

The Waking World

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Introduction Part 1

Every night when we go to sleep we go on crazy adventures in imaginary worlds: we are a superhero flying over a city, a secret agent driving a speedboat, a billionaire holidaying in Dubai. Every night we sample dozens of different lives and none of them are real. When we fly over cities with our cape fluttering behind us there is no city, no cape, no us. We are not truly flying over the city; we are lying in bed imagining flying over the city.

Our brain goes to a huge amount of effort to create this world for us. Our brain creates every building we see. Our brain creates everything we do, everything we say, out of absolutely nothing. If our brain has to do a large amount of work it must be using a large amount of resources. Every process our body performs requires a certain amount of energy and this energy has to be acquired by us during our waking life. Resources are precious, valuable. The resources that the brain uses to create dreams could be used to create something else instead. They could be used to pump the heart or expand the lungs, processes that our continued life is entirely dependent on.

The body has to be very careful with how it uses the resources available to it. Because there are these vital processes that need to be completed and these vital processes require resources the body must be very careful with how it uses the resources available to it because if it runs out of resources the organism will die.

Imagine an organism has ten parcels of energy. Pumping the heart uses one parcel of energy an hour and expanding the lungs uses one parcel of energy an hour. The organism needs to acquire more energy before the energy runs out in five hours or it will die because it cannot pump the heart or expand the lungs. The situation is far more severe than this because the organism only has five hours of life left if it only uses its energy to pump the heart and expand the lungs. In reality there are many more vital processes that require parcels of energy. The more energy consuming processes that the organism chooses to perform the less time its parcels of energy will last for. If the organism does ten processes that each consume one parcel of energy an hour then the organism can only survive for one hour on its ten parcels of energy. The more the body chooses to do the less time the resources it has acquired will last so the more the body chooses to do the more resources it is going to need. An organism that is unlucky enough to have a body that performs a vast amount of resource consuming reactions will have to spend a substantial amount of time acquiring resources to power these reactions.

It is massively advantageous for an organism to have a body that does as little as possible. The less the body does the fewer resources are required and the fewer resources are required the less time and effort the organism will have to devote to acquiring resources. The perfect organism will require no resources at all and as a consequence of this they will be free to do whatever they want with their time instead of being a slave to a body that constantly demands they drink water and eat food. This dream organism does not exist and all life is dependent on the continual acquisition of the resources needed to sustain it.

As organisms require resources to survive the more resources they require the harder it will be for them to survive. Predators have been evolving for billions of years with the aim of improving and becoming better at hunting, but, much to their dismay, the prey have also been continually evolving with the contradictory aim of improving their own survival. Because of this even though predators are fearsome animals they still have to work hard to catch prey because the prey have become exceptional at evading these predators.

Imagine a lion needs five parcels of energy a day. This is the exact amount of energy that the lion gets when he eats an antelope. Because the lion requires five parcels of energy a day and he gets five parcels of energy from eating an antelope the lion needs to eat an antelope a day to survive. It takes the lion five hours to catch and consume an antelope so the lion has no problem surviving. If the lion needs more than five parcels of energy a day the situation is drastically different. If the lion needs ten parcels of energy a day he would need to catch and consume two antelopes so he needs to spend ten hours a day hunting and eating. Because the lion is awake for sixteen hours a day he can achieve this. Because he is awake for sixteen hours a day he could even conceivably survive if he needed to catch and consume three antelopes a day but this would be the absolute maximum. If the lion needed twenty parcels of energy a day he would have to catch and consume four antelopes so it would be impossible for him to survive because there is not enough time in the day for him to acquire all the energy he needs.

The more energy an organism requires the harder it is for that organism to survive so the less energy an organism requires the easier it is for them to survive. There is constant competition for resources in the wild: there is both competition between organisms of different species and organisms of the same species. When lions hunt antelopes the lions and antelopes are competing for survival and they cannot both win. It is a highly unfortunate fact of life - such an unfortunate fact that its mere existence conclusively proves that life has not been intelligently designed - that the only way most life forms can continue living is by murdering and consuming other life forms. Lions have to kill and consume antelopes to survive and antelopes have to kill and consume grass to survive. All animals need resources and the only way they can get these resources is by eating other living things. That is not how you would design life. If you were designing life you would design it so it only needed air or water to survive instead of designing it so it was forced to murder other living things.

I digress. This is not a book about religion. The existence or lack of existence of god does not interest me terribly because I am, as everyone is, sure I already know the answer to the question 'does god exist?' 'Does god exist?' is an easy question with an easy answer so there is no point examining it in depth. A far more interesting question, a question I do not know the answer to, is 'why do we dream?'

Dreaming makes no sense at all: it makes no sense because we do not remember our dreams. We spend all night going on crazy adventures in imaginary worlds and then we forget every second of every adventure. What is the point of dreaming? It seems like a waste of time; and, more importantly, it seems like a waste of resources. The lion that couldn't survive because he needed twenty parcels of energy could have survived if he only needed fifteen parcels of energy. This imaginary organism is doomed to die because his body uses too many resources. The fewer resources you need the easier it is to survive and the less your body does the fewer resources it will need. Organisms need to do as little as possible because the less they do the longer they will live.

Evolution works in a number of ways. We believe, and we may be wrong, that one of the major forces at work in evolution is the process popularised by Darwin in which a population of animals adapts to its environment. Imagine a population of a hundred birds living in the jungle. Each of these birds has a different maximum temperature they can survive at. All of these maximum temperatures are between 50°C and 60°C and the temperature never goes above 45°C so all of the birds can survive. In this population of birds there are ninety birds that have a maximum temperature between 50°C and 55°C and ten birds that have a maximum temperature between 55°C and 60°C. The birds reproduce and all of the new birds have similar maximum temperatures to their parents. The average maximum temperature of the population of birds is 52°C.

Global warming strikes, as it has a tendency of doing, and the temperature in the jungle rises so that it now goes as high as 55°C. This is too high for ninety birds so these birds die leaving the ten birds that can survive above 55°C. The average maximum temperature of the population of birds is now 57°C. These birds reproduce and all of the new birds have maximum survivable temperatures above 55°C because they inherit that trait from their parents.

This population of birds adapted to its environment. When the temperature of the jungle never got above 45°C the average maximum temperature was 52°C which was high enough for survival. When the environment changed the population of birds had to change too. When the maximum temperature rose to 55°C the population of birds changed from having a maximum temperature of 52°C to a maximum temperature of 57°C. The population of birds changed from a population that couldn't survive to a population that could survive. The environment changed and the population of birds adapted to this new environment. They adapted through the deaths of ninety percent of their population. If the fittest survive the weakest must do the opposite of survive. Death is essential to Darwinian evolution because organisms that are not a good fit to the environment have to die before they pass on their inferior genetic information.

Baby birds inherit their maximum temperature from their parents. Imagine there is a male bird that has a maximum temperature of 58°C and a female bird that has a maximum temperature of 52°C. The male bird can survive in this new environment but the female bird cannot. If these two birds breed there is a 50% chance the baby will have a maximum temperature of 58°C and a 50% chance the baby will have a maximum temperature of 52°C. If a bird with inferior genetic information is allowed to breed then there is a 50% chance that the baby bird will also have inferior genetic information. This is a complete waste of the father's superior genetic information: he has spent time and resources making a baby that is doomed to die because he bred with a female who had genetic information that was incompatible with the environment.

All the birds that have maximum temperatures of below 55°C die when the temperature in the jungle rises to 55°C so their inferior genetic information is removed from the gene pool. This leaves the birds with superior genetic information to breed with each other. All the babies that are born will be able to survive in this new environment. The environment changed and the population of birds living within it were forced to change to; the population of birds responded to the temperature rising to 55°C by changing so that every member of the population of birds could survive at 55°C.

It is believed that this 'survival of the fittest' process has been the major process behind the creation of all forms of life that populate this planet but there are other processes at work too. There is a huge amount of luck in a process called genetic drift and there is Lamarckian evolution in which organisms themselves adapt to the environment by changing (in Darwinian evolution the

organisms themselves never change only the species changes). Even though these other processes are happening Darwinian evolution is likely the major force that has resulted in the life that exists today.

In Darwinian evolution certain members of a population have advantages over other members of the population. The birds that could survive above 55°C had an advantage over the birds that could not and because they had this advantage they were the ones that survived long enough to pass on their genetic information. The majority of life has evolved like this. Everything our bodies do they only do because when you do that thing you have an advantage over organisms that do not do that thing.

Consciousness gets in the way a little: everyone is running around doing things that do not benefit their survival in any major way. This is the curse of consciousness, the gamble we have to take when we give organisms free will. This strange grey area does not stretch to dreaming because dreaming is not under the control of the conscious mind. We do not choose to dream. Because dreaming is outside of conscious control it simple has to be advantageous somehow.

All animals dream so dreaming must have evolved very early on. In evolution we talk about organisms having common ancestors, 'hypothetical' creatures that these two separate groups of organisms evolved from. If there is a trait present in both of these groups of creatures it is likely that this common ancestor also had that trait. For example: humans have five fingers and chimpanzees have five fingers so the common ancestor that both chimpanzees and humans evolved from also had five fingers. Because dreaming is observable in both dogs and humans then it is likely that the common ancestor of dogs and humans also dreamed. This common ancestor would have been alive a very long time ago because humans and dogs diverged a long time ago. Dreaming must have evolved a long time ago.

What is more important than the fact that dreaming evolved a long time ago is the fact that it is still here. Let's say, and I'm making this number up, that the common ancestor of dogs and humans lived a hundred million years ago. If this common ancestor dreamed a hundred million years ago and we still dream today dreaming must be a huge advantage. If it were not we would have stopped dreaming at some point during the hundred million years. It is likely that dreaming is not only advantageous but necessary for conscious life. So, then, why is dreaming necessary for survival? Or, to put it in more appropriate terms, what exactly is the advantage of dreaming?