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**About Rupert**

Rupert Sheldrake, a biologist and author, is best known for his theory of morphic fields and morphic resonance, which leads to a vision of a living, developing universe with its own inherent memory.

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# Morphic Resonance and Morphic Fields - an Introduction

by Rupert Sheldrake

In the hypothesis of formative causation, discussed in detail in my books *A New Science of Life* and *The Presence of the Past*, I propose that memory is inherent in nature. Most of the so-called laws of nature are more like habits.

My interest in evolutionary habits arose when I was engaged in research in developmental biology, and was reinforced by reading Charles Darwin, for whom the habits of organisms were of central importance. As Francis Huxley has pointed out, Darwin's most famous book could more appropriately have been entitled *The Origin of Habits*.

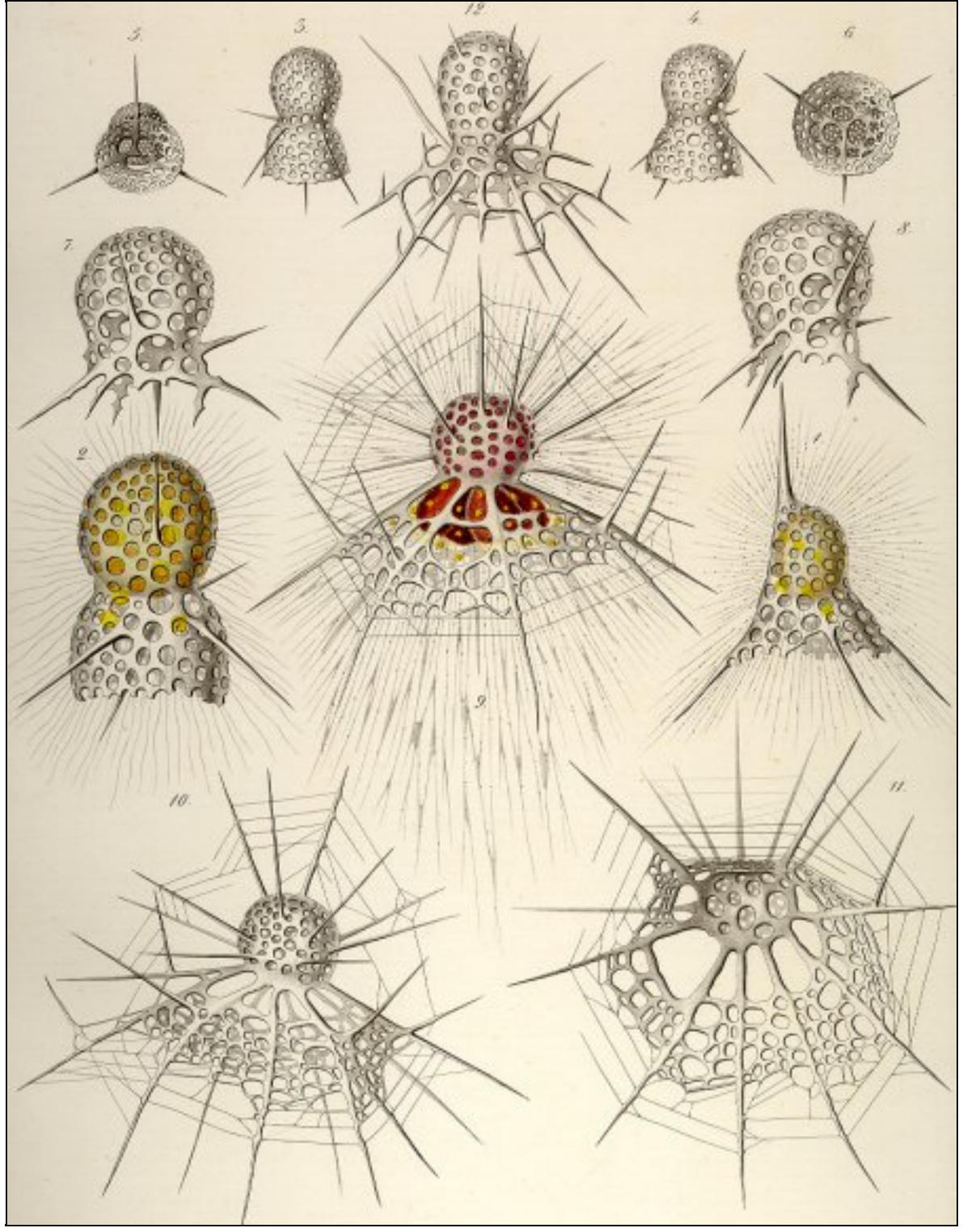
## Morphic fields in biology

Over the course of fifteen years of research on plant development, I came to the conclusion that for understanding the development of plants, their morphogenesis, genes and gene products are not enough. Morphogenesis also depends on organizing fields. The same arguments apply to the development of animals. Since the 1920s many developmental biologists have proposed that biological organization depends on fields, variously called biological fields, or developmental fields, or positional fields, or morphogenetic fields.

All cells come from other cells, and all cells inherit fields of organization. Genes are part of this organization. They play an essential role. But they do not explain the organization itself. Why not?

Thanks to molecular biology, we know what genes do. They enable organisms to make particular proteins. Other genes are involved in the control of protein synthesis. Identifiable genes are switched on and particular proteins made at the beginning of new developmental processes. Some of these developmental switch genes, like the *Hox* genes in fruit flies, worms, fish and mammals, are very similar. In evolutionary terms, they are highly conserved. But switching on genes such as these cannot in itself determine form, otherwise fruit flies would not look different from us.

Many organisms live as free cells, including many yeasts, bacteria and amoebas. Some form complex mineral skeletons, as in diatoms and radiolarians, spectacularly pictured in the nineteenth century by Ernst Haeckel. Just making the right proteins at the right times cannot explain the complex skeletons of such structures without many other forces coming into play, including the organizing activity of cell membranes and microtubules.



**Ernst Haeckel *Tafel_06***

Most developmental biologists accept the need for a holistic or integrative conception of living organization. Otherwise biology will go on floundering, even drowning, in oceans of data, as yet more genomes are sequenced, genes are cloned and proteins are characterized.

I suggest that morphogenetic fields work by imposing patterns on otherwise random or indeterminate patterns of activity. For example they cause microtubules to crystallize in one part of the cell rather than another, even though the subunits from which they are made are present throughout the cell.

Morphogenetic fields are not fixed forever, but evolve. The fields of Afghan hounds and poodles have become different from those of their common ancestors, wolves. How are these fields inherited? I propose that that they are transmitted from past members of the species through a kind of non-local resonance, called morphic resonance.

The fields organizing the activity of the nervous system are likewise inherited through morphic resonance, conveying a collective, instinctive memory. Each individual both draws upon and contributes to the collective memory of the species. This means that new patterns of behaviour can spread more rapidly than would otherwise be possible. For example, if rats of a particular breed learn a new trick in Harvard, then rats of that breed should be able to learn the same trick faster all over the world, say in Edinburgh and Melbourne. There is already evidence from laboratory experiments (discussed in *A New Science of Life*) that this actually happens.

The resonance of a brain with its own past states also helps to explain the memories of individual animals and humans. There is no need for all memories to be "stored" inside the brain.

Social groups are likewise organized by fields, as in schools of fish and flocks of birds. Human societies have memories that are transmitted through the culture of the group, and are most explicitly communicated through the ritual re-enactment of a founding story or myth, as in the Jewish Passover celebration, the Christian Holy Communion and the American thanksgiving dinner, through which the past become present through a kind of resonance with those who have performed the same rituals before.

## The memory of nature

From the point of view of the hypothesis of morphic resonance, there is no need to suppose that all the laws of nature sprang into being fully formed at the moment of the Big Bang, like a kind of cosmic Napoleonic code, or that they exist in a metaphysical realm beyond time and space.

Before the general acceptance of the Big Bang theory in the 1960s, eternal laws seemed to make sense. The universe itself was thought to be eternal and evolution was confined to the biological realm. But we now live in a radically evolutionary universe.

If we want to stick to the idea of natural laws, we could say that as nature itself evolves, the laws of nature also evolve, just as human laws evolve over time. But then how would natural laws be remembered or enforced? The law metaphor is embarrassingly anthropomorphic. Habits are less human-centred. Many kinds of organisms have habits, but only humans have laws. The habits of nature depend on non-local similarity reinforcement. Through morphic resonance, the patterns of activity in self-organizing systems are influenced by similar patterns in the past, giving each species and each kind of self-organizing system a collective memory.

I believe that the natural selection of habits will play an essential part in any integrated theory of evolution, including not just biological evolution, but also physical, chemical, cosmic, social, mental and cultural evolution (as discussed in *The Presence of the Past*).

Habits are subject to natural selection; and the more often they are repeated, the more probable they become, other things being equal. Animals inherit

the successful habits of their species as instincts. We inherit bodily, emotional, mental and cultural habits, including the habits of our languages.

## Fields of the mind

Morphic fields underlie our mental activity and our perceptions, and lead to a new theory of vision, as discussed in *The Sense of Being Stared At*. The existence of these fields is experimentally testable through the sense of being stared at itself. There is already much evidence that this sense really exists. Read about the results of the online staring experiment conducted through this site.

The morphic fields of social groups connect together members of the group even when they are many miles apart, and provide channels of communication through which organisms can stay in touch at a distance. They help provide an explanation for telepathy. There is now good evidence that many species of animals are telepathic, and telepathy seems to be a normal means of animal communication, as discussed in my book *Dogs That Know When Their Owners are Coming Home*. Telepathy is normal not paranormal, natural not supernatural, and is also common between people, especially people who know each other well.

In the modern world, the commonest kind of human telepathy occurs in connection with telephone calls. More than 80% of the population say they have thought of someone for no apparent reason, who then called; or that they have known who was calling before picking up the phone in a way that seems telepathic. Controlled experiments on telephone telepathy have given repeatable positive results that are highly significant statistically, as summarized in *The Sense of Being Stared At* and described in detailed technical papers which you can read on this web site.

Telepathy also occurs in connection with emails, and anyone who is interested can now test how telepathic they are in the online telepathy test.

The morphic fields of mental activity are not confined to the insides of our heads. They extend far beyond our brain though intention and attention. We are already familiar with the idea of fields extending beyond the material objects in which they are rooted: for example magnetic fields extend beyond the surfaces of magnets; the earth's gravitational field extends far beyond the surface of the earth, keeping the moon in its orbit; and the fields of a cell phone stretch out far beyond the phone itself. Likewise the fields of our minds extend far beyond our brains.

## Morphic Fields: A Summary

The hypothesized properties of morphic fields at all levels of complexity can be summarized as follows:

1. They are self-organizing wholes.

2. They have both a spatial and a temporal aspect, and organize spatio-temporal patterns of vibratory or rhythmic activity.

3. They attract the systems under their influence towards characteristic forms and patterns of activity, whose coming-into-being they organize and whose integrity they maintain. The ends or goals towards which morphic fields attract the systems under their influence are called attractors. The pathways by which systems usually reach these attractors are called chreodes.

4. They interrelate and co-ordinate the morphic units or holons that lie within them, which in turn are wholes organized by morphic fields. Morphic fields contain other morphic fields within them in a nested hierarchy or holarchy.

5. They are structures of probability, and their organizing activity is probabilistic.

6. They contain a built-in memory given by self-resonance with a morphic unit's own past and by morphic resonance with all previous similar systems. This memory is cumulative. The more often particular patterns of activity are repeated, the more habitual they tend to become.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