

# Evolution: A Third Way?

STEPHEN L. TALBOTT

In recent years we've seen increasing numbers of biologists who are dissatisfied with conventional ("Neo-Darwinian") evolutionary theory — biologists who, it would appear, are also unhappy with the resistance of an entrenched scientific establishment to the consideration of new ideas. Part of this resistance, I think it is safe to say, is owing to the fact that the establishment has taken on a kind of siege mentality owing to assaults from the intelligent design community. Unfortunately, when scientists and scholars retreat into an us-versus-them mindset, many important distinctions and possibilities of thought tend to be lost, sacrificed to the tactical exigencies of the conflict.

So it was that, during this past year, a group of biologists inaugurated a website called "The Third Way of Evolution" (<http://thethirdwayofevolution.com>). Led by figures such as James Shapiro, a University of Chicago microbiologist and author of *Evolution: A View from the 21st Century*, and Denis Noble, an Oxford physiologist who is president of the International Union of Physiological Sciences and author of *The Music of Life*, the group describes its purpose this way:

The vast majority of people believe that there are only two alternative ways to explain the origins of biological diversity. One way is Creationism that depends upon intervention by a divine Creator. That is clearly unscientific because it brings an arbitrary supernatural force into the evolution process. The commonly accepted alternative is Neo-Darwinism, which is clearly naturalistic science but ignores much contemporary molecular evidence and invokes a set of unsupported assumptions about the accidental nature of hereditary variation. Neo-Darwinism ignores important rapid evolutionary processes such as symbiogenesis, horizontal DNA transfer, action of mobile DNA and epigenetic modifications. Moreover, some Neo-Darwinists have elevated Natural Selection into a unique creative force that solves all the difficult evolutionary problems without a real empirical basis. Many scientists today see the need for a deeper and more complete exploration of all aspects of the evolutionary process.

The website has now achieved considerable weight, revealing a remarkable diversity of viewpoints among the scientists, philosophers, historians, and other scholars concerned with evolution. And this is perhaps the site's primary value. It succinctly presents viewers with a rich

variety of resources to pursue, depending on their interests. None of the viewpoints expressed there is endorsed, and none of them is necessarily consistent with any of the other viewpoints presented on the website. "Our goal is simply to make new thinking about evolution available in one place on the web." The website is a healthy — and, in the current intellectual environment, a rather unexpected — reminder of how downright *natural* it is in any living, vital field of science to see creative thinking going on in many different directions.

One more or less common element uniting all those scientists and scholars appearing on the website is a rejection of the idea that "small random mutations are the main source of new and useful variations." After all, as the home page puts it,

We now know that the many different processes of variation involve well regulated cell action on DNA molecules. Genomes merge, shrink and grow, acquire new DNA components, and modify their structures by well-documented cellular and biochemical processes.

To turn away from a preoccupation with random mutations and the "mechanism" of natural selection, focusing instead on the life of the organism, is to invite a consideration of the organism as an active agent in the evolutionary process. Perhaps even now not many are quite ready to embrace fully what this could mean, but we can look forward to some interesting developments.

As it happens, I was quite unexpectedly invited to join the group this past January. Participants are asked to submit (for the website) a statement about the nature of their own work, together with comments regarding their approach toward an understanding of evolution. For my remarks, which are necessarily rather dense, see the next page.



# Whole Organisms Evolve, Not Just Their DNA

*Following are the remarks Steve submitted for inclusion in “The Third Way of Evolution” website (<http://thethirdwayofevolution.com>).*

**Personal Profile.** After many years working in the engineering organizations of computer manufacturers, Talbott joined The Nature Institute as Senior Researcher in 1998. He has long been concerned about distortions introduced in biology by technological thinking. He attempts to show how our understanding of the organism and its evolution is transformed once we recognize and take seriously the organism as an intelligent agent meaningfully (though not necessarily consciously) pursuing its own way of life.

When molecular biologists formulate their fundamental questions (how are DNA breaks repaired? how does the cell divide? how are RNAs localized in the cell? how are protein amounts regulated?) they seem to believe that the organism is actually capable of solving such problems. That is, they believe it engages in the pursuit of ends, organizing its activity according to the idea or logic of the tasks at hand. But they commonly try to answer these questions merely by tracing and adding together local causes — showing how one thing controls another, how this makes that happen. Such making, however, never reaches to the biologically and contextually expressed intentional activity that informed the original questions. Causes by themselves do not pursue tasks. The always lawful molecular proceedings in the organism are vital to analyze, but to offer these proceedings as explanations of a living performance is misguided. If the organism is able to coordinate physical causes for the satisfaction of its own needs and aims, then it governs those causes at least as much as it is governed by them.

How should we understand this governing? We need a reconciliation of the causal and intentional ways of thinking — a reconciliation that does justice to them both without a dualistic cleaving of the world.

**Statement on Evolution.** We cannot understand evolution without understanding the life of the organism. This life is expressed in well-coordinated processes; organisms are not mere collections of molecules, “informational” or otherwise. What is inherited, then, are ways of doing things with the available resources. If an organism can differentiate and organize its tissues to form liver and skin, retina and endothelium, brain and heart — and if it does this adaptively and improvisationally amid the not always predictable conditions in which it finds itself — then why not assume that these same well-directed powers of adaptation and improvisation are brought to bear also upon the formation of its gonads and germ cells? The validity of this assumption is rapidly being confirmed today.

It may be argued that organismal performances (ways of doing things) cannot figure in evolution because they do not offer a sufficiently stable content for natural selection to work on. But this is, first, to accept the incoherent notion that the environment, as the “grim reaper” of natural selection, is the creative agent in evolution, and, second, to overlook that organisms, in responding to this environment, are the capable agents we observe them to be in all aspects of their own development. But if organisms *are* capable agents — agents harmoniously demonstrating their intention to live a life of a certain character even when this requires overcoming aspects of their environment — we should ask, not only how they may accidentally contribute to the fitness and survival of future generations, but also how they may creatively contribute to the evolving character of those future generations.

DNA sequences are appealing as the sole or primary materials of inheritance because they give us conveniently and quantitatively trackable things. But stable things and our own mathematical convenience are not necessarily the best guides for understanding life and change. What if the more pressing need is to learn to track a qualitative and coherent organizing reality we have hardly yet begun to recognize because we haven't yet even thought to look for it?