental changes that unguided evolution can’t cope. We have to use our brains to guide us out of foreseeable climate and ecological danger before we blunder into them, rather than after. Evolution now has new ways of winnowing possible futures, using foresight.

Anglican Archbishop of Sydney

CHARLES Darwin had a gift for noticing things and his genius has changed the way we think. His theory of natural selection is an explanation of the diversity of life; from the species of finch, to the way bacteria develop resistance to antibiotics. Does evolution exclude a God whose loving rule extends to the natural world? Some would say yes, but not because the theory of evolution requires it. Science neither proves nor disproves the existence of God, and to argue it does is unscientific.

Evolution is a tool; as a faith it is inadequate. Science and faith impact on the lives of us all but one must not do the work of the other. Nature helps me see the grandeur of the world and God. If I want to know God I turn to Jesus Christ and the Bible.

Faith in a divine Creator and belief in an evolutionary universe can coexist. A divine Creator and our universe can coexist. Darwin’s approach remains valid; stop and take notice, don’t jump to conclusions. Be confident that beneath the chaos lies an orderly world and a wonderful one. Recognise, like Darwin, that science does not have all the answers.