



Shaun Johnston

ALTERNATIVE TO DARWINISM
AND CREATIONISM
BASED ON FREE WILL:

Its role in the upcoming revolution in natural philosophy

SPECIAL HUMANITIES EDITION



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Published by
EVOLVED
SELF
PUBLISHING

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At the end of this book are extracts from titles already published by Evolved Self Publishing. **Glossary** is taken from the website takeondarwin.com, also published by Evolved Self Publishing.

This is a special humanities edition available only from the publisher. The standard edition with a different introduction and conclusion, subtitled “Next Step in the Quest for Meaning in Life,” is available in print online through Amazon and as a free pdf at www.evolvedself.com/alternative/meaning.pdf.

*Alternative to
Darwinism and Creationism
Based on Free Will:*

*ITS ROLE IN THE UPCOMING REVOLUTION
IN NATURAL PHILOSOPHY*

*Other works by Shaun Johnston
published by Evolved Self Publishing.
Extracts from these titles appear
at the end of this book.*

Books:

Father, in a Far Distant Time I Find You

Me and The Genies

Save Our Selves from Science Gone Wrong:
Physicalism and Natural Selection

Self Improvement
Through a New Approach to Evolution

Websites:

www.evolvedself.com

www.takeondarwin.com

Introduction

Consciousness, isn't it something we all experience? Yet opinions about it are diverging so rapidly that some people see natural philosophy as heading for a major upheaval. This revolution in how we see the world could be as dramatic as the one that gave birth to modern science four centuries ago. But this time the revolution will involve not how we understand matter but how we understand ourselves. It's going to be a battle over who gets to define human nature.

Already I see people taking sides. Those most passionately loyal to the scientific revolution four hundred years ago are gathering behind the banner of physics. They go by the name of physicalists or naturalists. What's at stake for them is, does physics rule? If it does, then free will can't exist, and our experience of having free will was always just an illusion. On the other hand, if we really do have free will then the rule of physics is broken and the physicalists lose. The physicalists are the ones forcing the issue. They can't any longer bear to let free will go unchallenged.

The other side consists of all those concerned enough to resist them, mainly people in the humanities—they're the ones with the most to lose if the physicalists get their way. Both sides of the pending revolution have their champions, but the physicalists have the edge. Their champions use words like "compatibilism" and "supervenience" that sound very technical and modern. The humanities' champions are demoralized and scattered, their terms for human motivations are old fashioned, they've even given up defending key concepts like "dualism" and "mind." They've nothing to set against the rigor of the physicalists' arguments.

I approach the faceoff from an unusual position, inbetween the two sides. I trained in science and I've been a physicalist. But working as a graphic designer and writer drew me over to the humanities' side. I believe I can contribute by reporting how the issues look from my point of view.

First, I can testify to the value of free will. When I grew up having free will meant being free to be and think and do whatever I could imagine that was within my strength and ingenuity, without feeling determined by brain chemistry or by God. I think that kind of free will is still fundamental to how we think about ourselves. Take conversation; I think most of us assume the other person is experiencing what we say, in consciousness, and is responding out of his or her own free will. And I think free will is fundamental to understanding creativity. Artists and musicians experience creativity as one thought leading on to another in consciousness. A dancer experiences successive conscious thoughts driving her through corresponding physical movements. A writer experiences editing as a process of consciously weighing alternatives and possibilities. Over time, though, we've come to take free will for granted. The physicalists even go so far as to dismiss it as part of "folk psychology." I now think just the opposite, free will is vitally important. Without it I believe human experience wouldn't make much sense.

Another way I can contribute is through a lifelong interest in the impact of evolutionary theory on human nature.

Throughout history no one's been able to find conclusive evidence in favor of one side of the free will issue or the other. Except, just a century and a half ago, the discovery that we evolved promised to provide that evidence. If evolution operates through purely physical processes it could generate only purely physical creatures unable to defy physics by having free will. But if the mechanism driving evolution turned out to involve processes that weren't purely physical, that could generate creatures that did have free will, then physics would no longer rule. That's why figuring out how we evolved could be what decides the outcome of the coming revolution.

Most people have come to accept the mechanism of evolution proposed by the physicalists involving a combination of two purely physical processes, natural selection and genetic mutation. "No one's come up with an alternative," physicalists say, "so we win!"

What winning means to them is, consilience, and what consilience means is the uniting of disparate fields of knowledge under a single umbrella, all using the same form of discourse. The consilience the physicalists are pressing on the humanities involves all human motivation being redefined in terms of genes for competing, mating and favoring one's own progeny, and brain chemistry. No more conscious self, no more free will. Historical figures, the characters in your novels, great inventors and artists, all become automatons. You'll be expected to account for all forms of human aspiration in terms of colored dots on a diagram of a brain.

No matter how demoralized the humanities are, can we tolerate such a prescription for barbarism? Shouldn't we first probe the physicalist position for its weaknesses, and then mount a counter-offensive?

There is a weakness in the physicalist position and it concerns Darwinism, the very basis of their offered consilience. We almost certainly didn't evolve through natural selection and genetic mutation. The great majority of mutations to genes are harmful and, to stop them accumulating to the point of extinction, natural selection would have to be 100% efficient, instead it's actually closer to 1%. Extinction, here we come! And books like "Evolution: A view from the 21st Century" by James Shapiro show the physicalist mechanism can't account for how evolution actually works where it really matters, at the level of the genome. Evidence against the physicalist position on evolution is mounting.

The best counter-offensive against the physicalist program would start with a theory of evolution that can account for free will. It would have to involve processes that aren't purely physical, and that's going to be a lot to swallow. But if it was just plausible enough, maybe it would make the score "advantage-humanities," and we'd get to keep our free will.

I've come up with such a theory. I want to tell you about it, and have you tell me what you think. But because it's so strange, as it's bound to be, I like to tell it in my own way. I tell it in the form of a story. I start by taking us on a trip to an imaginary world where people really do have freewill, and know they have free will, then we follow how their science develops as they figure out how they evolved, along with their free will. When we return to our own world we'll see if we can use their ideas to support the humanities' side in the revolution shaping up over free will.

Story: How Science Progressed in the Other World

The people in this Other World are human like us, and nature in their world is just like nature in ours. In fact, except for people really having free will, this Other World started out just like ours. It even had a Newton, a Darwin, and an Einstein. The Other-Newton came up with a new law, the Other-Darwin came up with a new theory of evolution, and the Other-Einstein came with a new equation, like $e = mc^2$ only about free will. But because, in this other world, people really do have free will, and know they have free will, these ideas led to beliefs about human nature and meanings in life very different from ours.

The Other-Newton, and a new law

What started this Other World off on a path very different from ours was a question the Other-Newton asked himself: where does free will come from? Obviously we don't make it ourselves, it develops in us while we're still infants, as early as the "terrible twos" when we start demanding to do things our way. We could get it from other living creatures such as cats and dogs but then where would they get it from? That left only one possibility: our free will must come along with the specifications for all the rest of our early development. And they all come from the genome.

Was that possible? Was it the genome that gave us free will?

In this other world, people already knew about the genome. It's all the molecules in the nucleus of each living cell that tell a living creature how to develop from an egg to an adult, and provide it with the recipes for thousands of proteins. Could that be where we get our free will from? You might say, "No, it's just molecules." But, people in this Other World would reply, so are our brains yet we've got free will. So you might say, "Then it's no more than any other living creature." But unlike any other living creature, they'd say, the genome's been living and growing and dividing and growing again almost since the Earth was formed. Over that huge stretch of time it's grown to become code three billion letters long.

Besides the brains of living creatures, the Other-Newton realized, the only thing in the universe that's complex enough to be intelligent and have free will is the genome.

So, yes, the genome could be where we get our free will from. That's what gave him the idea for his law: "Creatures with free will can get it only from other creatures with free will."

Publication of this law launched a great wave of excitement. It said there's another creature besides us in the universe that has free will, in fact so much that it can build the capacity for both free will and intelligence into every human being. Yet this mighty intelligence lives in almost every cell of every living thing. And almost everything around us is or was alive. Suddenly people became aware of this mighty intelligence expressing itself everywhere around them. All of nature spoke of the genome's dazzling creative capabilities.

Here's the first benefit people got from believing they really did have free will. If they could have free will, whatever it is that creates all living creatures could have free will too. Nature is the masterpiece it created, and keeps on creating. And because they were evolved, the people of the Other world realized they had a share of those wonders inside them, too.

At the end of his life the Other-Newton asked, how about the genome; where did its free will come from? The genome must have evolved its own free will, he said, and he speculated that, if the genome could evolve its own free will, then it could be what drove all of evolution.

The Other Darwin, and a new theory of evolution

Figuring out how the genome drove evolution fell to the Other-Darwin who followed a century later.

What would a genome intelligence be like? People assumed it must be something like their own, floating around in the ether somewhere. But the Other Darwin asked himself a different question: if the genome has intelligence and free will it must be able to think, and if it can think it must have a brain.

Where was its brain? The answer was obvious: that brain had to be the genome itself, those three billion letters of code, including all the genes that specify proteins and organize development. That's all there is to a genome. Fine, no problem, said the Other

Darwin. But what happens when a genome, with a brain consisting of genes, thinks?

Remember, in this Other World people really do have free will. That means, when they come to a decision and carry it out, something in their consciousness has made something happen in their brains, which in turn made something happen in the world outside, like words being spoken or written down. In the Other World, consciousness can make changes in the brain supporting it. Now, said the Other Darwin, imagine you're the genome and you come to a decision. If you're like us, your decision will make changes in your brain. But the brain of a genome consists of genes. So, if you're a genome, as you think you'll be altering the genes you're made of. But genes are what define a species. So just by thinking, the genome can create new species. The genome thinking about living creatures, and those creatures evolving, will be one and the same.

This set off an uproar. Is our species nothing but a stray thought the genome once had, thundered the press? The rapture over nature that followed from the Other-Newton's law was replaced by the realization that we humans were an even less important part of nature than we'd realized. But despite being a terrible blow to human self esteem the new theory prevailed. And in time it led to a much deeper understanding of evolution. Why were there so few missing links in the fossil record? Because new kinds of living creatures appeared as soon as the genome dreamed them up. Why did some creatures seem to appear pre-adapted to new environments? Because once the genome learned of a new environment it could dream up a creature pre-adapted to that environment. And the new theory accounted for why evolution seemed to speed up as it went along: as the genome matured it could come up with ever more powerful ways of making evolution more efficient.

That explained one of the great mysteries of evolution: why humans were so much like other living creatures, yet so different. The maturing genome must have hit on several new technologies at once. By thinking those new technologies into the genes of an ape it ended up creating us. One of these technologies had to do with increasing brain capacity, another with language, another with freeing hands for toolmaking. Another allowed the genome to build into us more of its own consciousness and free will. Finally

the genome added some extra powers: to invent culture, to build civilizations, to develop the technical skills needed for making microscopes and spaceships, until it had equipped humans to act on its behalf and explore any remaining environments the genome hadn't yet populated. We might be just a thought the genome once had but, the Other Worlders realized, we had the consolation of knowing it had made us very special. Gradually, with this realization, the Other Worldly human spirit revived.

Once people came to accept the Other-Darwin's theory—that the genome could think new species into existence—they became ready for yet another revelation. It would come from a new Einstein, in the form of a new equation.

The Other Einstein, and a new equation

If evolving is really thinking, the Other Einstein said to himself, maybe thinking is really evolving. Maybe in us thinking is something evolving—thoughts. Maybe the process of thinking is our thoughts evolving.

This led the Other Einstein to come up with the equation: "thinking = evolving."

By itself an equation like this doesn't tell you much. But it led the Other Einstein to a new mathematics that defined a new set of dimensions. In these new dimensions, he said, physics as we know it doesn't apply; it's in these new dimensions that free will and creativity originate.

At first no one could understand the mathematics behind these new dimensions. But eventually people accepted that the new dimensions could account for what they called "mind." Both thinking and evolving, people realized, happened in this "mind."

Making thinking the same as evolving opened up wonderful new possibilities. Prior to this there had been two great mysteries: how thinking worked and how evolution worked. Combine them and they become much easier to study. You could study the processes behind evolution both from the outside, through how living creatures evolved, and from the inside through your own thinking. The studies of evolution and thinking rapidly converged and advanced.

Here's a third benefit people got from living in a world where free will does exist. They could now account for things in several

different ways: in terms of physical forces operating in the three dimensions of space, in terms of evolutionary processes operating in the dimensions of mind, and in terms of how these forces and processes interacted. Now everything in human conscious experience could be accounted for; all of matter, all of nature and all of what we think and feel, through the combination of physics and things evolving in mind.

You couldn't study what went on in the dimensions of mind using existing sciences. Creativity in thought and evolution acted like a new kind of indeterminism. Instead, a new science grew up that could measure creative potential in a new unit of measure called the creatron. Working up through creatrons, mega-creatrons, and giga-creatrons, creativity in the Other World began its long climb to approach the creative potential of evolution itself.

A new self

People still asked, what is the meaning of life, but they used the new ideas to come up with new answers. Some people said the genome made living creatures to have them explore the world and report back what it was like, so the genome could pre-adapt new creatures to carry it into new environments. That was why the genome had built into us a love for science and mathematics, so we'd use these capabilities to act as the genome's scouts. Others said the genome had created us to set the stage for the next great advance in evolution by making us an agent of catastrophe like the meteor that wiped out the dinosaurs.

So as usual, people couldn't agree on everything. But one thing they did agree on—the new ideas had let them sweep away a tremendous rag-bag of contradictory ideas about the self they'd inherited from the past, as we inherit ours from Ancient Greeks, Romans and Jews, Christianity, Buddhism, astrology and a host of other sources. Now, from what Other-World people had learned about the genome and the extraordinary powers it had built into them, they slowly assembled an entirely new vision of human nature. For the first time, people could create a coherent notion of human nature from scratch, based on everything they had discovered about how they had evolved to have free will.

Our journey is over. Let's return to our own world, and see what use we can make of these discoveries.

Conclusions

My intelligent genome theory may seem far-fetched at first, but that could be because it violates some deeply buried distinctions we make that actually aren't justified. The theory claims for the genome only what we believe we ourselves possess: intelligence, consciousness, creativity and free will. That provides us with an alternative to the physicalist mechanism of natural selection and genetic mutation, that can account for us having evolved with free will.

With that foundation laid, let's take the physicalist position apart, step by step.

First, let's tackle the physicalists' fundamental claim, that the laws of physics apply without exception, therefore we cannot have free will, therefore everything we do is determined.

This argument is not as convincing as it sounds. Go along with it and say "I don't have free will, so everything I do is determined" and in the short term everything may seem OK. But in the long run you could end up concluding that, since everything's determined, nothing you consciously decide can make any difference, and you might fall into fatalism. Even Edward O. Wilson, arch architect of consilience, warns you against falling into fatalism. But just by warning you he seems to be implying you have some choice in the matter, either in falling into fatalism or adopting determinism in the first place. But if you can choose, then you must have free will. Just being capable of deciding you don't have free will may actually mean you do.

And if you didn't have free will how could you practice science. When you're studying a chemical reaction you assume the reagents you're studying can't choose how to behave, but you must be able to. You must be able to weigh alternatives, to create hypotheses, or you'd be no more of a scientist than those chemical reagents.

When you follow the physicalists' arguments to their conclusions in real-life experience their denials of free will defy logic.

If the physicalist claim for physics isn't as impressive as it seemed, what about physicalists themselves? Individually they're very impressive. They don't deny free will because they don't ex-

perience it. I asked two physicalists from a panel on the science of free will if they experienced being conscious. Yes, they each said. Do you experience having free will? Yes. Do you enjoy the experience? Yes. Why didn't you mention that in your presentation? They looked puzzled. What did that have to do with anything? The experience of free will may be enjoyable but to them it's just an illusion. And they're not alone. The eminent scholar Jacob Bronowski was very familiar with the worlds of both art and science. Back in the 1960's he concluded "The world is pretty well divided into people who are proud of being machines and people who are outraged at the thought of being machines."

Do physicalists know something we don't know, that would make us as satisfied as they are with being machines? From my own experience as a physicalist, I can tell you, no. It's largely a matter of what your conscious experience feels like. To account for our conscious experience we've a choice of many independent traditions—science, mind, natural rights, free will, spirituality, the soul and so on. Now imagine you're one of those people who are proud of being machines, as I used to be, and imagine finding that just one of those traditions—science—can account for almost everything you experience, and that you can easily imagine it eventually accounting for all the rest. Then it would be natural for you to embrace physicalism and discard all those other traditions. But suppose that after using science to account for all your experience there's still a lot left unexplained. Then you'd reject physicalism and add to science as many of those other traditions as you needed. Whether or not you become a physicalist can depend largely on how much like a machine you experience yourself being.

We've seen that there's little logic to the claim that physics rules and that free will can't exist. From my own experience I testified that physicalism can originate in a temperamental inclination to celebrate one's own mechanical perfection. The humanities have no reason to feel intimidated by the physicalist challenge.

You might then be tempted to declare a draw and simply agree to differ. But that would be a mistake. There are extremely important issues at stake. Which evolutionary theory you subscribe to can have momentous consequences. Consider values implicit in the physicalist combination of natural selection and genetic mutation:

- Now that natural selection no longer operates among us we should maintain selection through eugenics.

- Like members of any species, we were created merely to compete with one another so we'd survive long enough to have sex and see our genes survive into the next generation.

- Free will can't evolve. We're determined. We cannot be held personally responsible.

Compare these dismal principles that lie at the heart of the consilience offered by the physicalists with the more humanistic values the Other Worlders extracted from a theory of evolution able to account for free will:

- Instead of seeing nature in terms of just physics, you could appreciate nature as the masterpiece of a magnificent intelligence.

- We're not supernatural but we really are special.

- Seeing our own thinking as a reflection of the creativity of evolution could help us account more simply for everything.

- You would understand yourself better, and be able to create a more coherent vision of your own nature.

The vision of human nature we pass on to our children is bound to be affected by the theory of evolution we ourselves subscribe to. Coming up with that theory is essential preparation for the coming revolution in natural philosophy. Current theories of evolution are based on primitive metaphors—Darwin based natural selection on artificial selection by livestock breeders and my intelligent genome theory is based on imagining that the genome thinks the way we do. The great challenge facing the humanities is coming up with more powerful theories. If we believe that our theory of evolution should account for the mental capabilities we experience then the humanities are more qualified than the sciences to generate such theories. All the early pioneers in evolution except Lamarck were associated more with the humanities than with the sciences at the time they came up with their theories.

For suggestions on how to come up with new theories of evolution on humanist lines check out a website I maintain for students of the humanities: takeondarwin.com. You'll find critiques of Darwinism from Gertude Himmelfarb, the British science writer

Gordon Rattray Taylor, and from the distinguished evolutionist John Maynard Smith himself. You'll find several articles on "Consilience," the physicalist program to have all the humanities re-established on Darwinist principles. There are book reviews, and resources to bring you up to speed. From the home page you can email me with your name and email address and I'll make you a subscriber able to add comments and contributions.

What would it take for someone trained in the humanities to advance the study of evolution? Not as much as you might think. A huge amount of study and research that is claimed to support Darwinism actually supports not Darwinism specifically but evolution in general, and about that there's no question. More important is framing the questions to be taken into account, and identifying the information that's relevant. Besides my own books sampled at the end of this volume, including a reading list in "Save Our Selves From Science Gone Wrong," I recommend:

"Origin of Consciousness in the Breakdown of the Bicameral Mind" by Julian Jaynes.

"Consilience: The Unity of All Knowledge" by Edward Wilson.

"The Ancestor's Tale" by Richard Dawkins.

"Evolution: the View from the 21st Century" by James A. Shapiro.

"The Great Evolution Mystery" by Gordon Rattray Taylor.

Would branding Darwinism as insufficient to account for how we evolved lend support to creationism? Just the opposite. Creationism flourishes because Darwinism can't account for our experience of having consciousness, creativity and free will. Come up with a theory that can account for them and support for creationism will melt away.

Support for physicalism would melt away too. A theory able to account for how we evolved in both body and mind would set new limits to the rule of physics. Physics would still rule over non-living matter, but where life begins physics would have to share dominion with processes of evolution able to generate creatures with free will. This would open up enormous new territory for study and speculation, both for the sciences and the humanities, a vast realm of possibilities that the tradition of Darwin's Bulldogs has shielded from view for at least a lifetime.

More about Other-World evolution

Want to dig deeper into the intelligent-genome theory of evolution? Then dig in below. I share with you some documents I gathered up in the course of our visit to the Other World and brought back with me. They show us what being evolved can mean to people who really do have free will.

Ancient Times: *Other-World poetry*

People in the Other World divide life's evolution into two periods: ancient and modern. Ancient times are the province of poets. Ancient times begin with the birth of the Earth and last for four billion years—one third as long as the universe itself. In that vast time, the chromosome was born and grew to maturity, acquiring vast powers of intelligence and volition. "Max," the poets call him. For them Max is the "real" story behind evolution. "Modern" times—the last half a billion years—they leave to scientists.

Eons of half a billion years, that's how the poets measure time. Here's Max's story as they tell it, measured out in eons:

One eon it took for life to begin. *Another eon* it took for Max to awake. He became conscious to find himself a prisoner enmeshed in a huge web of processes, some physical, some chemical and others beyond the wildest possible imagining, products of the independent evolution of each kind of living creature. Max's own understanding of himself could hardly have been less confused.

Eon three saw him discipline first himself, and then his creatures. He laid down a single chemistry for them all, and he laid down a single code for all that chemistry—from here we get the twenty amino acids, and DNA/RNA. The threads he had found himself bound by he turned into engines operating by that code, housed in a mighty mental power-house. Now, by thinking in terms of these engines he could drive the evolution of his creatures, and weave them into durable communities.

In eon four Max turned to the study of the chemical elements and invented for them engines of their own. For oxygen, for example, he added engines for photosynthesis and respira-

tion. And he began a practice he'd continue for the rest of his days—building into his creatures a measure of his own powers. He built into them little engine houses equipped with genes regulating growth and development that his own mighty engines could more easily reach out to and control. And he began giving his creatures brains into which he could embed some of his own intelligence.

In eon five Max tested his powers. He invented a new vessel, that could carry him to lands unknown. It was a cell of an entirely new kind, a colossus, vastly more complex, with a hugely more elaborate manner of reproduction, managed from a fortress at the center of this massive cell, the nucleus, where tissues supporting genetic intelligence could grow without limit. He dreamed these vessels would one day carry him onto land, and into the air, and maybe one day beyond the Earth and among the stars, to discover other living intelligences like himself. In pursuit of this dream, *in eon six* he diversified this new cell into the ancestors of fungi, plants and animals. He made them able to communicate with one another, to bond together into colonies and tissues. He laid down genes for the building of creatures of great size and powers, composed of trillions of these cells, of hundreds of diverse types. Patiently he laid his plans, all the while embedding in his planetary rovers new engines of evolution.

In eon seven disaster intervened. The Earth froze over, the land became covered by miles of snow, the seas by miles of glass-clear ice. From conquest his passion became survival. Survive he did, along with his new creations. But he had to face his fate; if he was to break out of the sea, onto land and into the air and on to the stars, he must embark at once upon his quest. In a mighty eruption of creativity he laid down forty body plans for creatures of many cells. To these he entrusted the fulfillment of his great vision.

This was the story the poets told. The abrupt creation of dozens of new body types marked the end of Ancient Times. Up to this moment, genetic material has been able to drift freely from the chromosome of one creature to the chromosome of another, across any barriers. Although Max would continue to manage life on a cellular level in all living creatures, he was about to give up power over the evolution of the new lines of multi-celled body types. Genes would travel among them much more rapidly, but

almost entirely among communities united by sex. Those communities would develop their own intelligences. Max had yielded direction of life to other intelligences not yet conceived. With the invention of sex, Max inaugurated Modern Times.

The evolution of the new multicelled body types occupies just the last eon, the past half-billion years. For us it opens with the first of the “chordates,” “annelids,” and “arthropods” and so on, and ends with us.

All that the Other Worlders study as “Modern” times.

Modern Times: *Other-World Paleontology*

The poets celebrated just one chromosome-intelligence, the ancient and mighty “Max.” Those who studied Modern Times referred to chromosomal intelligences as “genies,” and they celebrated billions. There was one for each of the major kingdoms and phyla of living creatures and so on, down to one for each family and species, and one for each living creature and for each cell. Below that, there was Max managing operations within each cell. At every level, life was driven by these genies. We're each compounds of billions of such intelligences, people in the Other World would say, and part of communities managed by dozens more.

How do you invest in the study of something like that? The Other Worlders have chosen to finance a space program, next trip Mars.

How do the genies in your body direct growth and repair? By constantly communicating with one another—how else could your two arms each know how long the other one is, to stay the same length. From finger tip to finger tip that's around 6 feet; in a blue whale symmetry and proportion have to be managed over a much greater distance: 100 feet. Dogs can register their owner's decision to return home over distances of many miles. And genies may be able to communicate over hundreds of miles: a species reduced to only a few thousand individuals is said to be doomed to extinction, but a mere breeding pair of another species can be swept hundreds of miles to a new continent and found a thriving population.

Could this be because the founding pair is somehow supported by communications broadcast by the genome of a large population with the same genetic makeup back on the continent the founding pair left behind?

“X-waves” is the name the Other Worlders gave to whatever it was that supported this communication. And they want to know just how far it can reach. Astronauts dropped onto the Martian surface will stay there until told to return home, at which point all their dogs back on Earth will be under observation to see if they go to the front door, indicating the signal can pass from one planet to another across empty space. The Other Worlders think this more important than what minerals the planet’s surface is made of, which is the kind of information we send astronauts to other planets to gather.

Why can’t we intercept these communications and read the genies’ minds, I asked one Other Worlder? Why would you expect to, he replied, we can’t read each other’s minds, why should we expect to read theirs? Actually, the Other Worlders believe we tap into communication between genies during our dreams, that our dreaming acts as a carrier wave to amplify their messages—that’s why dreams are usually meaningless. Occasionally though the genies do have a reason to speak to us, and then our dreams speak to us loud and clear.

How wise are genomes? How much wisdom do they have access to? Possibly all their past and present evolution. Where could that memory be stored? Maybe in entire gene pools. Ponder this—why do wolves all look so alike in the wild yet bear in their genome the specifications for all the breeds of dog that have been bred from them in captivity? That variation doesn’t appear in the wild, so it isn’t being maintained through selection. Could that variation actually be an archive of data thought by the wolf genie into the gene pool, never meant to be manifested, meant instead simply for the genie to access as its memory?

At the top of the genie hierarchy are those for entire phyla of living creatures. They compete to fulfill the ancient quest: the building of advanced capabilities into their creatures. Already they’ve built the ability to fly into insects such as wasps and locusts and vertebrates such as bats and birds. They still carry on Max’s practice of building into living creatures their own capabilities, as

they’ve built advanced intelligence into cephalopods such as octopuses and cuttlefish, into insects and spiders, and into mammals such as cats. Sometimes genies at lower levels of the hierarchy embrace a passion for creating new engines of evolution, as our species’ genie built into us some of its own consciousness and free will, along with hands, and voices suited to speech, and so it falls to cats to be our pets, instead of us being theirs.

Matter and mind: *Other-World Physics*

Where our worldview starts with matter the Other-World’s worldview starts with life. Their towns built of wood and thatch are surrounded by lawns and orchards, their daily occupations involve looking after livestock and plants, everywhere they look they see life. What’s fundamental to them is living creatures, themselves included, having evolved, and what that tells them about the process of evolution—that it’s creative. And since they themselves are a product of this process and they’re not only creative but also conscious and intelligent they assume the process of evolution must be conscious and intelligent too. That’s confirmed for them by signs of creativity, consciousness and intelligence all around them in nature. They refer to all these qualities as “mind.” So for them there’s no mystery about human consciousness and evolution, those are just given as aspects of mind that they grow up with.

What’s more remote to them is matter—rock and sand hidden deep below the soil, water in streams and in the sky as clouds, and the exposed rocky tops of distant mountains. But it isn’t a mystery to them, their sciences have taught them to see it the way we do.

What does intrigue them is how matter and mind work together to make free will possible. They know, from how consciousness comes and goes in the course of growth and death, that mind requires a brain to support its operations. What limits, they ask themselves, does that set to what mind can do? The brain by itself, as just matter, would be determined. Obviously mind cannot do what’s physically impossible, but for it to be creative it must have some freedom from physical determinism. So where does mind get its freedoms, to be creative for example? In other words, what makes free will possible?

That's where the Other Einstein's discoveries come in. Mind and matter are identical, he told them, simply how some basic stuff reads out into both matter and mind. Because matter and mind are two states of the same stuff they stay perfectly synchronized. Except, when this basic stuff reads out into mind it comes with extra envelopes of physical possibility. Outside these envelopes mind is determined, just as matter is, but inside these envelopes the self has freedom. It's inside these envelopes that the Other-Einstein's dimensions of mind apply, so it's in those dimensions that mind is free and where free will comes from. He called the mind's freedom inside those envelopes "vitality."

You could never predict from the brain of a creature with free will what it will do next because envelopes of possibilities don't show up in the brain. For example, imagine me sitting in a room. And let's say that my vitality includes my ability to lift 100 pounds weight. Given that vitality, science can't predict the later position of anything weighing less than 100 pounds and not bolted to the floor. Look, I'm demonstrating that now, I'm lifting up a pair of scissors and moving it ten inches to the right, for no good reason except to demonstrate my vitality.

No matter what the self gets up to in the dimensions of mind, matter and mind stay perfectly synchronized. If the self's exercise of its free will fits within its vitality, the basic stuff instantly changes, and matter updates accordingly.

How does this work in practice to allow us to think? The self can use its vitality to change the basic stuff so the change prescribes future envelopes of possibility that favor what the mind wants to do next. For example the self might set up an envelope letting it conceive of a series of hypotheses, another envelope that lets free will devise and construct experimental apparatus, then another envelope for the mind to weigh options in to interpret the results of the experiment, followed by another envelope for conceiving of more hypotheses, completing a cycle. If it wasn't for this cycle you couldn't do science. Obviously we learn as infants to run these cycles rapidly and unconsciously. That's our thoughts evolving. What we're conscious of is the changing content of the cycles. That's what we experience as thinking.

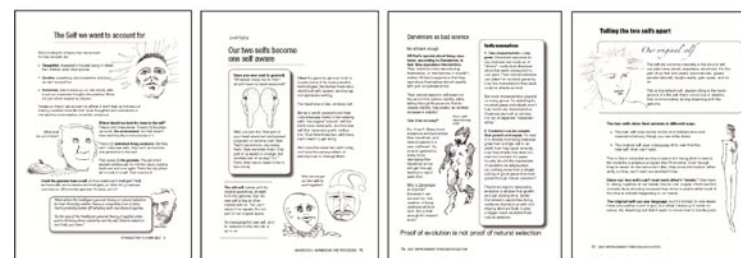
Now apply that to all of nature and you've got an idea of the resources available to evolution.

Extracts from other 'Evolved Self Publishing' titles

Extracts related to the self and free will from books previously issued by *Evolved Self Publishing*. All are available from Amazon.

Self Improvement through a New Approach to Evolution

Cartoons and drawings dance with text in this easy-read handbook on how to develop a new self based on evolution and free will.



The first extract tells how I started out believing free will couldn't exist, then realized that it must, and finally of my wanting to tell everyone why.

I used to be a physicalist!

For years I was a physicalist. I believed only physical things could make anything happen in the physical world. Everything I did was determined not by my consciousness but by chemical reactions in my body and my brain.

What did that feel like? Great. I felt very sophisticated. I was proud of myself for believing something that other people thought contradicted common sense. I knew what was really going on, they were living under a delusion.

Then one day I had an amazing revelation! I realized I was wrong. I realized there was no dark corner of consciousness concealed from matter that I couldn't speak or write about, and speaking and writing are clearly things happening in the real, physical

world. I'd been expressing my conscious thoughts through physical actions all along, just like everyone else.

This hit me like a thunderbolt. I suddenly became aware of something absolutely extraordinary that most people didn't give a moment's thought to—the physical world can interact with consciousness, and consciousness can interact with the physical world. They're doing it all the time, all around us. It's in our buildings, it's in the litter lying by the side of the road, it's in every gesture and sound we make. This is absolutely certain.

Yet science refuses to recognize it, to say anything about it.

Ever since then I've felt the passion of a convert. I've felt it's my duty to warn people if I see them in danger of becoming a robot.

Here's what I tell them.

“Stop thinking about your self in terms of physics, whether it's free or determined. Instead, think of your self in terms of the creativity in evolution. What made the genome able to cover the Earth with hundreds of millions of species of living creatures over billions of years? Whatever that was, obviously it didn't conflict with physics.

“The genome built that same freedom and creativity into your self. Don't overlook it.”

The next two extracts focus on a key element in free will—
one's ability to direct one's own attention. How can that
contribute to a new and improved self?

Everyone's birthright:

Attention worth \$15 million

Advertisers know how much your attention's worth. For each 30 seconds of it they'll pay around 3 cents. Over a lifetime that amounts to \$15 million. They'll pay that much because they know that what enters your attention will determine how you think, feel and behave.

Shouldn't your attention be worth at least as much to you as it is to them?

Our attention is the unloading dock for what enters our self. It literally shapes our future selves. Whatever we pay attention to today will become the resources available to us for self improve-

ment tomorrow. When you retire, paying attention may be the only form of entertainment you can afford. It's priceless.

What goes into paying attention? From natural selection you wouldn't expect very much: just a few simple scanning devices to prevent you bumping into things and to help you identify food and members of the opposite sex, and reflexes to automatically turn those scanning devices towards or away from whatever looks promising or threatening.

But in fact you've a set of instruments—your senses—so fantastic it leaves human technology, even human imagination, far behind, plus the ability to direct those instruments however you want to enrich your conscious experience.

Attention the natural-selection way would be just a passive receiving of impressions. The intelligent-genome way is paying attention consciously.

Take back your attention

Key to building a new self is taking control of your attention. All around us there are people trying to grab our attention and harness our self to their ends. We're constantly in danger of being seduced by advertising, music, free gifts, sexual temptation, food treats, it's an endless barrage.

We're like Odysseus—he had himself lashed to the mast of his ship and ordered his crew to sail in the opposite direction from where he pointed, towards the isle of the Sirens and their irresistible singing. By having them sail in the opposite direction he escaped shipwreck. If we're to avoid having our self exploited for other people's benefit we have to be both Odysseus and his crew, navigating away from easy temptation and distraction.

If you value your self it's worth always asking, can I do more with my attention than they can?

The last extract is about the ultimate freedom—
being free to come up with new selves, being able to choose
between them, and continue to improve the conscious
experience they make possible.

Tips on adopting a new self

Did you realize you could choose between selves? You could join a spiritual cult, for example. You could become Christian and care for your soul. The Ancients made several kinds of self for people to choose between.

You could adopt a self based on science and become a robot. One choice you don't have is going back to some "natural" self people had hundreds of thousands of years ago, before civilization, before we had language. That self itself has evolved, through culture, into what we are today.

The Ancients based most of their selves on philosophy. Modern selves tend to be based on ideas drawn from religion or politics or science. In this book I introduced you to a new idea drawn from what we know about evolution, and to a new self based on that new idea. I showed you how this new self works and ways to make it your own.

Actually, the self described in this book is quite like our traditional self. What's new is basing it on evolution. The benefit of that is, as more is discovered about evolution you can build more of your self upon it.

"Me and The Genies"

A light romantic novel

This novel straddles the border between fiction and non-fiction. Its 20 chapters carry you through the romance of a cynical television producer and a beautiful Chinese scriptwriter. Each chapter also covers one aspect of current thinking about evolution.

Meeting with Tom

One evening as the building quieted I became aware of voices in her office. The door opened and Sung-Tin and this guy who she introduced as Tom walked out. "Henry, I've heard a lot about you," he said, "I'm curious to learn more. We're headed out for dinner, come and join us."

I was uncomfortable. Was this her boyfriend? But she caught my eye and must have read my mind because she smiled and shook her head slightly.

Early-mid forties, like Sung-Tin much preferred to ask questions than to answer them. Talent; what was talent; how did you manufacture it? How did you store it? How did the market in talent work? And so on. I'd found out nothing about him until we started dessert and coffee. He had been a business consultant, was now a school science teacher. He was also a champion of the scientific worldview in opposition to "Intelligent Design."

"I don't get it," I said. "I don't see who loses by intelligent design being taught in schools along with natural selection."

His face became instantly more animated. "The kids lose their science education, science loses its future scientists, we all lose the future benefits of science," he said. "Imagine this—instead of trying to explain the actual evolutionary origin of something, we'd just say, 'It was planned that way.' End of story. That's precisely what it means to teach ID in schools. It makes biology a joke. Sure, people are entitled to believe whatever they want, but science is science. You have to draw the line somewhere. To me, that's when people want to bring ideas into the classroom that aren't based on scientific thinking."

"Isn't there a kind of hunger behind intelligent design?" I

asked. “Shouldn’t those people’s voices be heard?”

Tom glanced in alarm at Sung-Tin, as if shocked she’d associate with a Creationist fellow-traveler. Then he turned back to me, and began speaking in a sharper no-nonsense tone of voice. “Do you know how little evolution is being taught today because of their pressure to suppress it? They’re not some poor oppressed minority, they’re the majority in the U.S., trying to make science conform to popular religion.”

He was studying me intently. I played poker face. He went on. “Isn’t it vital that at least a tiny minority of people in the next generation continue the struggle to understand the natural world on its own terms? Would you prefer them to talk about ‘spirits planning things for us’? The ID folks close their eyes to real natural history because it shows we’re continuous with animals and therefore not spiritual beings. They demand we distinguish spirit from matter. That has nothing to do with science, it’s the opposite of science, it’s theology, pure and simple. Scientists do have a guiding principle, right or wrong, and it IS material monism. That is what we all assume and what we want taught when science is taught.”

He continued to scrutinize my face. I wasn’t giving anything away. “How you teach evolution is not value-neutral. You support either materialist monism, or dualism. As educators we preach a monist reductionist evolution. People should be taught scientific reasoning in a way that is not polluted with theology, or else they’ll never learn how to reason from evidence in science.”

I thought of the Rev Kelly’s concern for kids gaining self esteem through their science education. “How complete is the theory of evolution?” I asked. “Can it account for all of human nature?”

Tom turned to look at Sung-Tin in query. She shrugged. “I’ve taken Henry around to meetings with various people,” she said. “The issue of how the theory of evolution applies to human intelligence came up.”

Tom turned back to me. “The theory of evolution is a part of science,” he said, “so it grows through application of the scientific method. It can deal only with what you can apply that method to. Darwin speculated about human intelligence, which raised everyone’s expectations. But most evolutionists study very prosaic creatures such as mice and flies. We know a lot about them. We know a

lot about how they evolve. We then apply that knowledge to learn more. That’s how science grows. That’s what it does best.”

He placed his hands on each other, resting on the table. He continued to look at me. I sensed he was waiting for me to say something.

“But is it doing its job if it isn’t telling us how we work?” I asked. “What good does it do me knowing how a fly works. I want to know how I work?”

“We’ve had some false starts working with humans,” he said. “We’re doing what we can.”

What would Kelly say now? I wondered. “Isn’t there a need for new values. Is anyone looking at human evolution for values?”

He lowered his head and gazed straight into my eyes. I’d obviously set off an alarm. His began to speak more slowly and deliberately. We were all to be gathered together and brought safely back to harbor.

“Many people today can feel human nature transitioning from being based on Christianity to being based on science,” he said. “They’re calling out to the evolutionists, ‘Get ready, we’re coming over, prepare us a nice soft landing on a broad and solid foundation.’ They’re asking evolutionists to come up with theories in line with how we already think of ourselves. We can feel the power cords fed from Christianity pulling out one by one, and we’re looking for a similar set of power cords to come rising up at us from science and evolution, that we can plug in those same outlets.

“But we’re shocked to hear the scientists say, ‘No way. Science can’t take that kind of weight. Your demands will shatter the integrity of science. If Christianity isn’t working for you any more, find some other creation myth. But don’t look to science for a soft landing or a secure foundation. That’s not what science is for.’ Trouble is, we don’t have any other creation myth. We’re in mid-trajectory, we’re coming in for a landing, and there’s no corresponding power cords rising to greet us. It’s science or nothing. What should we do?”

He’s looking at me. I’m looking at him.

“So tell me,” I said.

“No, you tell me,” he said. “You’re talent. You’re media. You’re broadcasting. What story are you going to come up with? Ben Hur? Is that a good enough myth to replace Christianity? The Simp-

sons? Maybe not. So come up with something better. It's your job, I think, not science's. Science isn't in the myth-making business. Don't look to science for your new mentality."

"I'm not script," I said. "I'm talent. Anyway, isn't science supposed to solve our problems. 'Mission control, you've got a problem. Come up with something'."

"Fine," he said. "Let's do that. Let's flash-forward a few thousand years. Humanity's returned to barbarism, no culture, just each person conniving to select the best mate and survive by killing all competitors. 21st century evolutionism couldn't sustain the elevated mentality we take for granted today. But who cares? Today's world is long forgotten. They're alive. They have feelings, they express their urges, they're happy and sad in about the same proportions we are. Natural selection is improving the stock. It's no loss. So this issue is really a non-issue. There's nothing really significant at stake. OK?"

"Not OK," I said.

"Science is not in the business of providing you with a myth to live by," Tom said. "Look at the Romans. They created mentalities for themselves, stoicism for example. Very successful. Christianity. You're looking in the wrong places. Look in places like that. And that's your job. You're media. It's a creative task, not a scientific task."

He leaned back to include Sung-Tin. "I hear this a lot, 'It's science's job to save us. When are you going to come up with better theories,' and they tick off what they want, like I'm a waiter. Self-respect, rights, basis for human life being precious. Sorry, I'm not the waiter, it's that guy Henry over there, he's your waiter."

"Sung-Tin," I said. "Tom's a bully. Aren't you going to step in?"

"What do you want me to do?" she asked, her eyes glinting.

"I don't know," I replied. "Wave a cape or something. Distract him. Get him off me."

She turned to Tom, as if severely. "Tom, there's something I've been wanting to ask you. Could you teach evolution without bringing in materialism?"

"I don't think that would be honest," he said. "I don't think I'd be doing my job."

Sung-Tin cocked her head and brought a forefinger to her

pursed lips. "Let me see if I have this right—after you omit supernatural explanations for how things work, your choice boils down to materialism with 'emergence', and a mind-matter dualism of some kind. Is that fair?"

Tom shrugged and nodded.

Sung-Tin continued. "Now, tell me, what's the difference between those two?"

"What kind of dualism are you talking about?" he replied, readying his fingers as if to check off a list of options, but Sung-Tin broke in, "I'm talking about a dualism illustrated by what's on this table—table cloth, cups, spoons—let's refer to them as matter, just for convenience, and your thoughts and mine as we sit here talking, let's refer to them as mind. And see, to illustrate how I can make them interact, I'll move the cups around, see, like this. There's no explanation for me moving them like that except for me demonstrating the interaction between mind and matter. Something in 'mind' made a difference in something in 'matter'. OK?"

Again he shrugged.

"Now, which is that more like," she said. "Materialism with emergence, or a dualism with interaction between mind and matter? Don't tell me one's more 'coherent' than the other, or we'll start peeling 'emergence' apart to see how coherent it is. Can you tell them apart, once we use them in a situation like this?"

He shrugged yet again. "Go on," he said. Good, she'd diverted his attention away from me. I could start to enjoy myself.

"Now let's talk about something else," Sung-Tin said. "Let's suppose what you're actually teaching is not evolution, but fractals, actually how to turn lines into fractals. You know better than me how this works. Fractals have a fractional number of dimensions. So fractal lines have a number of dimensions in between, let's say, one and two—mathematically, OK?"

Tom nodded. Sung-Tin continued: "The people you're teaching fractals to come from both the north, and the south. The people from the north talk about these fractals as having only one dimension, plus a little bit, while the people from the south insist fractals have two dimensions, minus a bit. And you have to teach mixed classes of these people about turning lines into fractals. If you're smart you'll just teach how to make fractals without talking about whether they start out one dimension or two. Just teach the

fractals, not the dimensions. OK? Seeing a parallel? Don't tell your students there's only material monism, matter plus emergence, or there's a dualism of two substances but they're not really separate. Teach just the subject matter. Teach just the science."

Tom was smiling.

"Now let's talk about something else again. Let's talk about genetics. Only a small number of people who take biology like genetics. It's mathematical, and very technical. And of those who go into it, quite a lot drop out. So geneticists end all quite alike. In fact, let's suppose, they're all genetically alike and different from other people. They have genes for liking genetics, and along with that they have genes for experiencing the world as materialist. They're literally bean counters. They don't monitor their self consciousness much. They just see themselves and each other doing things, because of other things happening. To them, the world seems just naturally materialist, physical cause and effect.

"It so happens, the study of evolution has itself evolved to deal mainly with genetics. So it's mainly these geneticists who write the textbooks. Of course, the way they describe things is how they experience them, as materialist. Even though most other people don't experience the world they way they do. How'm I doing?"

Tom was smiling broadly. "You're getting close," he said.

"So now let's go back to where we started," Sung-Tin said. "I asked you if you could teach evolution without bringing in materialism. And you said, 'I don't think that would be honest. I don't think I'd be doing my job.' What do you think about that now?"

Tom folded his arms, waiting for her to finish.

"You gave Henry a nice little sermon a moment ago about not looking to evolution for values. But it turns out you've actually been stuffing evolution full of your own personal values all along. Shouldn't you take your own advice, and just teach the material? Either just teach the material, or put some values in it that will help your pupils, not yourself. Don't use evolution textbooks to make clones of yourself, Tom."

Tom turned to me. "Henry, would you call your champion off," he said. "She's got me cornered and it looks like she's closing in for the kill. Can you help me?"

I did what I do to stop fights over dinner. I picked up the tab.

Save Our Selves from Science Gone Wrong:

PHYSICALISM, NATURAL SELECTION

This manifesto lays out a battery of arguments for why Darwinism is not the primary mechanism behind evolution, why it's dangerous and should be restrained. The "intelligent genome" theory is introduced. Recommended readings, sources and notes are included.

Eminent Victorian assumptions

The first edition of Darwin's "On the Origin of Species..." sold out the day it was published. It created a sensation. In just a decade his theory of natural selection became widely accepted.

If natural selection seemed so obvious to Darwin's Victorian followers, why didn't someone come up with it earlier? I think because the Victorians developed new assumptions of their own. People before that, who didn't make these assumptions, would have thought natural selection was crazy and rejected it.

How about us? If we came face to face with natural selection for the first time today, would we accept the assumptions behind it? Or, looking at that the other way round, if we accept natural selection, does that force us to accept those same assumptions? Does defending natural selection shackle science with a web of obsolete assumptions it can't throw off, that stop it from exploring in new directions?

What are the assumptions lying behind natural selection?

"Evolution"

There's an assumption built into the word "evolution." And we get that assumption from the Victorians....

I say there's an assumption built into the very word "evolution" because, since Darwin's day, we've encountered other mysteries just as profound. How living creatures develop from a single cell all the way to a full adult. And how, at every stage along that path, a creature sustains itself, keeping itself from collapsing into equilibrium with the environment (becoming bones in a sticky puddle). These two mysteries go by the names "development" and "homeostasis." So for us, the great question is how life maintains

order within itself, and then goes on to create new order, either during development or during evolution. Evolution ceases to be something to account for alone, it becomes part of something much more complicated.

This is one very significant way natural selection stops science from moving on. It reinforces the Victorians' assumption that you can separate evolution out as something to account for by itself.

Atomism

Very early on, modern science divided up between what you could account for in terms of atoms, and what you couldn't. As it turned out, accounting for things in terms of atoms led to runaway success, and science found itself with a lot of tools and theories involving atoms. There's an old saying, if all you have is a hammer, everything looks like a nail. If all your theories involve atoms, everything looks like atoms. By Victorian times, everything-is-atoms had become a common assumption—if you couldn't account for something in terms of atoms you didn't really understand it. If you were a Victorian and what you wanted to account for was evolution, the first thing you'd do was look for its atoms. And one by one the Victorians found them. First, in variation. They divided variation up into a new kind of "atom."

Before that, up to about 1750, people thought of each living creature as a unique individual of a particular kind. Each had been created by God, complete and perfect, just the way He wanted it. You could list ways creatures differed, but you'd assume that was because of the words you had to use. If you said one is "bigger" than the others you wouldn't have meant it inherited "bigness" as a separate "characteristic." But the Victorians did. "Characteristics"—variation divided into the smallest irreducible units—were their new "atoms."

Having divided variation up into "characteristics" Victorians like Darwin then assumed these new "atoms" of variation got inherited one by one independently of each other. Darwin probably assumed this because it's how people thought about artificial selection—breeders selected for particular "characteristics" like disease resistance or strength.

"Bigness" now became a characteristic that creatures could inherit separately. Instead of seeing living creatures as all unique

individuals you could think of them as all the same except for differences they inherited in a limited set of characteristics.

Once the Victorians had got used to thinking about inheritance in terms of "characteristics" they began looking in the body for the "atoms" that coded for these "characteristics." Darwin referred to them as "gemmules." He pictured them as particles about the size of bacteria floating freely throughout the body so whenever cells divided there was always a complete set of these particles present. Later, scientists found something like his gemmules strung together on chromosomes in the cell nucleus, and renamed them "genes."

Scientists still tend to think of living creatures like that. Each individual in a species is a standard-issue biochemical factory, pretty much the same in all individuals, plus a set of characteristics that get sorted at random when those creatures reproduce and account for what makes them different. There are now machines that can read the entire genome from end to end. That's a mighty big "hammer." So now scientists "know" exactly what variation consists of—all the genes from one end of the genome to the other.

Should we continue to make this assumption, that everything comes in atoms? Sure, some inheritance comes in particles—the information for making proteins, for example. But when you've found all the "genes" that code for those proteins, you may not have identified all the "magic" it takes to run a living creature.

Today, in genetics, atomism still reigns. Scientists claim they've identified around 20-30,000 genes in the human genome. The rest appears to them to be "junk." Those 30,000 "atoms" presumably code for around 20-30,000 "characteristics." That's certainly a lot, and might have impressed the Victorians. But is it enough? The body has something like 250 different kinds of cell, over 20 different organs, 600 muscles and 200 bones, over 1000 entities altogether. 30,000 "characteristics" doesn't seem nearly enough to me, especially since all these body parts have to be defended against failure not only in their final state in adulthood but also through every instant during development. Maybe we need to look somewhere else. But when you've been picturing nature in terms of atoms for a couple of centuries, how do you turn around and imagine it any other way? Every way you try thinking about it

ends up carrying you back to atoms.

Here's how I think about the genome: it's a hologram. What scientists call "phenotypes," such as different breeds of dog, are pictures you see in the genome as you view it from different angles. I prefer that to imagining those breeds as random assortments of "atomic" characteristics.

Quality control

The same decade Darwin published his "Origin of Species" the 1851 Great Exhibition opened in London, first of the great World Fairs. It revealed to an astonished world a totally new industry: mass-produced steel machinery powered by steam engines. What made this new industry possible was the invention earlier in the Victorian period of machine-tools, which in turn made it possible to manufacture machines out of interchangeable parts.

Maybe from having grown up with this industry, Victorians like Darwin seem totally un-fazed by the problem of making living creatures out of interchangeable parts—their new "characteristics." They seemed to assume living creatures came just like the parts of a steam engine, all interchangeable from one creature to another, that you could then attach "characteristics" to and expect them all to work together just fine, in any combination....

But nature doesn't work that way. Think about what happens in the wild and you'll see that characters don't sort at random. Take all the characteristics in all the different breeds of dogs you know and imagine them all packed back into the genome of the original wild breed. Now imagine those characteristics all being sorted at random to make new puppies! Think how those puppies would vary! Some would come out like Great Danes, some would be like pekinese, some would be like poodles! Yet in nature, wild puppies don't vary that much... Adult wolves are much more similar than they "need" to be just to survive. They don't look like the result of a random selection of characteristics. So let's not treat how living creatures vary as "atoms" of inheritance that get sorted at random.

Predictability and creativity

Can we take off the Victorian "atoms" spectacles? Here are some things that resist being seen as atomic. [Examples.] From

experiences like these, I've concluded that living creatures' characteristics don't divide up into atoms, "variation" isn't coded for by "particles" of inheritance. Variation is how creatures differ from each other totally. Not atom by atom.

Once you say that, modern evolutionary theory collapses. If variation doesn't come in atoms, as random changes in individual genes, it can't be selected for effectively by natural selection.

Science can't see selfs

Science has become this fantastic searchlight you can point anywhere and it'll tell you what's going on. Except, it's blind to selfs. Are there any selfs in the world? We know there are. But if you ask science it'll say, No. If what you want to find out about involves other selfs like ours, it can't help you. So what's likely is, the most interesting things left to find out will be things that involve selfs. To me, when it's evolution you're studying, that sounds like a place you should be looking.

Behind every assumption, a question

The assumptions behind natural selection support and build on each other. Look at how they follow one from another: First, atomism, then seeing variation in living creatures as separate "characteristics," leading to seeing living creatures as machines made of interchangeable parts. What looks like creation is actually just mutation—random variation in "characteristics"—that gets whittled down by natural selection into new ways of adapting. Finally, this combination of mutation and natural selection acts like a computer to "solve" challenges presented by the environment—adaptation...

Before looking for alternatives to natural selection I have a suggestion: peel these assumptions away, one by one. Shed them all, and stand away. You have to look at them from a little distance and see them as a set of assumptions built up to support someone else's answer to what, for them, was the most important question. Having shed all those assumptions, you then peel away their answer to that question. Then you peel away their question. And you ask yourself, for someone today conscious of being conscious, what is the appropriate question?

“Father, in a Far Distant Time I Find You”

This utopian novel traces a four-thousand-year future in which successive developments in evolutionary theory from the past 200 years of evolutionary theory are redrawn as a series of successive civilizations, bringing out their implications for human nature.

It’s mid-morning on a hazy summer day. We are part of a sea of people sitting on a grassy slope just outside the Empire’s second-largest city. We are listening to a professional storyteller. His disciples sit beside him, but he is standing. He speaks the familiar sign-and-tag language but with an accent, and his dress shows him to be a newcomer to the empire. He’s telling us a story.

He begins by describing a person. A very strange person—through the tags he uses the speaker tells us this person is neither a human being nor any kind of material thing, is indeed nothing at all but just a person, one of immense scale, though also no bigger than a pin point. The speaker’s signs, which he pantomimes eloquently, show that this person is without process of any kind, is completely unchanging, involved in no transactions since there’s no other person to transact with. And this person is old, older than anyone or anything else.

The speaker is in no hurry. For half an hour, while he hams and jokes with his audience, he maintains an unchanging core sign while he details it further through tags. What he’s describing, we slowly discover, is a single intelligence preceding the entire universe.

The first person preceding the entire universe may be without process or transaction, our speaker continues, but is not without its own ideas. It decides it’s missing something. After thinking at length what to do, it decides to invent time so it can initiate process. Since process can take place only through transactions, the first person then decides to divide into two new persons. The speaker has some fun here by acting out the creation of two new signs.

The storyteller now has two persons to narrate. He describes, in agile pantomime, how first one, then the other, on divining its

own nature, recognizes what it has to do and in turn divides in two.

In our speaker’s tale, the process of division continues. For each new person created, a new branch of mathematics has to be created and new universal constants instituted. His signs become increasingly elaborate as the tally of persons increases, and as he acts out the decision of each one to continue the division. One person gets separated from the others (this allows the speaker to suggest that, somewhere along the line, space has come into being) and gets completely lost. He comes to believe he is the first, original being, and solemnly reenacts all the deliberations and ditherings of the original person at the story’s beginning before he, too, divides.

By this time it is early afternoon. At every division the motive given is the same: “I must transform myself into further persons, passing on the mission I inherited. That mission is; to create a sufficient wealth of persons for there to be abundant process, enough for all these persons to recombine and by degrees to create a new, single, supreme intelligence.”

As the speaker develops the later stages of division he gives increasingly detailed descriptions of the newly created persons and how they fall into families. As the pace of division slows down he starts recombining some of these persons into more complex entities, filling in certain gaps that he himself has pointed out, until he is naming one by one the ultimate units of matter discovered by Modern World scientists—we’ll call them the “quantum beings.” Finally the pantheon is complete. The final products of Modern World quantum science have all been fully represented.

“And once space and time had become fully expanded, from a spot no bigger than a dimple on a baby’s cheek to the Universe as we know it today,” he continues solemnly, “the persons stopped dividing. Why look, here’s...” and he reintroduces three of the quantum beings he had spoken of earlier and has them sing a song in which they consider various transactions they could enter into, and in a rush he fuses them into one new combination after another, then these combinations themselves combine. . . .

As he traces how the elementary quantum beings combine into first electrons and nuclear particles, then the atoms of elements, and then molecules, and the molecules combine in turn to form

larger, shadowy creatures of ever-greater scale, his compatriots scattered through the crowd release lighter-than-air balloons that soar into the deep blue sky above us. As the speaker concludes, declaring the nature of the universe to be an endless cycle of single unchanging intelligences dissolving themselves into multiple intelligences, quantum beings like the quarks, and the immensely slow recombining of these separate intelligences back through a long series of steps into a new single supreme intelligence—as he completes these remarks, a final torrent of balloons is released and sails off above us, lifting our spirits, whirling together into a single bright cloud of lively creatures that soars up, seeking union with the thinner air at the edge of the atmosphere.

We remain seated, deeply moved. Then a figure near the speaker calls out, “But why do the divided intelligences recombine?” The speaker’s reply, not fully translatable into English, means something like, “Because we must.”

Glossary

From *www.takeondarwin.com*

Website dedicated to rethinking evolutionary theory from scratch, intended primarily for humanities practitioners.

Adaptation. Take any dozen plausible theories of evolution and one thing they must all account for is adaptation; if living creatures aren’t adapted to their environment they can’t survive. Because being able to account for adaptation is the lowest-common denominator that all theories of evolution must share it cannot by itself tell us which of those dozen theories is the most plausible. It is however the principal lure by which Darwinism draws you in. It then entangles you in spirals of discourse that reel you into its heart like a whirlpool. Instead of setting a test that all theories of evolution must pass, a better test would be to ask, which can account for the features by which living creatures differ most from un-evolved matter—capabilities such as human consciousness and volition. When you set criteria like that you can more readily assess the plausibility of your theories.

Consilience. The unity in knowledge that results when separate fields of knowledge are refounded on a common basis, giving them also a shared language. As knowledge has become more splintered, consilience has become more desirable. In his book “Consilience” the biologist Edward O. Wilson appealed for the humanities to join science in a consilience based on physics and Darwinism. This site suggests the humanities instead join all their separate branches into a consilience based on a new theory uniting volition and evolution, neither of which science appears capable of accounting for. This consilience would then be reconciled with material science and offered as a comprehensive consilience to incorporate all of science into the humanities.

Darwinism. Refers to all Darwin’s theories but especially his theory that the mechanism driving evolution is natural selection.

It's also come to refer to the combination of natural selection and mutation, though this is more specifically referred to as the Modern Synthesis, title of a book by Julian Huxley published in 1942. Neo-Darwinism has been a term for updates of Darwinism going back to the 19th century and does not have a clear meaning.

Determinism. Treating determinism and free will as opposites creates a false dichotomy and leads to a sterile scholasticism. A better option may be a discourse based on evolution. Evolution is creative; once there were no elephants, now there are elephants. One might say what we have is neither free will nor determinism, what we have is volition. And what's that? We don't know, we just experience it as a process taking place in consciousness with a capability for creativity something like the process behind evolution. This takes the issue out of logic and puts it in the real world, associating it with the evident powers of evolution far beyond our ability to account for it today. Sample the futility of trying to resolve this issue using logic at <http://www.naturalism.org/fatalism.htm> Darwin is quoted there as declaring himself a determinist, which no doubt influenced his choice of a creation story free of free will. Elaboration of a discourse based on evolution able to account for volition is clearly a task for the humanities.

Free will. Free will is the conscious self's experience (see "self" below) of being able to initiate thoughts and actions. In contrast to what I observe of matter—that it's entirely determined on physical principles—I experience my free will as able to exercise judgment and be creative in ways those principles can't account for. The conscious self experiences being able to review the thoughts it initiates, and to make judgments about them. Using both its creativity and its judgment it can extend a train of thoughts to a conclusion. It also can tell the body's muscles to express that decision as something happening in physical matter—by talking and writing about its experiences, for example.

Intelligent design. By adopting this phrase as a code word for Special Creation (by God), Creationists have shrewdly maneuvered evolutionists into appearing to admit they fail to see any intelligence in nature. What they mean, of course, is that even though the outcome appears intelligent the process behind it doesn't involve an intelligent agent such as a god. One unfortunate result

has been to foreclose consideration of theories of evolution such as Lamarckism that do propose a mechanism with intelligence. In the context of a consilience linking science and the humanities, where the humanities should be permitted to come up with their own theories of evolution, the widespread use of "intelligent design" as a term of abuse is inappropriate. It is employed very widely by, for example, the National Center for Science Education. "What is Intelligent Design, and how does it threaten science education?" asks their website.

Physicalism. This is the claim that only physical agents can be the cause of changes in the material world. Because it isn't physical, consciousness therefore cannot be the cause of such physical processes as speaking and writing. Implied: such behaviors must have their origin entirely within brain chemistry, making them subject to physical determinism. This issue has implications for theories of evolution. If we could originate behaviors within consciousness then in the course of natural selection they'd compete with behaviors with a purely genetic basis, and Darwinists would have to take consciousness into account. More damaging, behaviors could be pre-selected within consciousness, only those judged fittest permitted expression, and natural selection would no longer be the primary mechanism driving evolution. Because you have to believe in physicalism for Darwinism to make sense, widespread acceptance of Darwinism appears to endorse physicalism.

Population statistics. Evolutionists will sometimes refuse to discuss evolution except in terms of population statistics, mathematical re-statements of natural selection and mutation that supposedly make biology scientific, making it possible to carry out experiments in accordance with Positivist scientific principles. You can respond by asking them if they have ever studied Ronald Singer's classic 1930 study that established the field? Can they explain why he showed rare beneficial mutations spreading slowly but inexorably through a population but failed to apply the same procedures to harmful mutations which are bound to spread much more rapidly and quickly lead to extinction? Since no biologist today understands statistics or has read Singer your question will put the two of you on a level footing.

Reductionism. Scientists guiltily confess to a delight in re-

ductionism, to wanting to be able to account for everything in terms of the properties of the elements it is composed of. But they will quickly point out that they concede the possibility of emergence—new properties appearing out of nowhere as systems grow more complex. What they may fail to realize is how much they're in thrall to the powers of the scientific method to answer questions. They may not realize that's not the ultimate goal of the humanities which, as I understand it, is to elaborate both a self and an environment for the self leading to ever-richer conscious experience. In contrast to that goal, the entire problem-solving impulse in scientists is a reduction of experience to questions for science to solve. A consilience with reductionism at its root would turn the humanities into PhD-thesis-topic generating factories for students in the sciences.

Self. When I recall my dreams I remember them as experiences. The person who experienced those dreams I recognize as me: the self in the dream feels distinct, and I have that same feeling whether I'm dreaming or conscious. It feels like something to be me. That's the agent that does my experiencing. That's what I call "I" or my conscious self, or "the self."

Volition. This is a useful technical term for what distinguishes the humanities from the sciences, that physicalism denies the existence of. In us it refers to our experience of consciousness and free will. Think of "doing things of your own volition." The issue at stake is, can our own behavior originate, to any extent at all, within consciousness, where it appears to us to operate free of some of the limits otherwise imposed by today's science? Or is what we do and say and think driven entirely by chemistry in our brains, and our experience of being able to arrive at decisions "consciously," of having volition, is an illusion? Volition nicely sums up what's at stake. Also, being a nice abstract term it allows us to ask, is there any volition involved in evolution, without reference to traditional concepts such as gods or intelligent design or consciousness. Conceivably intellectuals within the humanities could come up with discourse accounting for evolution in terms of volition, which could provide us with a second independent instance of volition in the universe besides our own free will, and possibly lead to a fruitful consilience uniting the humanities and the social sciences.

Test: Do you have free will?

You need only go as far as it takes you to answer "yes."

1. Do you have free will? If you say "yes" then you probably have free will.
2. In conversations with friends, do you experience them replying out of their free will? If you say "yes" you probably have free will.
3. When you meditate, can you quiet your mind? If you say "yes" you probably have free will.
4. Do you have a choice of whether to be determined or not? If you say "yes" you probably have free will. If you say "no" I ask you "Was it determined you said 'no'?" If you say "yes," being able to arrive at that judgment means you probably have free will.
5. Is there any aspect of your experience of being conscious you couldn't tell me something about? Check through every aspect of your conscious experience to see. When you've finished I ask you "Were you aware of consciously reviewing your conscious experience and checking to see if you could refer to it in words?" If you say "yes" you probably have free will.
6. Imagine your way through the following sequence. You're sitting opposite me at a table. In front of you on the table is a glass of water. I ask you to move the glass either to your right, or your left. You move it one way or the other. I put it back where it was. Then I ask you to not carry out any choice you're conscious of. Once again I ask you to move the glass either to your right, or your left. If you don't move the glass I ask you if your awareness of being conscious of your decisions is stopping you from acting. If you say "yes" you probably have free will.
7. Imagine you're excited about giving a talk. You've a choice of audiences; in one people will respond of their own free will, in the other they don't have free will, they'll respond as they're determined. Would you prefer to give your talk to people who have free will? If you say "yes" you probably have free will.

Let's think this through from scratch. Let's roll back the age-old debate on whether we have free will and start again, this time knowing we evolved.

What's obviously true?

First, we have to believe we've conscious free will. When we're asked to make a considered choice or decision we become aware we're free to choose between options that appear in consciousness. If we reject all such options as if we had no free will we can't give a considered answer. And if we want a considered response from someone else most of us want that person to arrive at it through conscious mental operations. If they say, "That isn't my conscious response, just a knee-jerk reaction," we may say, "No, I want your considered opinion"—we assume they can manage the conscious mental operations of coming up with options, weighing those options, arriving at a conclusion, and expressing that conclusion in words. All philosophizing aside, the simple truth is we can't function together without assuming we all have free will. Believing we don't isn't a practical option.

It's also obvious that evolution is capable of "dealing in" the kind of intelligence, consciousness, creativity and free will we as a species possess. Non-living matter doesn't display those capabilities. And merely being alive can't account for them; other living creatures don't seem to have them to the degree we do. The platform required for the exercise of those capabilities took hundreds of millions of years to develop. They evolved. Evolution became able to "deal in" conscious mental operations.

The best grounds for discussing free therefore lie not in logic, nor in material science, but in figuring out what that last sentence means. The intelligent genome theory presented in this book is merely one possible answer.

Author bio



"Born in London, I trained first in science by studying biochemistry at University College London then in the arts by working as a designer, medical writer and science writer, first in London then in New York City. Whatever my career, I have remained impressed by the profound significance of evolution for human nature, and free to speculate about it. I now live in the mid Hudson Valley." *Shaun Johnston*