

ESSAY

Evolutionary Learning at Revolutionary Speeds

by Joel Getzendanner

It happens a billion times every day. A seed falls to the ground. It waits for conditions to be right, and once they are, it begins its magic. Protoroots probe their surroundings, selectively absorbing the molecules they need. The roots pass the nutrients to the shoots as they reach for the sun. Leaves and branches form, and eventually a flower buds, then blossoms. Bees, butterflies, or insects may complete the pollination process. Deep inside the plant, molecules reorganize themselves into a seed, so that the cycle can repeat itself the following year. But not quite.



While seeds from a single plant are nearly identical genetically, slight variations occur from time to time. And



blocks of DNA coding that might lay dormant for generations can become activated if their surroundings change sufficiently.

And change occurs constantly.

Every plant and animal grows, adapts, and evolves in an ecosystem of other plants and animals that are growing, adapting, and evolving. They must learn how to survive anew in each and every moment, since every moment is brand new, never to be repeated. Even something as apparently simple as a seed must be a master learner, as evolution roils around and through it.

A billion years of learning went into that seed. And it participates in a billion learning events in its short lifetime.

How did matter learn to be alive?

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A few hundred years of learning have gone into the design of our commercial organizations. We “hone a fine edge” to them. We make them “run like clockwork.” We find “leverage points” so that they can operate like a “well-oiled machine.”

The scientific and industrial revolutions gave us our current generation of organizational forms. They are analytic creations, designed and operated to be financial instruments, extracting, producing, and concentrating financial assets. We think that to optimize business outcomes, we must first make our organizations—and ourselves—cold, calculating machines, subject to manipulation. But when we succeed in this, we succeed only in making them dead things, and in the process we crush any life that lies within them, including ourselves.

Good leaders know that such “success”

is short-lived and shortsighted. They strive to make their workplaces more humane and vibrant. They know that if you kill something, it can feed you only once. If you grow something, it can feed you many times. But they struggle against the mechanical forms and the concentrating and centralizing forces. Even those who succeed in fending off the forces and learn how to create real value often watch their work vanish with the next generation of leaders.

Learning is killed along with everything else. If evolution worked like that, we’d still be pond scum.

What is it time for?

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Evolution hasn’t stopped, of course. But the explosion of scientific knowledge and commercial practice has transformed the environment. Nearly every ecosystem on the planet is now dominated by the same species: homo sapiens. This is unprecedented. We’ve put ourselves in a delicate situation. Our very survival may depend on our ability not only to organize knowledge abstractly about the ecological demands we place on the world—and their interdependencies—but to apply that learning in situ at a billion places around the world, simultaneously. Our current institutions are not very well suited to this challenge: they are too much like machines. What we need is to be able to learn the way that life on this planet has learned for eons.

There’s been a social transformation, as well. While some people may still long for a uniform “corporate culture,” the call today is for a cohesive “multiculture.” Again—hard for our current institutions, effortless for nature.

Nature would never find itself arguing about how centralized or decentralized a system should be. It’s well beyond that. It’s perfected the art of creating *distributed* systems, with lots and lots of autonomous, interacting parts that share just enough code to cohere. Some of these

parts may appear to form patterns that are centralized or “top-down,” but the search for the organic equivalent of a board of directors is futile. Even the human brain contains barely half of the neurotransmitters in the body. The rest are distributed throughout the body and linked into unimaginably complex patterns. (My roommate in college once won an insult contest with, “My *elbow* is smarter than you.” Maybe he was right.)

Nature does not set priorities. It continuously experiments and *learns* how to create value. It doesn’t look for the best answer. It looks for multiple right answers. There is always room for another right answer. Still, every part of nature coevolves with every other part. Just as there is an extraordinary freedom for every molecule to find its own pathway, there is a strong tendency for the parts to organize into mutually beneficial pathways. Evolution couldn’t really get a toehold on this planet until it learned that balancing act.

There is great irony in the fact that we have spent most of the last half millennium distancing ourselves from the pre-eminent learning system on this planet at the very moment when we most need to emulate it and reintegrate within it.

How fast can we learn to be alive?

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