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Evolution inverted

Take the giraffe. Marvellously suited to nipping the top-most leaves from acacia trees in and around the African savannah. Elegant too, in an elongated way. Crucially for us, though, it is an ideal example of how evolution occurs.

We can all identify with it, stretching and straining to get at the best leaves, just at the edge of its reach. We have all been there sometime ourselves — straining to reach something on a high shelf perhaps, but straining to reach something nevertheless. We know how frustrating it can be to be able to brush our fingertips against the desired item and yet not quite grasp it. There, by a taller tree, just as it seems as though even the giraffe's legs, body, and neck are not long enough, out comes this remarkable tongue. A tongue that stretches out can wrap around a sprig and pull it back into the waiting mouth. A trick not available to us at all: when we have reached our limit we can only resort to a box, stool, ladder, or something precarious to balance upon.

But the point is made. Giraffes are a prime example of Natural Selection.¹ Or as Darwin's contemporary, Herbert Spencer, put it in a somewhat more punchy, tabloid headline style: Survival of the Fittest. That is, survival of their kind is directly linked to giraffes having long necks. Height allows them to occupy a grazing niche that is abundant and free from non-giraffe competition.

So far so easy.

Stephen Jay Gould, expanding on Darwin's ideas, makes a key observation.² He demonstrates that evolution is not a steady progress, an advance of the sort the Victorians were attracted by: inevitable; inevitably leading to the emergence of man (not just any man either, but one with more than a passing resemblance to a true Aryan male, rather than, say, a Woody Allen). In fact, although evolution is sometimes characterised by incremental adaptations over successive generations, at others it is typified by random disasters and random responses. Luck is a key element. Too late to point that out to the dinosaurs though.

Dawkins, adding his own twist to the plot, highlights that, contrary to our

anthropocentric view of the world, the unit of inheritance is the gene. It is not the organism after all, but the gene codes we contain. They are jostling for survival by being associated with organisms that can successfully reproduce them.³ In the giraffe then, the long-neck gene finally found an answer to its predicament.

Now it gets harder.

Evolution still happens to humanity.

There, I have said it. I know we like to think it does not apply to us, but it does. It is still happening. It is an inescapable truth. Everywhere. All the time. Whether in the randomness of existence: for all that earthquakes, mudslides, shootings, and stabbings may mostly seem like bad-luck ways to die; or in its more ordered forms: for example, those getting better nutrition living longer, healthier lives than the rest.

Even if we blow up the planet or pollute it till it is sterile, evolution will still have happened. For all our luck, it will also be continuing, just elsewhere. We are one fragment of evolution, that is all.

Medicine has the power to interfere, but in a small way. Let us not kid ourselves. Some of the random bad luck — certain infections may be an example — can be very effectively cancelled out these days. Dodgy genes may not be so reliably fatal as a short neck in a giraffe. But the more insidious forms of disadvantage can never be cancelled out, not completely. Social inequalities are worth fighting, but do not think it is a winnable war. The analogy is wrong.

We doctors already know most of this, and mostly nowadays refer to the problem using a term coined by Tudor-Hart: we call it the Inverse Care Law.⁴ In a nutshell, those who most need care are least likely to get it. The truth of it has been demonstrated time and again by researchers.

But see the Inverse Care Law for what it is. Think mathematically. Evolution is one over it.

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4. Tudor-Hart J. The inverse care law. *Lancet* 1971; i: 405-412.