

MORPHOLOGY AND MEMORY

Derek Turner interviews influential anti-materialist thinker
RUPERT SHELDRAKE

You have become widely known, indeed controversial, for your belief in “morphic resonance”. The obvious place to start is to ask you to explain what exactly is meant by the term.

Morphic resonance is a memory principle – a means whereby similar patterns of activity influence subsequent similar patterns of activity across space and time. The key principle here is similarity – patterns of activity in self-organizing systems. So that means molecules, crystals, cells, organisms, or societies of organisms like flocks of birds, wolf packs or human societies. “Self-organizing” obviously excludes machines. Each species has a kind of inherent, collective memory and each individual within each species draws upon that collective memory, and contributes to it.

You have written books examining so-called telepathic effects – people having a sense of being stared at,

dogs seemingly knowing that their owners are coming home. Is this part of morphic resonance?

That isn’t a primary part of the morphic resonance theory. The primary part is to do with evolution and inheritance of forms and behaviour. I started as a developmental biologist working on plant growths, and my interest was first aroused in the way plants obtained their forms. The telepathy comes in rather further down the line. Social groups have fields – all the members of a wolf pack, for example, are linked through a field as a group. We talk of bonds between people, or between animals, and I think those fields are real. They means that animals or people can stay connected at a distance through these fields, and that underlies telepathy. One of the predictions of the theory is that telepathic communications can occur between bonding members of social groups. But the central part of the theory is to do with biological

morphogenesis, the organization of the nervous system and the inheritance of the inherited memory.

What first got you thinking along these lines?

Goethe first inspired my interest in a holistic approach to the plant form, and that was reinforced by German developmental biologists of the early 20th century, such as Hans Driesch who had ideas of form being organised by what later became known as morphogenetic fields, fields of form. But of course Goethe didn't have an evolutionary approach. The evolutionary side of things comes in when you think about biological forms. They must evolve and there must therefore be a way of inheriting these fields. I was wrestling with this problem when I read Henri Bergson's book *Matter and Memory*. That was a huge revelation, because Bergson shows that memory may not be stored inside the brain. Memory can work across time. I realised that if something like that were at work with morphic fields a huge number of phenomena could be explained. Bergson was primarily concerned with human conscious memories, not the memory principle of all nature. I generalized this idea of Bergson's into the idea of morphic resonance – not just in living things, but also in crystals and molecules. That was the original insight which occurred

to me back in 1973 when I was at Clare College. Since then I've been developing the theory and thinking about all the implications.

You have been criticized by some leading scientists, who say your theory is essentially mystical, that it is incapable of proof and that your experiments lack rigour. There are mysteries about where life came from, and why we are the way we are – but isn't it possible these questions will eventually be answered through genetics and chemistry?

That's what people have been saying for 150 years – and they are still saying "give us more time". Clearly, most people working within conventional biology do believe that. It's a very strong act of faith for many people, especially materialists. A lot of the criticism I've come in for has not been because my views are illogical or inconsistent, or even that the evidence does not support them, but because they go against a very deeply established and dogmatic belief system.

Materialists are sustained by the faith that science will redeem their promises, turning their beliefs into facts. Meanwhile, they live on credit. Karl Popper described this faith as "promissory materialism" because it depends on undated promissory notes for future explanations. Despite all the achievements of science and technology, it is facing an unprecedented credit

crunch. In 1963, I was invited to a series of meetings with Francis Crick and Sydney Brenner in Brenner's rooms in King's College, along with a few of my classmates. They had just cracked the genetic code. Both were ardent materialists. They explained there were two major unsolved problems in biology: development and consciousness. They had not been solved because the people who worked on them were not molecular biologists. They were going to find the answers within ten years, or maybe 20. But they failed. The problems of development and consciousness remain unsolved. Many details have been discovered, dozens of genomes have been sequenced, and brain scans are ever more precise. But there is still no proof that life and minds can be explained by physics and chemistry alone.

The fundamental proposition of materialism is that matter is the only reality, and that consciousness is nothing but brain activity. However, among researchers in neuroscience and consciousness studies there is no consensus. For example, Steven Lehar argues that inside our heads there must be a miniaturized virtual-reality full-colour three-dimensional replica of the world. When we look at the sky, the sky is in our heads. Our skulls are beyond the sky. Others, like the psychologist Max Velmans, argue that virtual reality displays are not confined to our brains; they are life-sized, not miniaturized.

Our visual perceptions are outside our skulls, just where they seem to be. The philosopher David Chalmers has called the existence of subjective experience the "hard problem" of consciousness because it defies mechanistic explanation.

Some physicists argue that quantum mechanics cannot be formulated without taking into account the minds of observers; hence minds cannot be reduced to physics, because physics presupposes minds. The most ambitious unified theories of physical reality, superstring and M theories, with 10 and 11 dimensions respectively, take science into completely new territory - a very shaky foundation for materialism. The known kinds of matter and energy constitute only about 4% of the universe; the rest is dark matter and dark energy. The cosmological anthropic principle asserts that if the laws and constants of nature had been slightly different at the moment of the Big Bang, biological life could never have emerged, and hence we would not be here to think about it. Some cosmologists prefer to believe that our universe is one of a vast, and perhaps infinite, number of parallel universes, all with different laws and constants. We just happen to exist in the one that has the right conditions for us.

Rather than treating science as a religion we should be treating it

as a system of testable hypotheses. Instead of putting all our eggs into the materialist basket and waiting for many more generations to pass to see if it works out that way, we can ask right now whether things could work differently.

Crick and Brenner were obviously hubristic. But science has always moved slowly; for instance, medical science was essentially static between the ancient Greeks and the discovery of the circulation of the blood. Chemistry and – even more so – genetics are still young sciences.

Well, maybe. But 99.99% of institutional biologists are following the path you advocate. In those circumstances, there is surely a place for a few people to explore alternative ideas. We don't have to exhaust some particular line of enquiry before we think about others, but can explore lots of different ideas at once. I'm very impressed with the advances in chemistry and genetics; it's very good as far as it goes, but it needs to go further.

There were reports recently of how locusts alter physically when they congregate – they change colour, their wing muscles strengthen, and they exude serotonin. Shy and retiring insects become voracious and reckless swarms. This sounds like an accelerated form of morphic resonance. Might similar things

happen to human crowds? For instance, do groups of football fans develop a collective personality?

All human individuals are subsumed within groups at some level. We're a social animal and all social animals have traditions, patterns, cultures, things that continue; even when individuals within groups die, the group as a whole continues. Churches, colleges, nations – all these things have a larger life than the individuals within them.

But human continuity is carried forward physically – for example through written histories, or folk-tales or artworks. Obviously this doesn't apply to animals, so how is their continuity assured?

Animals have traditions too. The song of a chaffinch, for instance, is learned from other chaffinches. The way that starlings fly together is a morphic field phenomenon. You can introduce starlings from other flocks into a flock, and they instantly work together; it's as if they come into resonance with that field of flock behaviour.

Human crowds can develop a morphic field, but it is a much weaker and more temporary phenomenon. The members of a crowd don't necessarily know each other, whereas the members of a family group or a tribe do and the connection goes much deeper.

Morphic resonance reminds me of E O Wilson's concept of "bioculture feedback" - the idea that nations develop specific characters because over long periods of time the dominant culture favours certain types of individual and these individuals in turn reinforce the dominant culture. Isn't there a similarity?

It's not the same thing, but there are similarities. The interesting thing about Edward Wilson is that he thinks of social groups as social groups. His most recent book on social insects is called *The Superorganism*. There was an attempt in the 1960s and 1970s for people to reject the superorganism concept for bees, wasps and ants in favour of a relentlessly reductionist approach. Wilson, who is rather reductionist, has come back to the conclusion that we really need the concept of the superorganism - that the whole really is more than the sum of its parts. I think this is undeniable when we think about social insects; it is interesting that Wilson rejected it and then came back to it.

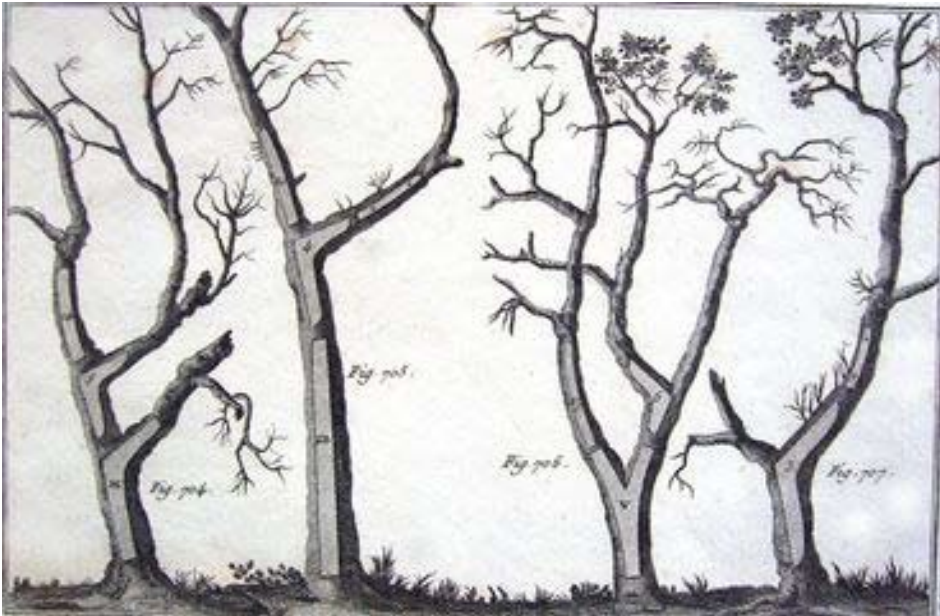
The idea that the kind of society affects the kinds of individuals who succeed within it is pretty uncontroversial, and it doesn't really tell us much that's new. Morphic resonance is more controversial but then it tells us rather more that's new.

I'm interested in the day-to-day implications of your ideas. For

example, the "presence of the past" could theoretically be used to justify political conservatism - or classical revivals in the arts.

We don't need morphic resonance to explain conscious revivals. The main way it works is through unconscious habit and memories. We don't need it to explain classical or Gothic revivals, which are a part of normal cultural transmissions. But we do need it to explain more mysterious things - like language learning. A long-established problem in linguistics is how children can learn language so quickly. For example, Noam Chomsky and Stephen Pinker both argue that the ability to learn languages must be innate, because any children from any background can learn any language. An English child adopted by Chinese parents could learn Mandarin, and because this is the case, despite the human races having been separated for such long periods, they have to suppose that there is a kind of universal grammar and genes for universal grammar in all human beings. But there is no evidence for either theory. You can explain all this more easily with morphic resonance. A baby growing up hearing Chinese around him tunes into Chinese by morphic resonance which facilitates the learning of the language. This is an unconscious transmission.

But learning to communicate is surely just a survival skill, like a lion cub



CONTINUITY AND CHANGE - 18TH CENTURY FRENCH NAVAL DRAWING SHOWING HOW SHIP SECTIONS WERE PREFIGURED IN LIVING TREES

learning to hunt. Is this morphic resonance, or just a necessity?

The two things aren't alternatives. It's a necessity for a child to learn a language, but that doesn't explain *how* he learns it. The young lion needs to learn hunting skills, but morphic resonance tells us how it learns its particular skills, and its innate disposition to learn those particular skills. It's not just about how it pounces and rips apart prey, but about how lions work together as a group. They work synergistically as a team. These things are a combination of morphic resonance and learning through experience.

One of the key aspects of morphic resonance is that it has a cumulative effect, with forms and behaviours

becoming more likely over time. Wouldn't this lead eventually to a kind of concretization?

Yes - it's a habit principle and things tend to get into grooves of habit. Stephen Jay Gould's theory of punctuated equilibrium points that out the average species comes into being fairly quickly, lasts about 14 million years with almost no change and then goes extinct. The fossil record shows that there was a period of fairly rapid evolutionary change after the dinosaurs were wiped out about 70 million years ago by an asteroid. There was massive environmental change and the very rapid evolution of mammals. Most of the species of mammal we have today came into being in a fairly short time

in geological terms and since then haven't changed that much. Human cultures have quite similar patterns. *Homo Sapiens* has been around for over 100,000 years, and for most of that time – up until the Neolithic revolution of around 10,000 years ago – they hadn't changed very much. We're used to dizzying speeds of change, but most of that has been the product of the last few hundred years, and isn't natural for humans nor any other mammal. Most species run in very deep grooves of habit for a very long time.

Is your desire to democratize science partly driven by a degree of bitterness at the way some in the scientific establishment have criticized you?

I don't feel bitter – although there have been times when I have felt bitter. If anything, I just feel rather sad that science has got into such a state. I believe passionately in science, and spend most of my time doing research. Most of my colleagues are now heads of institutes and Nobel laureates, and they haven't done research in 20 years, They spend their whole time flying around the world sitting on Royal Commissions. I care deeply about science and science education and feel sad that so many people outside science see it as being narrow, boring and dogmatic. Many people within science see it in the same way – and that's because it *is* narrow, boring and dogmatic in most of its modern

manifestations. I'd like to see more science, not less, but we're going to get less soon, because I'm sure there will be funding cuts. There isn't a big popular constituency for science.

In order to lighten up science a bit, and get people engaged with it, we need to do several things. There need to be more people working independently – people who aren't kept in check by peer-review or narrow grant-giving criteria. Through force of circumstances I had to work independently for more than 25 years. Very, very few scientists are independent these days. In the 19th century it was very different, and people like Darwin appeared from that independent, amateur tradition. They didn't need to worry about not being promoted, or not doing well in the next research assessment exercise.

Secondly, I have proposed a 1% science funding scheme, whereby at least 1% of the government science budget would be used to pay for research that would actually interest taxpayers. One would ask people what they would like to see being researched.

Wouldn't you just get a flood of gibberish – requests to research UFOs and ghosts?

Frankly, the present system gives us a flood, not exactly of gibberish, but of fairly unimportant facts. Most scientific papers are only cited in a few other papers and are therefore a waste

of money. What I am suggesting is that organizations like the RSPB, trades unions or women's institutes, rather than individuals, would be asked to submit their ideas. The wildest and most absurd ones would therefore be filtered out. For example, I belong to the Royal Horticultural Society and they complain that the government spends very little on vegetable-growing and horticultural research in the public interest. The old research institutes were privatized and have ceased to do what they are supposed to do. What research is done now is on claiming more genes or sequencing more proteins. Far more people in Britain are interested in gardens than are interested in protein sequences. Asking gardeners for their ideas would produce a lot of practical, simple, low-cost projects that would actually benefit taxpayers. The present idea of "leave it all to the experts" reminds me of a college of cardinals. Democratizing science would introduce a breath of fresh air into science, just like the Reformation introduced a breath of fresh air into the Christian church.

Your mentioning the church, and the whole idea of a memory in nature, makes me think of one of those 17th century gentlemen scholars - like Sir Thomas Browne - who combined Anglican mysticism with scientific pursuits.

I'm not sure that belief in a memory

in nature is part of the Anglican, or even the Western mystical tradition, which tend more towards the Platonic or neoplatonic. They have the idea of ideal forms outside time and space. Most of the Anglican mystics I've read - including some of the most inspiring, such as Thomas Traherne - are neoplatonic. My views are closer to those of Eastern traditions, like Hinduism or Buddhism. But morphic resonance is not a mystical concept, but a practical scientific hypothesis. Mysticism for me is all about the knowledge that there are forms of consciousness higher than our own, and that we can get in touch with them through praying, meditation or mystical illumination. This is something on which mainstream science at the moment is neutral; insofar as science doesn't have an understanding of consciousness it can't really have an understanding of these kinds of consciousness. The best it can do is to say that during a mystical experience certain parts of the brain light up - but that doesn't tell you about the mystical experience, just about what parts of the brain might be involved.

As well as ecologists, your ideas have been embraced by certain Christian offshoots, such as creationists and intelligent design advocates. How does morphic resonance interact with these notions?

It hardly interacts at all. My criticism of

the intelligent design movement is that it's too mechanistic; they have the same assumptions as standard molecular or mechanistic biology. The intelligent designers and the neo-Darwinians battle each other, but they actually share a lot of common ground.

Mechanistic biology is based on the idea that organisms are nothing but physical and chemical machines, and intelligent designers share that view. The movement grew out of the mechanistic Protestant theology of the 18th and 19th centuries which had grown out of the Industrial Revolution. The problem with the machine metaphor is that because the machine has been designed from outside by an engineer or a mechanic the intelligence and consciousness are always outside the machine. A living organism makes itself, organizes itself; it doesn't have a design blueprint. The idea of God as an external mathematician, designer and super-scientist is a false and anthropocentric conception. In *A New Science of Life* and *The Presence of the Past*, I argue that the evolutionary process is an interplay between habit and creativity. Morphic resonance accounts for the habits but it can't account for evolution by itself. So there has to be a creative principle. But how do you explain it? In the end, the question of creativity is a metaphysical one.

One of the theories I put forward is a kind of expanded materialism which says that ultimately it's all chance; because we can't explain it any other

way, chance has to pick up all the slack. Another possible theory is that creativity depends on the holistic organising principles within nature itself. ♦

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Selected books

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