Translated excerpt

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Evolution. Eine kurze Geschichte von Mensch und Natur
Illustrationen von Johann Brandstetter

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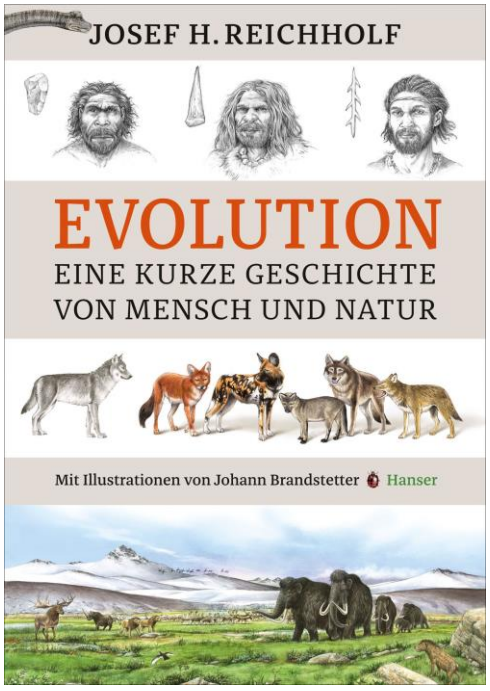

INTRODUCTION

Life on earth began about four billion years ago. How it developed and how we humans emerged is what scientists call “evolution.” This has nothing to do with fossils and old bones, with dinosaurs or Neanderthals, it has to do with us humans as we exist today: How we live, what endangers us, where we are headed and how we (possibly) will continue to develop. The greater our options to intervene in the processes, the more we will also use those options.

From the perspective of us humans, evolution has brought us wonderfully beautiful things, but also very threatening things. The magnificent plumage of peacocks and birds of paradise, the most delightful bird songs, and the impressive antlers of a stag are all results of evolution. Our language is also part of it. As are the diverse cultures and religions.

Among the threatening things, on the other hand, are diseases. The feared avian flu is triggered by viruses. Of course not the kind of virus that gets into computers. It would be crazy to think that! Or maybe not? Why are computer programs that do damage called “viruses”? Is that also part of evolution? They are in fact active everywhere and all the time. We don’t always notice it, unless something bad happens. It is the same thing with infectious diseases. Their pathogens change more quickly through evolution than new remedies can be developed. The flu viruses are frequently more than just a runny nose ahead of medical research. Bacteria that we thought we had overcome are presently also getting out of control. Antibiotics such as penicillins virtually breed bacteria that even the most powerful remedies cannot cope with. They are called “multiresistant germs” if they cannot be treated with a mixture of different antibiotics, and are particularly threatening in hospitals, just the place where we should feel the safest. If we trace their development path it is quickly obvious what happened: evolution. The bacteria, the viruses, and other pathogens of diseases, such as the ones that cause malaria, mutate so quickly because we change their living conditions by introducing medicines. They adapt to the new conditions. That is evolution! However, that is the threatening side of evolution, since far more people have died from infectious diseases than in wars.

Our genesis, or origin, is itself an extremely exciting story! The evolution of human beings took several million years. And it is continuing even today. Evolution never stops. Right now we are certainly not at the crowning conclusion of our development; instead, we are an intermediary state on the continuing path of the human species. As people say, life goes on. Even if each individual life ends in death. We don't really want to admit that death is necessary, at least not while we are young and healthy, looking optimistically toward the future. We surely do not do everything we could in order to live a long and healthy life, because while we are young we think we are strong enough and we feel rather certain that we will be able to cope with everything in life. But as we start to get older, when afflictions and sicknesses become noticeable, we often regret the things we neglected to do earlier. We usually don't waste a thought on why things for us humans happen as they do, with ageing and many diseases. Our developmental history, however, makes it understandable that we have certain physical weaknesses that make us susceptible to diseases; but we also carry with us the possibility for a uniquely long life expectancy.

A lifetime of seventy to eighty years or more—for elephants that would be an extraordinary age. Horses, which are much larger than we are, manage to live only about one-third that long. And as we know, dogs' lives are even shorter. Even with the best care, dogs die at the age of ten to fifteen. Our life expectancy makes us totally out of the ordinary in biological terms. Turtles, which live about as long as humans, move slowly. Their lives progress as a leisurely pace, but ours move much faster. There is a rule in nature that a fast life is a short life. Slowness lets you get old. So why can we humans, of all animal beings, live to be older than elephants? We are distinguished by numerous other advantages as well. But also by attributes that it would be best not to have….

Humanity unfortunately acts as if not all people belonged to the same species, but instead to different species that are very foreign to each other. It is *people*, not wild animals, who are the worst enemies of other people. Is that normal? What does evolutionary biology have to say about that? Did we somehow go wrong as a species, as a life form?

This book deals with that kind of topic. There are three parts. The first part is about us, about the development of human beings and the question as to why we turned out as we did. Starting from our daily experiences and our own family histories, we venture to look back into the deep past. We will find our distant ancestors in the African savannah, surrounded by large wild animals and subject to conditions that continue today to determine our inner life. We will consider events in the earth's history that had a lasting influence on the path to present-day human beings, including the gulf stream and its origins, and the ice ages. Looking at our physique we might ask why we became runners and why we have such a large brain that it causes difficulties at birth. Our distant ancestors were not two-legged, but more similar to chimpanzees. They lived on trees and only occasionally went down to the ground. Of course we will also look at the Neanderthals and try to figure out why they became extinct although their brains were not smaller than ours, but actually even larger. Is a large brain a survival guarantee? Or not? We also have to ask why people can look so different and where did this diversity, which brings such conflict, come from. Looking and talking differently from others has cost the lives of more people than attacks by so-called wild animals. Humanity was divided until just a few decades ago into numerous different "races." These were linked to values such as "higher" and "civilized." Those who did not belong to a certain group were considered "subhuman." They were often treated as nonhuman. Racism has by no means been overcome; it still presents a huge problem for humanity. Cultural characteristics reinforce it. Why do people who think they are the "crown of creation" act so inhumanely? And how can we deal with the exclusion of other people? We should know about the background that led to the discrimination of other people. Looking more closely at our evolution might help us understand ourselves better.

It should not be taboo to take other cultures and religions into account. In the third part we will see how they came about and what impact they have. It is in fact the new, globalized developments, beyond all borders and cultures, that allow us to look hopefully to the future. A view of evolution in the modern, electronically networked world will show us that. For the very first time, *one* world is now emerging with *one* humanity.

In between, part two, is about dinosaurs and whales, about birds and the big mystery about how life could emerge in a world that was totally inanimate. Selected examples will show that we can in fact follow processes of evolution outside, in nature. To do that we don't need to breed dangerous bacteria or have any special biological knowledge. Openness and interest will suffice. Then we can experience right before our eyes how life develops further, constantly creating new diversity again and again.

We humans are unique. There's no doubt about that. But at the same time we are also part of the big event of evolution. If we understand to some extent how we got to be how we are and how the rest of nature developed, then we certainly will be better able to judge what is important in order to survive in the future. There have been enough things that have gone wrong in evolution. Human beings do not have to become one of them. But there is certainly a risk.

We have been highly irresponsible in the way we have been treating the environment and the rest of life around us. Evolution teaches us respect for life. And it urges us to act responsibly—toward our fellow human beings, in the interest of coming generations, and for life itself. It is our greatest asset.

Josef H. Reichholf, December 2015

1. AN EXTREMELY ODD BEING

We immediately recognize people as people. It takes no effort at all to distinguish them from apes and from all other living things. And that is true, despite the fact that people all look so different. Just the height alone can vary in adults from around 4 feet to well over seven feet. To us Europeans, some peoples in the world seem so small, like the Pygmies in the Congo rainforest; and others seem like giants, such as the Massai in East Africa. These two peoples differ greatly from us and Asians with respect to skin color. But some facial shapes and features also look very different. Is there even such as thing as "*the*" human being? Do we really mean all of humanity? Or are we thinking more of ourselves and our culture? Do we unconsciously make judgments based on what is familiar to us? Then many people really are "different" from us. And we are different to them.

The Aborigines, the indigenous people of Australia, could have thought the Europeans, who suddenly descended upon them in their remote world a good 200 years ago, were aliens from outer space, who only had vague similarities with what they considered normal human beings. They considered themselves to be "normal." In South America the Spaniards came as conquerors and were at least as barbaric for the highly developed civilization of the Inkas as the Germanic peoples were to the cultivated Romans, whose empire they destroyed one and a half millennia ago. Is "humanity" just a collection of different groups of people who have little in common except for basic needs such as food and drink, sex and shelter? Most people seem foreign to us because they speak differently, think differently, live differently. So they are in fact "different." How do we manage when we come together with "the others"? Should we be giving or demanding? Should we try to harmonize things or tolerate differences? Answers are only easy if we are not dealing with a real situation, but only a theoretical encounter. Real life is always more complicated than our wishful thinking. We cannot know what other people think and feel, and what they have internalized over the course of their lives. That is true for all people, without exception. No one can understand absolutely everything about human life. That is what makes it so difficult for people to live together.

Why is that the case? Why do these differences, these problems exist? Couldn't, shouldn't all people speak the same language and have the same culture and look relatively similar? If that were true there would be no conflicts between religions (that is, with people of a different faith or nonbelievers), ideologies, and peoples. "Peoples" would not exist at all. In real life, however, groups of people are separated from one another into nations by artificial boundaries or made into "peoples" through cultural idiosyncrasies. Are Austrians a people of their own because they live in Austria, a piece of land separated off by borders in the middle of Europe? And not Germans, although they speak German and the Austrian dialect is far more similar to Bavarian dialect than Bavarian is to the Low German dialect spoken along the North Sea coastline? In Switzerland three different language groups live together in a single country and most Swiss identify themselves as Swiss. To them, as to all people from central and northern Europe, people from Sub-Saharan Africa or New Guinea are much more foreign, no matter what country they are from. In short: We have a hard time dealing with ourselves: "human beings."

Dogs, on the other hand, have far less problems with each other, although they have been bred into such extremely different breeds. The word "breed" refers not only to dogs and other pets, but to animals and plants in general. A different word is used to refer to different ethnic groups within the human species: race. The word "race" has led to much harm and misery. Classifying human beings according to race has historically usually been connected with a valuation, viewing your own race as having greater value and devaluing or denigrating the others.

Of course, people had to develop more or less different lifestyles, depending on whether they lived in cold, polar regions or in the tropics; at the coast or in the mountains. But "race" didn't refer to different lifestyles, but to appearance. At first sight, as it were, people decided if someone else was accepted as an equal or rejected as "foreign." If humanity were not divided up into different races, people say that there would not have been any discrimination of the others. And humankind would have remained peaceful. But that is—unfortunately—a fallacy.

Because people do not want to be the “same”; they want to be different. Even without the distinction of race, people identify as Germans, French, Turks, Arabs, Chinese, or Indians; and within a country, for example Germany, people might identify as Saxons, Friesians, Hessians, or Bavarians. People evidently cannot simply be people who live in different regions. Even with the same basic lifestyles, they want to distinguish themselves from the “others,” based on language, culture, and religion. For humanity, sameness is an illusion.

Reality shows people everywhere in their diversity. Should humanity develop into a general unity and equality anyway? As stated in the United Nations “Universal Declaration of Human Rights”: “All human beings are born free and equal in dignity and rights”! However, this does not mean that they are “the same,” but that all human beings have the right to be treated equally. They do not want to be the same. Being the same would rob them of their individuality and ultimately leave them nameless. Individuals would be unrecognizable and randomly interchangeable. The military tries to enforce such a uniformity among the soldiers, but all too often that leads to death in the extreme situation of war.

All of this is well known. Laws and moralizing demands deal with this. But they do not answer the basic questions: Why are things as they are? Where do the differences come from? What does that mean for our humanness? And what does it say about where we have come from and about the future of humanity?

The history of humanity covers only a very small part of the history of our species since the beginning of humanity. Humans had long since become human beings in a biological sense when they built the first stone dwellings, which marks the beginning of what our school instruction considers “history.” That happened a good 10,000 years ago. But our species of human has already existed for about 200,000 years. Does that mean that we were “ahistorical” for by far most of our history? It would be a grave mistake to assume that. And an extremely dangerous one. It was those times in the distant past that made us into humans; into the type of human being that biologists call *Homo sapiens*. Other people classified as different species lived on the earth before that, and for a few millennia they lived together with *Homo sapiens*. The name of one of those is familiar to

us and we use its name colloquially usually with a derogatory connotation, since it is portrayed, or “reconstructed,” as dark and somehow dumb: the Neanderthals.

However, the fact that the Neanderthals were Ice Age humans, who on average had a somewhat larger brain than ours, makes us hard pressed for an explanation. Because we tend to equate a large brain with greater intelligence, somewhat like the storage capacity of computers. The Neanderthals are extinct. Our late Ice Age ancestors with smaller brains survived. They spread out over the entire planet. Were they smarter than the Neanderthals? The old bones of the Neanderthals, of which a lot still exist in a fossilized form, reveal next to nothing. This is because we can only “reconstruct” fossils in a meaningful way—that is, rendering them in a living form as it were—if we know of similar living beings that still exist. That means that in attempting to figure out our origins, we have to start with ourselves. Our features and characteristics offer sufficient starting points.

Not only the old bones tell us about our descent from earlier, long past times. The distant past also exists today in our flesh and blood, in our brains and our habits. The primordial times of humans continue to have an influence in the present. Stone Age life was not simply overcome, once most people became sedentary. The times before that show themselves whether we like it or not. Humans developed over the virtually inconceivably long period of many million years. We will keep getting reminders of the distant past. There’s so much we still don’t know about how we evolved. Every year new findings are reported. Some of them supplement what we already know, and others make it necessary to correct our ideas. That is a very normal research process used in the natural sciences. They do not start by assuming that knowledge is fixed and definite, that it has to have been this way or that, and that it could not have been at all different. Science is always open for new and better insights. It is an adventure that leads into the unknown. We can use science to learn about the world, about life, and about ourselves. And about how we became what we are.