



## The Secret Life of Plants

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Is there a spiritual dimension to the story of the universe that biological evolution tells? In “Creationism and the Spirit of Nature” (*Tikkun*, November/December 1987), an essay reprinted in *The Bank Teller and Other Essays on the Politics of Meaning*, Peter Gabel has elaborated an answer to this question. He believes that “spirituality” is “manifested in every life-form as both presence (or existence) and desire.” To illustrate this idea, Gabel cites the tendency of a plant to arch toward the sun:

We have all seen this many times—the upper leaves and branches seem to stretch in a sensual way up toward the warmth and the light, while the lower leaves and branches do the best they can and curl around toward the sun with the same apparent desire and intention. A scientist would tell us that it is mere sentimentality or personification to think that the plant is leaning toward anything, that what is “really” going on is “phototropism,” the first phase of something called “photosynthesis,” a process by which the chlorophyll in the plant combines with light to produce oxygen.... Ascribing intention or desire to the plant’s movement attributes an immanence or inner life to the plant that is not observable by objective, impartial methods, and therefore cannot qualify as “knowledge” according to science.

Rejecting this particular scientific paradigm, Gabel recommends a new scientific method—one that enables us to “free ourselves to see the plant as a presence like ourselves, desiring the nourishment of the sun’s warmth and light and undergoing vibrant physical transformations as this desire is realized.”

I believe that this is a misreading of the natural world we inhabit. Gabel is searching here for intentionality in a domain—botany—where it cannot be found in the form he discusses. Yes, there is something deep in the wellsprings of our nature that seeks connection—something that opens up and reaches out. Out of that, idealism is formed: we look for the light in others and ourselves, hoping to redeem a world largely thrust into darkness. Gabel himself has written very eloquently about such yearnings, which indeed resonate with a leaf opening, a vine spiraling, a seedling inclining toward the sun. I agree that recognition and expression of these longings may be essential to our future on the planet. But are we really reconnecting with and respecting our natural surroundings when we ascribe desire as widely as Gabel does? Let’s reconsider his botanical illustration.

According to the scientific account, plant movement toward light results from the action of certain plant hormones. Such movement was investigated by Charles Darwin and his son Francis, who published their findings in *The Power of Movement in Plants* (1880). They hypothesized that an internal biochemical signal accounts for the growth of seedlings toward light. Their observations would later lead to the discovery of plant hormones called “auxins” that induce plant cell change. An auxin migrates to the shady side of a plant, where it modifies cell division and growth. As a result, shady-side cells stretch out more than illuminated ones, and that causes the plant to incline toward the source of light. The detailed interactions of auxin with cells is also increasingly understood, involving alterations in cell wall rigidity, gene expression, facilitation of ion transport, etc.



I’m simplifying a story here whose wonder lies in its intricate biochemical complexity. The relevant point is that there is no “explanatory gap” here, and hence no explanatory role for intention to play. Given the biochemistry of plant phototropism, and given any plausible definition of “intentionality,” it seems evident that the leaning of a blade of grass toward the light has nothing to do with any “intention” or “desire” on the part of the plant.

Do our immediate experiences tell us otherwise? Do they really affirm the presence of intentionality—preference, desire, volition—throughout nature, including the plant world? Let’s note that, although experiences are of course relevant to understanding our surroundings, they do not speak with only one voice, and their revelations call for interpretation. Experiences are as diverse, and sometimes as contradictory, as the persons who have them. Peter Gabel, like

European Romantic poets two centuries ago, perceives in a plant desire and intentionality. Eckhart Tolle, drawing differently upon the same tradition, finds instead stillness and peace: “Look at a tree, a flower, a plant. Let your awareness rest upon it. How still they are, how deeply rooted in Being. Allow nature to teach you stillness.”

It does not make the inclination of a seedling to the light any less lovely to recognize that its way of moving is not our own, i.e., not intentional. To be sure, some human actions are, like plant movements, driven by hormones. But in our affairs, motivation and purpose play an explanatory role that has no counterpart in the botanical world. This is a point that philosophers such as Daniel Dennett and Tyler Burge have made persuasively in their writings over the past two decades.

Indeed, not all truth is scientific. In our experiences of nature’s many dominions we find resonances, parallels, and kinships that lie beyond the purview of science. Wordsworth, Dickinson, and Frost give expression to an understanding as profound—and as relevant in an era of ecological crisis—as anything that science tells us. Music too— e.g. the Ashanti talking drums, Brahms’s Requiem (“For all flesh is like grass”), Stevie Wonder’s homage to the “Secret Life of Plants”—invokes and interprets nature.

But we err if we base our explanations of nature’s ways upon a literal-minded reading of metaphors. A snow bank builds when layers of flakes “find a bed” upon those that have preceded them, but they do not do so because they are tired and want to sleep. Salt dissolves in water because water is an ionizing agent, not because the crystals have a death wish. And a blade of grass inclines toward the sun not because of a desire to do so but thanks to auxin-plant cell interactions.

Is there mystery of a kind in the myriad ways of nature? There is, but it seems to me that we misunderstand that when we project human ways into botany or physics or astronomy. Must we find our own features reflected back to us everywhere we look? This is akin to the hubris that Spinoza noted when he considered doctrines of intelligent design. Intentionality is one way of being in the world. Why universalize it? Spinoza views as self-centered and fallacious our inclination to cast G-d and nature in our own, human image.

I don’t mean to dismiss here an essential task that lies before us: establishing a sustainable “partnership,” so to speak, with a planet whose life forms are amazingly prolific, but often endangered. The terms of that partnership aren’t understood in the same way by all of us, however. I welcome this diversity, and appreciate this opportunity to share what I take to be a scientific perspective.

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