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1
The Diverse Ape

So God created man in his own image, in the image of God created he him; male and female created he them. And God blessed them, and God said unto them, Be fruitful, and multiply . . .
Genesis 1: 27–8

Creation myths can be found at the core of all religions. Most seek to answer the child's question 'where do we come from?' – to explain our existence and our place in the world in a succinct way. But while they may attempt to explain how we originated, creation myths fail to account for the spectrum of cultures, shapes, sizes and colours we see when we look at people around the world. Why do we look so different from each other, and how did we come to inhabit such far-flung places?

Herodotus, the fifth-century BC Greek historian, provided posterity with far more than a description of the Greco-Persian wars. He also gave us our first clear descriptions of human diversity, viewed through an idiosyncratic classical lens. We learn of the dark and mysterious Libyans, the barbaric man-eating Androphagi of the Russian north, and hear descriptions of people who seem to resemble the Turks and Mongolians. Herodotus relates fanciful tales of griffins guarding precious hoards in the mountains of Asia, and we are treated to exotic descriptions of tribes in northern India who collect gold from the burrows of ants. Overall, it is a tour de force – the first ethnographic treatise in Western literature and, despite its obvious flaws, a valuable snapshot of the known world at that time.

If we were to assume the role of a naïve modern-day Herodotus and fly an equatorial route around the world, the diversity of people and

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places would be astounding. Imagine for a moment being on a plane above the Atlantic Ocean at the very centre of the Cartesian globe, 0° longitude, 0° latitude – about 1,000 km west of Libreville, Gabon, in west-central Africa. If we imagine the plane flying east, and allow ourselves the science-fiction trick of being able to scan the ground from our vantage point in the sky, we will get a small sample of humanity's diversity.

The first people we encounter are Africans – specifically, central Africans, speaking Bantu languages. They have very dark skin, and live primarily in small villages hacked from the forest. As we move further east, we still see dark-skinned people, but these look somewhat different. They are the tall, thin Nilotic peoples of east Africa – some of the tallest on earth. They live on grassy savannahs, and are almost completely dependent on their cattle for survival. Scattered in amongst these groups are people who speak yet another language – one which is as different from Nilotic and Bantu as they are from each other, even though they live close by – the Hadza.

As we continue east we encounter a huge body of water – so vast that it is impossible to see across it, and it seems an eternity before we reach an archipelago known as the Maldives. The people here seem quite different from those we saw in Africa, and speak yet another language. Their skin is dark, like that of the Africans, but their faces are different – nose shape, hair type and other minor details. They are clearly related to the Africans, but differ in obvious ways.

As we continue on our journey – above the same enormous body of water – we see a large island rising up ahead of us. We have reached Sumatra, and here we encounter yet another type of human, somewhat smaller than the Africans and peoples of the Maldives, with yet another facial appearance – very straight hair, lighter skin and a thicker layer of skin above the eyes. Further east, passing countless other islands, we again encounter people with very dark skin, known as Melanesians. They are unlike the Africans in many other ways, so is their dark skin a characteristic that evolved in this region? Or is it indicative of a close connection with Africa?

Next we encounter the Polynesians, living on small coral atolls separated by thousands of miles of open ocean. They appear to be somewhat similar to the Sumatrans encountered before but, as always

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seems to be the case, they are different. The biggest question is why they are living in such remote locations – how did they get there?

Continuing on our route, we encounter the coast of Ecuador, in western South America. In the capital, Quito, we find an odd mix of people. There seem to be two main types: those who in some respects resemble the peoples of the Maldives, but with lighter skin, and those who in many ways resemble the Sumatrans and Polynesians. It seems odd to find such divergent types of humanity living in the same place, since the other locations we have visited tended to be more homogeneous. Why is Ecuador different? A disparate mix of people is found further east on the continent, where on the north-eastern coast of Brazil we encounter Africans again – but living far from Africa! During the long journey back to our starting point we ponder the tapestry we have just seen, and try to formulate an explanation for the pattern of diversity.

Our short tour of the world was a kind of thought experiment, where we imagine what it must have been like to encounter things as people may have done a few hundred years ago, during the first European 'voyages of discovery'. By assuming the guise of ignorance, we can ask simple questions that seem trivial to us today, given our knowledge of history. The interesting thing about this thought experiment is that, until very recently – excepting the Africans and Europeans encountered in South America – there was no ready explanation for the patterns we saw.

One species . . .

On 30 June 1860 an angry cleric named Samuel Wilberforce mounted the stage at Oxford University's Museum Library. He was primed for a fight – not just for himself, but for something far more important: his worldview. Wilberforce felt that he was fighting for the future of Christianity. The venue was a formal debate on the place of man in nature, a field of enquiry until recently limited to philosophers and the church. The good bishop, taking scripture at its most literal, believed the world to be around 6,000 years old, created by the hand of God on 23 October 4004 BC, a date obtained by counting back through

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the genealogy described in the Bible. In his speech he asked a pointed question – one that was on the minds of many in the audience. Was it really possible that he could be related to a monkey? It sounded so preposterous!

Wilberforce was a polished speaker, and to many in the audience his argument was persuasive. But while he held his own in the library that day, in the long run he was destined to be trounced. And, foreshadowing a significant change in the way we viewed our place in the world, the dragon slayers were not philosophers or clergymen but professional scientists. Joseph Hooker and Thomas Henry Huxley, both Victorians par excellence, were strong supporters of Charles Darwin's new theory of evolution by natural selection. Huxley, lecturer in biology at the London School of Mines, later became better known as 'Darwin's Bulldog'. Hooker was an accomplished botanist and assistant director of the Royal Botanical Gardens at Kew. When they rose at the end of Wilberforce's lecture to refute his emotional arguments, they were sounding a death-knell to the old views on human origins. Science was leading the way into a brave new world.

The debate between Wilberforce, Hooker and Huxley served not merely to reinforce the public's acceptance of evolution – most educated people had already come to see the world in an evolutionary context – but rather to realign humanity's place in it. When we viewed ourselves as the divine creation of an omnipotent being, we could easily justify our isolation from the rest of the living world. Masters, conquerors, perhaps favoured children – but different.

Darwin's insight had changed all of that. This dyspeptic near-recluse had, with a few strokes of his pen (and some twenty years of dabbling with pigeons and barnacles), demoted humanity from divine creation to a product of biological tinkering. And the odd thing is that he hadn't even set out to do this. Darwin, the scion of a wealthy Victorian family (his grandfather was Josiah Wedgwood, his father was a wealthy physician, and Darwin himself spent part of each day looking after his investments), had no intention of rocking the boat when he set out on his voyage of discovery aboard the *Beagle* in 1831. He was certainly looking for adventure, and needed something to stave off the looming inevitability of a staid country parsonage – the logical career choice

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for a Cambridge graduate of that era. But he was looking for something else as well.

As was the case with many Victorians, Darwin had developed a keen interest in science during his childhood. While he had the usual chemistry accidents, especially with his older brother Erasmus – with whom he once destroyed a garden shed-cum-laboratory when an experiment went explosively awry – Darwin's interests were primarily of the outdoor variety. He was inordinately fond of beetles (he once wrote in a letter of 'pining' for a like-minded beetle fancier), and spent many hours in the field scavenging for exotic specimens. But it was his interest in geology, developed while he was a student at Cambridge, that was to have the greatest impact on his future work.

Geology was undergoing a revolution in the early nineteenth century – one which was calling into question our whole understanding of history, as handed down in the Bible. Darwin was an adherent of a school of thought that became known as uniformitarianism, first formulated by Charles Lyell. Lyell believed that the forces and materials found in the world today had always behaved in essentially the same way – even in the distant past. Diametrically opposed to the uniformitarian school were the catastrophists – led by major scholars such as Louis Agassiz, a Swiss transplant to America who founded Harvard University's Museum of Natural History. The catastrophists believed that the earth went through long periods of stasis when nothing much happened, but that occasionally all hell would break loose. This could take the form of a biblical flood, or an ice age, or a massive upheaval in the earth's crust. All major changes – in organisms as well as the planet itself – were driven by these freak events. The distribution of the world's plant and animal species was due to a series of catastrophic events during their history.

The problem with catastrophism was that it relied too much on odd happenings to be of any use – there were rather a lot of changes that seemed to have occurred without any drastic catalysts. If change could occur without invoking a major causal event, then why was it necessary to invoke them at all? Why not simply assume that the earth is constantly changing at a very gradual rate, and that over long periods of time these incremental steps produce significant results? It seemed so much easier to reconcile with the actual data, said Lyell.

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All of this was percolating in young Darwin's mind when he set out aboard HMS *Beagle*, engaged as a 'gentleman companion' for Captain FitzRoy. This unusual position had to do with Victorian social customs, in that the Captain was considered to be of too high a social class to mix with the crew. There was, in fact, an official naturalist on board the ship – the ship's surgeon – but he ended up leaving the voyage in Brazil after a falling out with FitzRoy. At any rate, Darwin was the *de facto* naturalist on the journey, and his lack of official status as such allowed him enormous leeway in pursuing his own studies.

His journal from the five-year journey, *The Voyage of the Beagle*, is a classic of nineteenth-century travel literature. During the trip, Darwin made several major discoveries, including finding a reasonable explanation for why coral atolls are round (it has to do with receding volcanoes) and deciding that the Tahitians were very attractive people indeed. The most important – his initial insight into the action of natural selection, and its role in the origin and evolution of species – has been examined so often that it isn't necessary to reiterate here. Suffice to say, Huxley and Wilberforce would never have faced off in 1860, and you wouldn't be reading this book, if Darwin hadn't recognized natural selection as the driving force of evolution.

It is one of Darwin's other subjects, discernible even in this, his earliest major work, which interests us here. It is a subject which is dealt with more subtly than his discussion of biological evolution, presaging his hesitation nearly thirty years later to include a direct discussion of it in *The Origin of Species*. The subject is humanity. Or rather, the diverse array of humanity encountered through the lens of a Victorian scientist with an urge to explain the patterns he saw. Why were people around the world so different from each other?

The *Beagle* set sail from Devonport, near Plymouth, on 27 December 1831, calling at the Cape Verde Islands, Brazil, Argentina, Tierra del Fuego, Chile, Ecuador, the Galapagos, Tahiti, New Zealand, Australia, Mauritius and Brazil (again) before returning home on 2 October 1836. Travelling on such a grand, circuitous route, Darwin had a chance to encounter many different groups of people first-hand. He explored Brazil, witnessed the gauchos of Argentina in action on the pampas and trekked into the Andes with Chilean guides. Perhaps

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the most distinctive people he encountered, though, were the native inhabitants of Tierra del Fuego.

Darwin described the Fuegians as being '. . . stunted in their growth, their hideous faces bedaubed with white paint, their skins filthy and greasy, their hair entangled, their voices discordant, and their gestures violent. Viewing such men, one can hardly make one's self believe that they are fellow-creatures . . .' Clearly not what most people conjure up when asked to describe 'noble savages'. Yet Darwin was actually travelling with three Fuegians taken to London five years earlier by Captain FitzRoy. Colourfully named Fuegia Basket, Jemmy Button and York Minster by their kidnappers, their real names were Yokcushlu, Orundellico and El'leparu. Taken by the sailors on the earlier voyage as a form of ransom after a small boat was stolen, the Fuegians were clearly out of their element in the world of Victorian Britain. Nevertheless, they had learned to speak rudimentary English and had even begun to take on some of the affectations of the British middle classes. Jemmy, for instance, repeatedly exclaimed 'poor, poor fellow' when Darwin was seasick – which he was with disheartening regularity. In spite of the alien nature of the Fuegians in their native land, Darwin clearly views them as being members of the same species, albeit with his Victorian class-influenced view of humanity. He even compares them favourably with the sailors on the *Beagle* when discussing superstitions, and blames their generally lower level of material culture on an egalitarian political system. Although he may have been rather naïve politically, he was ahead of his time scientifically.

Importantly, Darwin had come down on the side of nurture in the nature vs. nurture debate. Even the Fuegians, as horrendous as they were in their natural state, were members of the same species as the crew aboard the *Beagle*. In the closing chapter of his journal he takes a jab at the barbaric slave trade then widespread in the Americas with one of the most poignant statements ever made on the equality of humanity: 'It is often attempted to palliate slavery by comparing the state of slaves with our poorer countrymen: if the misery of our poor be caused, not by the laws of nature, but by our institutions, great is our sin . . .'

But if humans were all members of the same species, how was it possible to explain the dizzying diversity in human colours, shapes,

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sizes and cultures around the world? Where had the species originated – and how had our ancestors journeyed to such remote parts as Capetown, Siberia and Tierra del Fuego? The answers to these questions would need to wait another 150 years, with a few detours through bones, blood and DNA.

. . . or many?

How do we define a species? The accepted definition since the mid-twentieth century is that of an interbreeding (or potentially interbreeding, in the case of widely dispersed species) group of organisms. In other words, if it is possible to reproduce young together, you must be the same species. To Darwin, writing before the acceptance of this codified definition, there nonetheless seemed to be no question as to the commonality of humanity. His abolitionist call at the end of the *Voyage* was heart-felt, as slavery had recently been outlawed in Britain, and the debate still raged in the United States and elsewhere. But many others had taken quite a different view, arguing vehemently that humanity was clearly divided into distinct species or subspecies. This was first formalized in the early eighteenth century by a Swedish botanist, Carl von Linne (Latinized to Linnaeus), who took it upon himself to classify every living organism on the planet. Rather a daunting task, but Linnaeus managed to do a pretty good job. Among other innovations, he gave us the binomial system of nomenclature used by biologists to this day – the Latin *Genus species* we all know from school, as in *Homo sapiens*.

Linnaeus recognized that all humans were part of the same species, but he added additional subclassifications for what he saw as the races, or subspecies, of humanity. These included *afer* (African), *americanus* (Native American), *asiaticus* (east Asian), and *europaeus* (European), as well as a poorly defined, blatantly racist category he called *monstrosus* – which included Darwin's Fuegians, among other groups. To Linnaeus, it seemed that the differences among humans were great enough to warrant this additional classification.

Darwin, ever the objective scientist, noted that our outward appearance has been over-emphasized in classifying humanity. In *The Descent*

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of Man, written towards the end of his life, he notes that: 'In regard to the amount of difference between the races, we must make some allowance for our nice powers of discrimination gained by long habit of observing ourselves.' This is an important insight, and one that helps to explain much of the subsequent debate over human origins.

The American pro-slavery lobby embraced an extreme form of the Linnean view in the nineteenth century. The view that human races were actually separate, inherently unequal entities made it easier to justify the brutal oppression practised in the United States. The theory that human races are distinct entities, created separately, is known as polygeny – from the Greek for 'many origins'. This theory clearly contradicted the biblical story of the Garden of Eden, inhabited by a single Adam and a single Eve, and thus raised the hackles of the church. Most biologists also objected to the polygenist view, noting the extensive hybridization among human races. To the polygenists these objections were easily overcome, as exemplified by Louis Agassiz, our Swiss catastrophist. According to Stephen Jay Gould, Agassiz believed that the ancients who wrote the Bible would not have been familiar with the different types of humanity, and thus they only wrote about a Mediterranean Adam. Agassiz thought that the Negroid Adam must have existed, as well as the Mongolid, and presumably the American.

While most biologists did not accept this view, it has been maintained to the present day in some anthropological literature. This is largely as a result of the great difficulty in explaining the physical diversity in humans, as well as certain patterns in the fossil record. Perhaps the best-known recent adherent of this view was the American anthropologist Carleton Coon, who published two hugely influential books in the 1960s, *The Origin of Races* and *The Living Races of Man*. In these books, Coon advanced the theory that there are five distinct human subspecies (Australoid, Capoid, Caucasoid, Congoid and Mongoloid), which evolved into their present forms *in situ* from ancestral hominids. Tellingly, Coon suggests that the different subspecies evolved at different times, with the African Congoids appearing early and remaining trapped in an evolutionary dead-end until the present. He asserts that the dominance of the Europeans is a natural consequence of their evolved genetic superiority, and even

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provides solace for those who lie awake at night worrying about interracial mixing:

> Racial intermixture can upset the genetic as well as the social equilibrium of a group, and so, newly introduced genes tend to disappear or be reduced to a minimum percentage unless they provide a selective advantage over their local counterparts. I am making these statements not for any political or social purpose but merely to show that, were it not for the mechanisms cited above, men would not be black, white, yellow or brown.

This was not a statement to be taken lightly, considering that the writer was the president of the American Association of Physical Anthropology (the largest and most influential anthropological organization in the world), a professor at the University of Pennsylvania, curator of ethnology at the University Museum and a regular guest on a popular American television programme.

It is interesting that Coon went to such an effort to distance himself from political motivations. He did this because physical anthropology was just emerging from a dark period when it had, in fact, been self-consciously political. As outlined by one of its main proponents, Aleš Hrdlička, in the inaugural issue of the *American Journal of Physical Anthropology* in 1917, physical anthropology should serve humanity as well as study it – it was not simply a 'pure' science. Hrdlička noted its utility in formulating eugenics programmes, as well as in determining immigration policy. While he may have been trying to impress funding agencies with the applicability of what many considered to be a rather esoteric science, it was clear that some people were listening quite closely – and were soon to act on the advice of some pragmatic and politically savvy anthropologists.

Out of the ivory tower

Anthropology had developed in the nineteenth century as 'that science which has for its object the study of mankind as a whole, in its parts, and in relation with the rest of nature'.

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More than anyone else, the Frenchman Paul Broca – who penned this description – can be credited with creating the modern discipline of physical anthropology. Broca was an expert on craniometry, the measurement of minute differences in skull morphology that were thought by some to indicate innate potential, and he developed a detailed classification of humanity based on these subtle variations. Broca's methods, disseminated in a highly influential textbook, served to galvanize the scientific community. Soon everyone wanted to measure skulls.

In England, an amateur scientist named Francis Galton was an early convert of Broca's. Galton had inherited enough money to fund a variety of research subjects, including statistics and biology. Soon he too began to measure anything and everything on the human body in an effort to categorize human diversity scientifically. This could have been dismissed as no more than an eccentric's dabblings had his fascination with human classification not mixed with a misinterpretation of Darwin's theory of natural selection to produce a potent brew.

As we saw earlier, Darwin was not a 'hard' racist. He was as prone to trivial biases as the next person, but from his few statements on the subject, we can infer that he believed humanity to be largely equivalent in terms of its biological potential. This was not true for many of his adherents. It was the philosopher Herbert Spencer, for instance, who actually coined the phrase 'survival of the fittest', and he used it to justify the social divisions inherent in late-nineteenth-century Britain in a series of widely read books and essays. If divisions within society could be explained by science, then surely differences between cultures had a similar cause. Combined with the Victorian obsession with classification, this leap from 'might makes right' to a belief that these cultural differences must be definable using scientific methods encouraged the growth of the eugenics movement.

The movement began innocently enough. Eugenics actually means 'good birth' (who could oppose that?) and, to a certain extent, it had always existed. The collection of ancient Jewish laws known as the Talmud, for instance, urged men to sell all their possessions in order to afford to marry the daughter of a scholar, so that their children would be more intelligent (scholars' daughters clearly weren't cheap

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dates). It was only at the end of the nineteenth century, however, that eugenics really took off. The reasons are complex and have to do with Victorian ideas of self-improvement, interest in new scientific fields such as genetics and the wealth of emerging data from physical anthropology. Once it got going, though, there was no stopping it.

The Eugenics Education Society was founded Britain in 1907, in Galton's honour. Its stated objective was to improve the gene pool of humanity through the selective breeding of 'fit' individuals. Its influence spread rapidly to the United States, where the culture was particularly predisposed to theories that promised self-improvement through the application of scientific knowledge. Soon 'Fitter Families' contests were a common feature of American state fairs, with families vying for the kudos and medals that came with being chosen as the fittest. Eugenics also caught on throughout Europe, where a somewhat darker strain emerged in the form of German racial hygiene.

While eugenics began as a movement dedicated to social enlightenment, its aims were soon perverted, and by the 1910s and 20s it was being used in the United States as scientific justification for the forced sterilization of people believed to be mentally subnormal. It was also behind the mean-spirited implementation of racist immigration tests and quotas (in the 1920s desperately poor eastern European immigrants, most of whom were illiterate, were expected to arrive at Ellis Island in New York knowing how to read). The systematic extermination of Jews, gypsies, homosexuals and other supposedly inferior groups by the Nazis in the 1940s had its scientific justification in the application of eugenic principles. Physical anthropology had jumped to the head of the queue in its race to prove 'useful'.

It is no wonder then that Coon, writing after the horrible truth about the Nazi atrocities had come to light, made such an effort to distance himself from political ends. Even in the segregationist climate of America in the early 1960s he would have inflamed old wounds that were only beginning to heal if he had recommended political action based on the findings of physical anthropology. Instead, he presented the fact of human racial differences as an objective, scientific observation of the world – warts and all. Don't blame the messenger, he seemed to be saying, if you don't like the message. But the claim

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that his conclusions were based on an objective appraisal of the evidence at hand was flawed, since no one had actually tested his genetic hypotheses. What *did* our genes have to say about human racial differences?

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