

Why Practice Natural History?

Seeing the Natural History Way

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There is nothing in which people differ more than in their powers of observation. – John Burroughs

Perception is one of the greatest of all natural gifts. It provides continuous flows of energy and information—enhancing facets of the environment, directing our movements, and providing pleasure to most mammals. It is as diverse as are species and individuals, and in humans it is ideally made up of beautiful forms and saturated colors, sweet and erotic scents, the easy cadence of crickets, and clear survival signals.

I have pondered what it means to see for some thirty years. My inquiry began when I was a myopic kayaker and unable to see through salt-encrusted glasses. I left an idyllic back-to-the land existence to enroll in vision improvement classes in Los Angeles. Despite being initially terrified by such a big city and generally resistant to being there, the ensuing perceptual shifts shook up my way of thinking and what I did.

My priorities changed as dramatically as my ability to see, so I went to graduate school to study visual science. Once there, I discovered how the visual cortex changes as a function of experience, which, in my mind, explained my radical experience with vision improvement exercises, the practice effects I observed in the lab, learning, and the self-organizing behavior of organic systems. Soon I was thinking about the way our vision is conditioned by culture and about the nature of the “Western lens.” I came to the conclusion that our environmental crisis is ultimately a crisis of perception.

My thinking went like this: We are children of the Age of Reason and yet collectively embedded in commercialized images appealing to the senses with every imaginable, seductive hook. As a consequence, the focus of our attention is on numbers, material objects, and one’s self. Above all, we value monetary success and independence. Because we are “inattentionally blind” (Mack and Rock 1998),

relationships of all types—even simple, natural patterns—are commonly unseen and even considered invisible, despite the fact that we live within dense relational fields. (The obvious exceptions to this are those relationships that can be plotted on x and y axes—or basic, casual relationships—not the complex interactions that determine ecological reality.) Further, because the visual system adapts to experience mediated by attention, the upshot is a Western lens that limits collective consciousness, particularly with respect to understanding the relational world.

After some dozen or more years of thinking along these lines, I’ve also concluded that shifting consciousness through the eye is as natural as is our need for sleep. Over time, sight influences consciousness by way of iterations of signals running through networks of neurons, strengthening some neural connections while allowing others to atrophy. This not only changes the structure of neural networks but also determines which signals we pick up and which ones we don’t, further determining the ways in which we sort and categorize incoming visual information, what we think and value, and what we act upon.

As my vision improved, I was surely picking up a great many more signals than I did as a bespectacled myope. After a month or two of practice, nuanced dynamics—even in crowded rooms—became almost obvious; it was as if I had x-ray vision. Previously unseen street signs popped out in sharp relief, and in some uncanny way, I was uncharacteristically on time for every event. I found myself being curious about whatever landed at my feet, struck by a young woman’s sense of empowerment, and overall, having a fabulous time. The world was newly lit up and jazzy.

In my now studied way of thinking, all of this follows from visual system plasticity, or changes in vision and visual cortex as a function of experience.

In the last two decades, neuroscientists have found that plastic changes in visual system structure and function can appear rapidly and be radical (e.g., Kilgard and Merzenich 1998, Doidge 2007). The study of neuroplasticity is a complicated science but two fundamental findings are relevant here. First, links between neurons, or synapses, that repeatedly fire become “facilitated” or more tightly connected. This is the Hebbian Learning Rule, now commonly summarized as, “What fires together, wires together.” In functional terms, it means that a facilitated synapse has a lower threshold for firing (Bear et al. 1987, Clothiaux et al. 1991, Rauschecker 1991) and that as a consequence, signals are routed through certain, well-used networks.

Second, in adults—or beyond early developmental stages—such neuroplastic changes in synaptic connectivity are dependent on the activation of attentional processes and mechanisms (e.g., Kilgard and Merzenich 1998, Doidge 2007). This can be summarized as, “Energy flows where attention goes.”

Behaviorally, this means that what one values or desires, and presumably looks at a lot, is analogously buried in the brain. As the neural connections become increasingly facilitated, the valued “thing” becomes more readily seen in subsequent open-eyed moments.

What we see, then, is largely the result of perceptual habit, unless we intentionally focus on something else. If we are paying attention, the “thing seen” will be picked up faster and with more detail and vibrancy (Bashinski and Bacharach, 1980, Carrasco and McElree 2001, Pestilli and Carrasco 2005), and it will be the groundwork for a different way of seeing, and consequently, for a certain quality of mind.

We differ greatly in our observational capacity. As a visual psychologist, I have been especially interested in those who are acutely observant—including those who produced “outlier” data in my vision experiments, are said to have a “good eye,” or are clearly “perceptive.”

For at least two decades, I have asked natural historians what they see. Throughout this time, their exceptional ability to pick up details and identify fast-moving objects—like lime-green warblers flitting through lime-green thickets—has impressed me (and apparently all who traipse behind on bird walks and natural history hikes). They discriminate patterns in a single glance and sustain their attention for long periods of time. They hold images in mind while classifying and identifying, refreshing their mental image by repeatedly looking at whatever they see. Given the nature of visual

system plasticity, it is the best recipe for seeing way beyond the norm.

Natural history requires focused attention on the distinctive patterns of flowers, birds, reptiles, social behavior, food webs, and habitats. Over time, these observations surely become a significant way of knowing the world, perhaps not unlike a violin player knowing strings, tones, and melodies. Natural historians thus find themselves embedded in a saturated world of other beings—squawking, thumping, buzzing, flitting about, and flirting. Consequently, they know a lot about where they stand, literally and figuratively. They know their places deeply and deliberately, and as a further consequence, they know what they value. They tell me that they *love* this earth and that joy comes easily. This is no surprise to me. With eyes and ears so highly tuned, they are undoubtedly within a phenomenologically deep world of *all-the-relations*.

I have long suggested that the practice of focusing on natural patterns and qualities may be the best remedy for the conditioning effects of Western culture (Sewall 1999). Too, an eye focused on natural patterns may serve to recover a once-hardy capacity to discern relationships between predators and prey, between plants, herbivores, weather, and climate—what we now call system dynamics. I have suggested that this way of *seeing-into* the world of relations both demands and cultivates fine pattern perception, a strong intuitive sense, a good sense of gestalt, an awareness of thresholds, and at the very least, a capacity to read the signs, as when a squawk signals your step.

I am now suggesting that such shifts in perceptual capacity—or rather, the recovery of our finely evolved sensory abilities—feed forward into shifts in consciousness. With an eye tuned to pattern, movement, beauty, and the secret lives of birds and bees, the world brightens and beckons, and what one values becomes a matter of where one stands, literally, and of the wilder and complex relations there. The fact of interdependence—between pollinators, flowers, and food; between birds, fish, coastal waters, and coastal communities—is witnessed directly and becomes deeply known. No longer abstract, our mutual dependence may then inform our behavior, and upholding the common good becomes enlightened self-interest.

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