



# *In Context*

A Publication of **The Nature Institute**

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How Does the World Lend Itself to Our Knowing?

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#48

*Fall 2022*



## The Nature Institute

Dear Readers,

Much of our work at The Nature Institute focuses on *how* we experience, explore, and come to insights. The *what* of knowing always appears as the result of the interweaving of self and world. If we do not become more keenly aware of our points of view, our biases, and predilections, we may end up thinking the picture of the world we paint is “the way things are” rather than a particular perspective that can both illuminate and color our understanding. As the saying goes, if your only tool is a hammer it is tempting to treat everything as a nail.

Awakening to the *how* means becoming more aware of the ways in which the quality of our attention and intention informs what the world can show us. This awareness can stimulate us, on the one hand, to free ourselves from ingrained habits of mind. We can strive, to speak with Thoreau, to explore with “more free senses” and practice a kind of open attentiveness that lets us apprehend something already known for a “thousandth time ... as something totally strange.” On the other hand, we can consciously consider things from different perspectives, shifting points of view. With a growing flexibility of mind, the world can show herself in greater breadth and depth.

These are practices that we work with in our education programs and that you can get a glimpse of in the News section of this issue. You will also find an array of articles that revolve around awakening to the *how* of knowing and gaining meaning-filled experiences and insights.

Can we heighten our attention for the concrete appearances that are waiting to be perceived in the sense world and that we all too often hardly notice? In her article, Henrike Holdrege describes different types of shadows one can encounter. Paying careful attention to them, and to the contexts they appear, can lead to a surprising insight.

Just as we pass by shadows without concerning ourselves with them, so we might, year in and year out, pass by dandelions in the spring and not give them any more attention than registering them as weeds in a yard or field. But those yellow flowerheads are an open secret. Jon McAlice relates in his article how high school students, guided in considering dandelions carefully and relating them to other flowers, can recognize this open secret and stand in awe before this “common” plant.

In this issue’s feature article, Steve Talbott addresses the topic of knowing in a foundational way. He challenges the widespread notion that we are somehow separate from things and that knowing means forming subjective representations of the world. He wants to help the reader move beyond this frame of mind. Can we begin to see that we live in *one* world, a world in which we are active participants, not only in what we outwardly do, but also in the ways we perceive and conceive of things? The implications of this transformation of understanding are immense.

Craig Holdrege

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# Learning and the Experience of Meaning

JON MCALICE



I spent my first years teaching in surroundings of the utmost simplicity. Although this was long before the digital age made its invasive entry into all aspects of private life, the students who came to us in rural Vermont still

found the lack of distractions challenging. There were no televisions, no trips to the mall, no hanging out in town. We had an old 16mm movie projector for which we would rent movies from time to time. There was plenty of work to do, places to explore, things to learn. Boredom was not something to flee from, but to overcome. We led a more or less communal life. Hiding from one another was difficult; hiding from oneself more so. Simple things, the ones we often take for granted, took on a new significance. The fads and hype of what some still insist on calling the “real world” lost much of their draw.

Once I watched one boy, who was 13, taking leave of the place before traveling home with his parents for vacation. David didn’t notice me. He wandered through the small woods that separated the living quarters from the main house with its dining room and classrooms. He greeted each stone, each tree, reminded them of the moments they had shared, told them he hoped they would be well while he was away, he thanked them for being there and promised to return soon. He squatted down at the curve of the path where a smooth, rounded knob of granite rose gently out of the surrounding earth. “Good-bye my noble friend,” he said. “You never let me lose my way in the dark. Thank you.” And he patted it with his hand.

I know how he felt about that chunk of granite. I, too, had counted on it being there to guide me as I felt my way along the path on dark, moonless nights. On clear

nights, it was possible to find one’s way with the help of the stars, something that was easier in winter than in summer when the trees were all leafed out. On moonlit nights, the woods were alive with mys-

terious shadows. But in the dark, it was the granite that served as a touchstone.

For David, as for me, this stone was an object of significance in a very real, deeply experienced world. The boy and the stone remain inseparably linked in my memory. It is more than 30 years since I watched unseen as he took leave of “his” woods. Watching him converse without pretense with the trees and stones — the touchstones of his life there — taught me something about teaching. I learned something in that moment: In our world, designated teachers may be necessary, but it is not from them that a student learns the most. A student learns the most important lessons from his or her surroundings. Learning is a contextual reality. The best teacher knows how to bring the world to life for his students. A student learns through what lives in the world around him or her. If there is something you wish your students to learn, you must find the way to bring it to life for them. It becomes a real part of the world they experience as real. No curriculum, no program can replace this.

Some years ago, during an exploration of life during the fall of the Roman empire, I told my young students stories of the Desert Fathers, the early Christian ascetics living in northern Africa. In one story, Selma Lagerlöf writes of a monk who stood silently on one leg praising God. He stood so still that a bird searching for a place

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to build its nest settled in the monk's tangled locks. His heart went out to the bird and he remained standing there through the weeks that it took for the eggs to hatch and the nestlings to fly away.

When time for recess came, I left the classroom briefly to get my snack. I returned to find the children gathered by the big windows looking out to the garden. They were very quiet. As I approached, one of them signaled to me that I should move quietly and slowly. Outside two students were standing in the snow, their arms outstretched, a boy and a girl. On the palms of their hands and on the top of the wool hats, I could see bird feed. We all waited in silence, unmoving as the two waited for the birds to come. And come they did. The longer the two stood there in absolute stillness the more birds came to pick the seeds from their hands and heads. Recess passed, the next period began and still we stood there silently at the window watching the birds, watching our two fellow students.

One spring, I visited a high school science teacher from a school on the shores of Lake Champlain in Vermont. I had been invited by the school to visit her classes and give her feedback on her teaching. She was in the middle of a botany block. Each day she took the students out into the early springtime woods and meadows surrounding the school to observe. These observations began in silence, then moved on to descriptions of the plants. The teacher described the almost reverential mood among the students as they observed the simple woodland flowers blossoming among the debris of the last winter.

My first experience of her students was listening to them speak about a tree they had discovered on the edge of a field the day before. It was an old beech tree with four strands of barbed wire running through the middle of its trunk. Although some of the students had seen trees that had grown up around old wire fence before, none of them had ever given them much thought. The discussion that ensued concerning the growth process of a tree was lively and thoughtful. When the teacher brought the discussion to a close by asking the students to write three adjectives describing the tree, several of them chose words that expressed some aspect of the resilient, gentle strength and majesty with which the tree had grown around the wire, encasing it without breaking it. One boy struggled to find just the right word for the power of the tree's growing. There was little doubt that the observation and the thoughtful reflection on what they had seen had made a deep impression on each of them.

Later that morning I accompanied the students on a field observation. They were heading out to observe

dandelions. We left the schoolhouse, crossed the road and followed a path to a small grassy area between the train tracks and a parking lot. The grass was deep green and well-tended. The whole area was aglow with the bright yellow of a multitude of dandelions. There were so many that it was impossible to walk through the grass without crushing the cheerful blossoms. Yet the students waded merrily in, settled down into the sunlit grass and began to observe the flowers. It wasn't long before the first flower heads flew through the air; one girl began to weave dandelions into her neighbor's hair; a boy picked an especially large flower and began dissecting the stem, then the flower itself. Although a mood of attentiveness and interest was more or less maintained, reverential would not be the word one would use to describe the students' relationship to the dandelions. But discipline was not lost. Students shared their discoveries with one another around the loose circle that had formed as they had settled into the well-flowered grass. The analysis grew more pronounced as students began probing the mysteries of the flower head.

Little by little the dandelion, as an experienced wholeness, disappeared to be replaced by a searching for the right words and phrases to describe the intricacies of the discrete parts of the heads of the flowers they had so blithely dissected. Magnifying glasses were added to the mix. Evermore intricate structures became apparent. The groups' interest began to diverge. Some continued wrestling to articulate and bring order to what they were discovering; others relaxed into the fresh grass and warm sunlight; two boys began to test relative ignition points by focusing sunlight through their magnifying glasses.

I spoke with the teacher about this session later in the day. She was disappointed that her students had spent so little time getting a feel for the plant as a whole, something that surprised her after having experienced them with the woodland plants and the trees. We spoke about the gesture of the plants, the radiating movement that appears in each of its stages; how the bud forms deep down, nestled in the rosette of leaves close to the ground, then rises upward on the stem to burst into the light. I spoke of my own practice as a teacher to steer clear of spontaneous "field dissections," i.e. tearing things apart to find out what's inside of them. If something is to be dissected, it should happen in the focused environment of a lab. When outside, students should have the opportunity to experience the plant in its wholeness, within the context in which it lives and grows to be moved by its living presence.

The following morning the teacher returned to the experience of the dandelions the previous day. Briefly, she shared her sense that they had moved too quickly into what Annie Dillard might call a mode of plucking and analyzing. Then she asked the students for their thoughts. As we went around the circle, it became apparent that many of the students had reached a similar conclusion when writing up their reflections of the day the evening before. They too expressed feeling they had not been as respectful of the living dandelion as they had, for example, been of the trillium. One pointed out that it was the complexity of the dandelion's flower that had led them to look so much more closely at its parts. Another remarked that there were just so many of them, it didn't seem to matter.

The teacher proceeded to diagram what they had observed of the intricacies of the flower head on the blackboard. At each stage, she asked the students if what she had drawn reflected their memories of what they had observed. When the diagram was complete, she went through it, naming and explaining the various parts. When she pointed out that what they had assumed to be petals in their rather rough and tumble field observations was in fact the corolla, one boy burst out: "These are all little flowers! The dandelion is covered with little flowers!" A ripple of wonder went through the room as the students grasped the concept of a composite flower and suddenly saw the common dandelion in a new light.

For these students, the concept of a composite flower was rooted in their experience of coming to know the dandelion. Every step in this process contributed to their experience of meaning. They observed the

dandelion in its context. They observed themselves in relation to the dandelion. They reflected on the difference between their behavior with the dandelion and the trillium. Having become aware of their experience of inner connectedness with these plants, when they took the step of coming to an understanding of what was specific and essential to the dandelion, the dandelion resonated more strongly in them. It moved more than just their intellect.

This approach to science — the discipline of learning to understand the natural world, the world of the senses — seems to make sense. Ideas that do not move us are of little value in the great scheme of things. It does not matter if I know about photosynthesis, about plant communities, about various forms of blossoms if this knowledge does not heighten my awareness of my relationship to the natural world.

The human being is part of a greater context. Each of us has a role to play in the evolution of this context. The way we understand it, the way it lives in our consciousness, affects our ability to do what it asks of us.

Encounter-based science teaching can take us a long way towards meeting this challenge. With information so readily available through online sources, schools no longer primarily face the task of imparting knowledge about things. The new task is to guide students into deeper, more immediate encounters with the earth and to give them the opportunity to begin to experience how the blossoming of understanding sparks feelings of wonder, respect, and a sense of commitment to the world they are learning to know.



# Shadows and the Sun

HENRIKE HOLDREGE



Figure 1



Figure 2

On a walk in a forest with the sun high in the sky we enjoy dappled light gracing the scene. Often enough, when we pay attention, we find that there are patches of brightness on the otherwise shaded ground that have unmistakably the shape of circles or ellipses (see Figures 1 and 2). These vary in size and brightness. They are more or less defined, have sharper or more blurred edges. They can overlap and merge and form even brighter and larger patches of more irregular form. With wind in the trees, the circles move and dance on the forest floor.

Where do these round forms come from? Clearly, they are not outlining tree trunks, branches, leaves, or the irregularly shaped spaces in the forest canopy through which the sun shines into the forest.

Consider a different situation, as shown in Figure 3. Here, a low-growing plant, in direct sunlight, casts its shadow on a rock. The divided leaves of the plant, their toothed margins, and the plant's narrow stem are clearly discernable. The shadow is dark, sharp, and distinct. It shows forms of the plant in detail.

You see in Figure 4 a potted fern that I placed in my yard on a stool in direct sunlight. The white paper on the ground next to it shows the shadow that the plant casts. The fronds of the fern arch up and out. Only two of



Figure 3



Figure 4

them reach so low that they touch the paper. You see them in the upper portion of Figure 5. Here, their shadow is crisp, dark, detailed, and partly angular. It clearly shows forms of the leaf. The sunlight shining through the leaf even colors the shadow green. For the same leaf, the shadow changes for the part that is higher above the ground. Now the shadow is less dark and its boundaries are less defined. There is a light grey fringe, a partial shadow or penumbra, surrounding the darker core shadow. In the lowest portion of the figure, the shadow is even less dark and appears blurred. All outlines are rounded and curved; none of the edges have any angularity. There are tiny patches of brightness in the midst of grey that have the shape of circles or ellipses.

To explore these shadow phenomena further, you can use your own two hands. Spread the fingers of both

hands and place one above the other in a crisscross fashion so that they form little windows in between your fingers. These windows vary in size and have a more or less rectangular shape. In direct sunlight, the shadow that the hands cast on a surface (we use white paper) in close proximity shows in detail the forms of the fingers

and the angular forms of the little windows in between them. When you move your hands away from the surface, or when another person moves the surface away from you, the image on the surface changes. Figures 6 and 7 show such a situation. Here, the surface is placed several yards from the hands. On the screen, the fingers are barely recognizable, parts have disappeared. The shadow outlines are concave. There are no angular forms. The bright angular windows of varying sizes have given way to circles of brightness. All of them have the same size. By further increasing the distance between surface and hands, the size of the circles will grow. And they have the shape of a perfect circle only when the surface is held perpendicular to the direction of the sun. Otherwise, they assume the shapes of ellipses. What are these bright circles or ellipses?



Figure 6



Figure 7

For a shadow to occur, three things are needed. First, there must be an opaque or semi-opaque object that can cast a shadow. Second, there must be the luminosity of a defined light source. (When

the sky is overcast and evenly bright, things do not cast shadows. Shadows don't appear when there are no defined light sources that stand out in luminosity against the surrounding sources of illumination.) Third, there must be a surface, or another suitable medium like haze or smoke, that allow shadows to appear.

The space under the crown of a tree with the sun overhead, or the space "behind" or "under" an opaque object in the sun, is a space of differentiated illumination that remains invisible to us unless a suitable surface or medium brings it to appearance. On the surface of white paper, for instance, the sun directly illumines some parts, other parts are blocked or partially blocked from direct sunlight. By moving the paper, we find that in close proximity to the opaque object the shadow is a detailed image of the object. It is dark and surrounded by brightness. With increasing distance from the object, the circular shape of the sun begins to take effect. It carves away from the previously crisp outlines and rounds out all angular corners. Finally, in circles of brightness surrounded by grey, we see images of the sun. For them to appear, the image of the opaque object retreated. For the sharp image of the object to appear, the images of the sun retreat. We see either the one or the other.



Figure 5

under the small opening in a tree's crown there is a light-filled space. Being in that space and looking up at the hole, you meet the sun's blinding brightness. That space has the shape of a cone. When intersected by a surface, circles (or ellipses) of brightness appear on the surface — images of the sun.

They are images of the sun. Let me explain. The sun itself has a shape. It appears as a disk of blinding luminosity in the sky. It has the visual, apparent diameter of half a degree. The sun is fully hidden from view in the core shadow of an opaque object and partially hidden in the penumbra. Behind or under the "hole" in an opaque object or

# An Enchanted Universe?

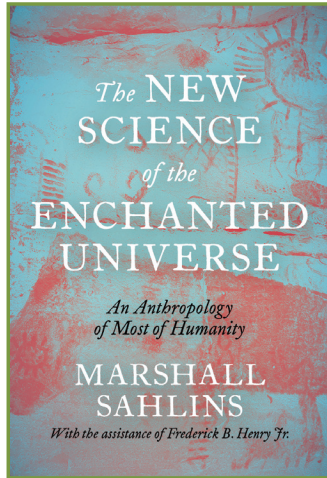
CRAIG HOLDREGE

Historians and cultural anthropologists have no simple task. This becomes especially clear when they are dealing with ancient cultures or indigenous ones that have been relatively untouched by modern industrial societies. In these peoples, the historian or anthropologist confronts ways of living and speaking about the world they inhabit that are utterly foreign to the modern western mind.

How are we to understand people of Tikonia, a Polynesian island, who speak of humans, canoes, temples, or weapons as embodiments or vessels of the gods? Can we understand that gods and the dead descend from the heavens to participate in the feasts of the Arawaté people who live in the rain forest of northern Brazil? Can we take seriously the Netsilik Inuit perception that “Powers that rule the earth and all the animals and the lives of mankind on earth are the great spirits who live in the sea, on land, out in space and in the Land of the Sky”?

These are only three examples from the hundreds discussed in the posthumously published book by anthropologist Marshall Sahlins, *The New Science of the Enchanted Universe* (Princeton University Press, 2022). Sahlins acknowledges and draws extensively on the efforts of anthropologists to record faithfully how people in different cultures live, think, and feel. But he is critical of what he sees as a pervasive underlying bias through which many anthropologists tend to take their own view of reality *to be* reality and then interpret the other culture as a “fictional representation of ours,” thereby “maligned the people’s mentality as a mistaken sense of reality” (p. 11). For example:

Anthropologists are prone to use the verb “to believe” — that the people “believe” in something — only when they don’t believe it themselves. Anthropologists don’t say, “the people believe curare poison kills monkeys; but they will say, “The people believe the game father makes monkeys available for hunting.” Anthropologists don’t say, “The people believe that rain is needed for the crops to grow;” but they will say, “the people believe the gods make the rain”... (p. 13)



Sahlins quotes French anthropologist Jean Pouillon: It is “the nonbeliever who believes that the believer believes.” Sahlins goes to great length to show that distinctions we make today, such as between spirit and matter, mental and sensory, divine and mundane, or beings and things, do not conform with the perceptions of indigenous peoples he describes in the book. In fact many of the categories we so easily apply — to name a few: belief, myth, personification, projection, religion, economics, or politics — skew our understanding of their lived experience.

Sahlins wants to create a heightened awareness for the often unreflected biases and assumptions that inform a modern, university-educated person’s view of what is real. At the same time, he wants to characterize the nature of a very different kind of experience that he finds in both ancient and indigenous cultures. A key distinction he makes is between what he calls immanent and transcendent perspectives. Looking back in history, he and others see an important (and still ongoing) shift in human consciousness that was set in motion between the eighth and third centuries BCE in cultures around the globe:

The essential change was the translation of divinity from an *immanent* presence in human activity to a *transcendental* “other world” of its own reality, leaving the earth alone to humans, now free to create their own institutions by their own means and lights. (p. 2)

Before this transition — and there are many indigenous cultures in which no such transition occurred — people were

surrounded by a host of spiritual beings — gods, ancestors, the indwelling souls of plants and animals, and others. These lesser and greater gods effectively create human culture; they are immanent in human existence and for better or worse determined human fate, even unto life and death. (p. 2)

Most of us today see rocks, clouds, rivers, or mountains as inanimate things separate from ourselves. For a Lakota, a rock could be, or have, *wakan* — a word



that can be translated in a variety of ways; I'll call it spirit power. The smoke of a pipe, the steam in a sweat lodge, or the skull of a bison could all be *wakan*. Plants and animals, which we call alive, were experienced as persons. The difficulty for a modern mentality is to take seriously that these were *experiences* of a kind of power or beingness indwelling all things. We speak of animism. We do homage to the integrity of the Lakota when we acknowledge animism as experienced. But we are dismissive when we consider *wakan* to be a projection of human subjectivity. That is the key message of Sahlins' book.

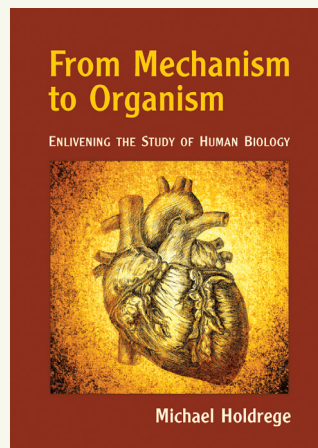
Even though he is often critical of his fellow anthropologists, throughout the book Sahlins quotes colleagues who are clearly doing their best to move beyond their own biases when characterizing the ways of the people they are interacting with. He quotes, for example, the Norwegian anthropologist Fredrik Barth, who in reference to the Baktaman people in central Papua New Guinea, expresses surprise at "how *empirical* these spirits are, how they seem to appear as very concrete, observable objects *in* the world, rather than ways of talking *about* the world" (p. 34; emphasis in original).

When Westerners view peoples whose world is filled with spirits and interpret this as mystical, then they are

operating on their own distinctions of the spiritual and the physical or the supernatural and the natural, their own transcendental suppositions. The irony is that these peoples are all-around, complete, world-constituting empiricists. Rather than "superstitious," "deluded," or otherwise taken in by wishful fantasies, their enchantments are effects of a sustained and radical empiricism. (p. 39)

Marshall Sahlins was working on this book and had finished it — except for the acknowledgments — when he died at the age of 90 in 2021. I would love to have asked him: When we come to the realization of the empirical nature of the enchanted universe, does that have consequences for how we experience the world today? Does the world truly have a depth that we are blind to today? If most of us don't experience the universe today as a weaving of powers and beings, might it be possible, from a different starting point, to find ways to get there from here?

Michael Holdrege's new book, *From Mechanism to Organism — Enlivening the Study of Human Biology* (Waldorf Publications, 2022) draws on the author's lived experience in teaching science to adolescents for more than three decades. Written especially to the teacher (or parent) of middle or high schoolers, the 240-page hand-illustrated text succeeds in being both an engaging primer on the wondrous interwoven processes that constitute the human organism *and* a pedagogical advisor for creating curriculum that nurtures active learning and sound judgement. Holdrege's chapter on the cardiovascular system, for instance, not only charts the course of blood flow in the body, but the topic also becomes a means to "help students develop more fluid, dynamic thinking that is not satisfied with easy, quick, one-dimensional judgments." In other chapters, he shows how to present students with concrete phenomena that appear to be riddles; such mysteries often awaken an eagerness to study phenomena in search of answers. With an enlivened, contextual approach to science education, the book schools an independent way of thinking as much as it does the subject of human biology. — *Elaine Khosrova*



# News from the Institute

## Events

■ In June, the institute hosted a visit from Zheng Yan, director of the **Shanghai Fuyuan Waldorf School** in China, and her colleague Hai Dejun, as part of their exploration of educational resources and opportunities in the US that are available to Chinese Waldorf high school students.



■ Artist Ella LaPointe began teaching a 10-session course, “**Drawing into Nature**,” at the institute in September. Using drawing as an exercise to help us attend to and carefully observe natural phenomena, she also shared some fundamental elements and techniques of drawing. A follow-up course in the spring is being considered.

■ On August 29 and 30, Craig worked with the faculty of the **Green Meadow Waldorf School** in Chestnut Ridge, NY, on the topic of “**Education and Our Responsibility to Children and the Earth**.” He gave a public talk on this topic as well.



■ In her public talk on September 23 highlighting “**Gestures in the Work of Artist Ernst Barlach**,” Henrike Holdrege shared the work of this early 20th-century German artist. His drawings and sculptures bring features of human life to vivid expression in a way that offers much to our times.



■ During their first two-week summer intensive at The Nature Institute, participants in Cohort IV of our **Foundation Course** engaged in guided explorations with our staff covering various topics related to Goethean science. You can see photos of some of the group’s activities on pages 12-13.

■ “**Studying Gestures in Nature**” was the theme of a public workshop given at the institute by Craig Holdrege on September 24. Together, participants explored the unique qualities of different plants and what gestures we might discern from their individual forms and substance.

As of this writing, other events planned for fall 2022 include:

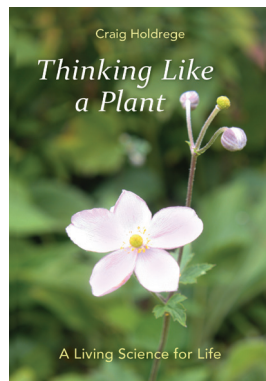
- The weekend of October 15-16, the institute will host a two-day workshop for the public on “**Seeing and Language: Creative Reading and Writing as a Way to Experience Meaning in Nature,**” led by our adjunct researcher Ryan Shea and Craig Holdrege. Integrating nature observation, readings, and writing exercises, participants will explore the ways in which a creative language practice can amplify and deepen our immediate experience of the world and even enable us to have new capacities of perceiving.

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- At the **Camphill Academy** in Kimberton, PA, on October 28-29, Henrike Holdrege will lead a course in projective geometry and Craig Holdrege will offer a workshop in plant study.

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- The Escola Schumacher Brasil has created an online course focusing on Craig’s book, *Thinking Like a Plant*. Participants will discuss the book in eight sessions and Craig will be present in the last online session in November to field questions.



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- On Wednesday, November 9, at 7:00 pm, Jon McAlice will give a public talk on “**Appreciating Barry Lopez.**” Before his death in 2020, the award-winning writer Barry Lopez spent a half-century traveling to 80 countries in his pursuit of an understanding of human identity and destiny. He generated many nonfiction and fiction works, including volumes of essays on the natural world that some critics likened to those of Thoreau and John Muir. This event honors his life, lyricism, and insights.

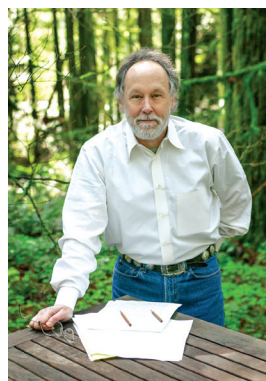


photo credit: David Liittschwager

## Recent Podcast Episodes

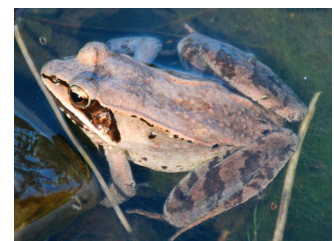


You can find our new and archived work in audio at our podcast page (<https://www.natureinstitute.org/podcast/in-dialogue-with-nature>), or wherever you access podcasts. Recent episodes feature the following topics:

- In 2003, Arthur Zajonc, a professor of physics at Amhurst College, was interviewed by Dr. Otto Scharmer of MIT’s Sloan School of Management about Goethean science. His remarks were featured in our fall 2007 issue of *In Context* (#18) in the article, “**Toward a Participative Science.**” In this episode, podcast host John Gouldthorpe reads the text which illuminates the three stages of Goethean science; how real knowledge is a kind of seeing; and why close and delicate empiricism is vital to scientific understanding.

- In the episode “**Portraying Milkweed,**” listen to Craig Holdrege describe his study of milkweed, a plant he calls both “effusive, yet also specialized. Milkweed invites life, but also holds it back. There is a fascinating tension in this plant.” Reading from an abridged version of his whole-organism study of milkweed published on our website (*The Story of an Organism: Common Milkweed*), Craig brings together his observations with those of other researchers to paint a vibrant picture of the plant and its relationships.

- When we give careful attention to what is actually happening when a new phase of life develops out of a previous stage, there are large implications for our overall understanding of developmental processes and evolution. That is the theme of Craig’s lecture, “**Do Frogs Come from Tadpoles?,**” featured as a podcast episode. You’ll also find a link on our podcast page to the accompanying illustrations that Craig refers to in his talk.



## 2022 Summer Intensives

In June and July of this past year, 19 participants from two cohorts enrolled in our 15-month-long Foundation Course in Goethean science spent two weeks at the institute. They worked individually and collectively to develop a practice that involves moving beyond simply noticing and registering natural phenomena to thoughtfully participating in the creative activity that is nature. The new cohort focused on color and plant studies, while the cohort that was concluding the course engaged with the four elements and the study of animals. Here we share scenes from the many activities and some student reflections:



*I could describe the whole experience as validating and expansive. More than just the readings and activities, the conversations and community that was built within those conversations was so very strengthening for me. . . I also felt challenged in very important ways, including by the discipline and stamina “encountering” requires.*  
— Erika

*The experience . . . showed me a lot of my difficulty in focusing attention, being patient and being open to the unseen or the unknown. I was struck by finding everyday a detail that was missing the previous days, some of them shockingly evident. I also came to realize something that I thought to have understood only theoretically, which was to become “actively passive,” as for instance when trying to see the afterimages of the colors.*  
— Augusto





*A rhythm was created around themes that allow one to “live with” the experiences and questions. The contributions of multiple perspectives/voices/ experiences — the communal aspect of it is valuable as well, especially in today’s isolated/ing society. The guidance from the instructors was fluid, focused and flexible, engendering insight and growth of an individual and the group.*  
— Alexander



# Conversations with Wild Rosemary

CEINWIN SMITH



*Born and living in South Africa, Ceinwin Smith was a recent participant in our Foundation Course in Goethean Science and completed the program in July 2022. She wrote the following reflection on wild rosemary as part of her final project in Goethean methodology.*

Wild rosemary has many names depending on where it is found and in which language it is being referred to. “Kapokbos,” meaning Snowbush in Afrikaans, is one of the most widely used colloquial names for wild rosemary, which occurs across the diverse landscapes of South Africa.

I chose to study this plant and its relation to space as my project for the Encountering Nature Foundation Course for two reasons: it is a local plant that I encounter almost daily in my garden, on mountain walks, and along the rugged coasts and sandy lowlands around South Africa; and it has a long history of connection to, and use by, people.

On the opposite page, I present a narrative expressed from the plant’s perspective, with the intention of giving a glimpse into my initial conversations with various wild rosemary plants I have encountered and observed over the past ten months. These conversations have opened a doorway into the wildly diverse expressions of wild rosemary and highlighted the intricate relationships woven between people, plants, and wildlife across South Africa’s varied landscapes, cultures, and historical contexts.



## *Wild and Weathered, Soft and Scented*

Growing upward, expanding outward, I sprawl over the dry earth creating a cool web.  
Reaching skyward, my young branches form flexible tendrils swaying in the breeze.  
Becoming heavy with age, they curve downwards towards the earth — arcing and spine-like.  
New growth extends upwards, like hackles raised in surprise.

I appear prickly and bold in form and structure, yet soft and springy, a surprise to the touch.  
I am strong and flexible, content in heat and howl.  
My thin branching leaves, fleshy, finger-like and feathered with fine hairs.  
My stiff woody limbs, knotted and twisting, barely trembling in strong winds.

Curling upward, my branch tips show signs of new growth as small, cupped hands  
gathered...open...receptive.  
Enclosed in a soft gray felted clasp, tiny buds form as I taste the first rains.  
Hesitantly at first, I gently unwrap delicate clusters of tiny white flowers.  
As the days cool, I gain momentum and by winter I am woven in lace.

Soon my petals begin to brown, and the first seeds appear  
clothed in a soft pale woolen down — the *kapok* or 'snow,' for which I am named here.  
Pungent when crushed and a perfect lining for nests,  
My soft seeds are sweetly fragrant and a deterrent to pests.

I have been long used in traditional medicine.  
My leaves and flowers are a remedy for stomach ailments, muscle spasms, and immune support.  
I am focusing, calming, and an active diuretic.

My extracted oils bring potent clarity to the senses,  
a sharp clean fragrance, with layers of pepper and mint.  
Earthy undertones and a lingering musky sweetness.

Scattered across the wind-swept slopes, clinging to rugged rock-face and unstable sandy scree,  
I thrive in salty sea-spray and howling gale, poor soils and sun-parched summers.  
My roots are strong and deep, fine and expansive.  
Extending outward in a fine web below the surface, gathering moisture from dew and mist.

Flexible in growth,  
my adaptive form is long, thin, and wispy in shade and shelter.  
Short, compact, and sturdy in glaring sun and gale.  
I am fleshy and green in winter, silvery-gray and brittle in summer.

Expanding, crisscrossing, my strong branches weave an intricate woody web  
creating a safe haven for seeds and small creatures.  
Providing food for antelope and ant,  
a shelter for many and a companion to all.

My sprawling growth is unstable with height and best supported by sturdier neighbors.  
Dense sweet confetti bush, strong-stemmed cape camphor, edible sea guarrie and  
slow-growing milkwood; all lend me their strength and stability,  
while I continue to reach out and expand, spreading my woven web across the earth.

— Ceinwin Smith

# Thank You!

*We are privileged to thank all who have made donations or contributed goods or services  
to The Nature Institute between April 1, 2022 and September 30, 2022.*

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# How Does the World Lend Itself to Our Knowing?

STEPHEN L. TALBOTT

*Following are a few of the introductory sections of the long, concluding chapter of my online book, “Evolution As It Was Meant To Be — And the Living Narratives That Tell Its Story.” The chapter is called “Some Principles of Biological Understanding,” and the book is available on The Nature Institute’s adjunctive website, [bwo.life](http://bwo.life) (also accessible as [BiologyWorthyofLife.org](http://BiologyWorthyofLife.org)). The full version of this chapter is at [bwo.life/bk/epist2.htm](http://bwo.life/bk/epist2.htm).*

**S**TAND ANYWHERE IN NATURE and observe the scene. It can be a mountain or meadow, sea or sky, lake or desert — or a city street. Then ask yourself: what would remain of the scene if you were to remove every quality from your surroundings?

To ask about qualities is not merely to inquire into our aesthetic sensibilities. Rather, it has to do with the bedrock character of the world we perceive, bearing on everything from the luxuriant Amazon rain forest to the barren surface of the moon. Wherever we are, what would exist for us if there were no qualities? Does any material *thing* in the known cosmos present itself other than through qualities?

It is not a difficult question. Would that tree be there in what we consider a *material* sense if there were no color of the leaves, no felt hardness of the trunk, no color and texture of the bark, no whispering of the breeze among the leaves, no smell of sap, wood, or flower, no possibility of song from birds flitting among the branches? Do we see, hear, touch, smell, or otherwise sense anything in the world apart from its qualities? Could we speak of a thing’s form, substance, or even its existence if it did not present a qualitative, sense-perceptible face to us?

The hardest part of all this talk about qualities for most people lies in their feeling that the solid external reality of things is being denied. But to point to the qualitative nature of the sensed world is not to question its reality, or its solidity, or its otherness. It is merely to acknowledge that real solidity — the only solidity we are given in experience and can collectively verify as an objective aspect of reality — is *felt solidity*. The sensed hardness of things is no less a perceptible quality than the taste, color, or sound of things.

What tends to be missed here is that the qualities of nature are not the private individual’s subjective contribution, but rather belong to the world’s objective reality that we collectively share. We do not need to invent an additional reality — minuscule bits of mindless stuff somehow *behind* what

we experience — in order to account for the trans-individual objectivity (otherness) of the world’s expressive qualities. We will gain a fuller perspective upon this as we move along<sup>1</sup>

To say that the world we know is qualitative is not to doubt its substantial reality. It is only to say that this reality is irreducibly qualitative. Qualities are not features that exist only “in our heads.” So we come back to the perfectly straightforward question: “Does anything exist materially, available to an empirical (experience-based) science, except as a presentation of qualities?” Would we have quantities to play with if there were no qualities from which to abstract them? And would we know what our mathematical formulae were about — what they meant — if we could not restore to our thinking the qualitative contexts from which they were abstracted? It is hard to believe that numbers alone can give us a world.

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*Does any material THING in the known cosmos present itself other than through qualities?*

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I think the conclusion you will come to is inescapable: whatever knowledge of the world we manage to gain is rooted in qualitative appearances, and the world would lose its reality for us — it would no longer be there for scientific investigation — were its qualities to vanish.

Given the more or less determined, yet never fulfilled resolve among scientists from Galileo onward to have a science without qualities, it would seem that the integrity of science as a respectable knowledge enterprise rather than an empty pretense hangs on our answer to the question, “Would anything be left to investigate if we were true to our ideals and really did remove qualities from our science?”

Because the answer is that nothing would be left, we never do in fact succeed in having a science without qualities. In “All Science Must Be Rooted in Experience” (Talbot

2020) I pointed out how nonsensical, if not also humorous, are the ways in which otherwise serious thinkers end up falsely projecting qualities into their non-perceived, purely theoretical constructs — all so that they can seem to have something, rather than nothing, to talk about.

## We Know the World through Thinking as Well as Sensing

There are two primary portals for our experiential knowledge of the world: first our senses, and then the thinking that conceptually orders the diverse contents of the senses, bringing them to meaningful and coherent appearance. If we could not perceive qualities through our senses, as I suggested in the previous section, we would not have a world. But it is equally true that without a conceptual ordering of what we receive through the senses, we again would have no world.

If we are truly to recognize something — a *this* as opposed to a *that* — we must be able to form *some* conception of what we are beholding. Which is to say: we must grasp the ideas that inform and are inherent in what we are beholding. The phenomenon can present itself to us as a given reality only so far as its real and inherent thought-content becomes at the same time *our* thought-content. To see a soaring hawk while having no idea of organism, bird, wing, flight, raptor, predation, air, gravity, matter (or material thing), and so on, would not be able to *see a hawk*.

The appropriate concepts are our power of recognition and explanation, and without them we have no such power. This is true whether we are apprehending ideal (idea-like) laws governing material interactions, or the ideal coherence of a single leaf or grain of sand.

We would not recognize a tree if, in looking up toward a cluster of green leaves, we had no ideas to tell us that the relation of the leaves to branch, trunk, and roots is very different from their relation to the visually adjacent patch of sky-blue color. We could in general recognize nothing of the tree at all if we had no idea of the thought-relations constituting a tree.

To stare in absolute, thought-less incomprehension at the scene around us would be to stare at a meaningless blur — or not even that, since, in our thoughtlessness, we would not even have the concept of a “blur.” Things come to meaningful appearance only by virtue of their distinct and interwoven meanings; we recognize them by means of the ideas lending them specific form and significance, through which we can identify them as being the kind of things they are. (“Oh, *that’s* what I’m seeing!”)

In only slightly different words: we could have no idea of things that, in their own nature, were entirely non-ideational. “A reality completely independent of the mind which conceives it, sees or feels it,” wrote the French mathematician

and physicist Henri Poincaré, “is an impossibility” (Poincaré 1913, Introduction). And the traditionalist thinker, René Guénon, distilled the matter to its essence when he wrote: “If the idea, to the extent that it is true and adequate, shares in the nature of the thing, it is because, conversely, the thing itself also shares in the nature of the idea” (quoted in Burckhardt 1987, p. 14n).

The main point here — that ideas belong to the innermost nature of the world — seems extraordinarily difficult for us moderns to take hold of. Perhaps we await only an emphatic snap of the fingers to awaken us from our trance and enable us to see what is painfully obvious: if we, with our human thinking, can *make sense of the world*, it can only be because the world itself is in the business of *making sense*. Ask yourself: how could it be otherwise? And yet the fact that thoughts are not merely the private property of individuals, but also come to manifestation within the world around us, is virtually unapproachable for most of us today.<sup>2</sup>

I don’t suppose there could be a more startling disconnect than when knowledge seekers aim to *articulate a conceptual understanding of a world they consider inherently meaningless*. A conceptual articulation, after all, is nothing other than the working out of a pattern of interwoven meanings. A truly meaningless world would offer no purchase for this effort.

My repetitive efforts to get this point across have been intentional because the truth so easily escapes us. Let this be the sum of the matter:

*Anything whose objective and true nature we can apprehend only through revealing description, including scientific description, can hardly be said to possess a nature independent of mind, thought, language, or meaning.*

Two other notes. First, we commonly assume that our perception gives us “things” directly and mindlessly, about which we then think and form theories. But a truth widely recognized by those who study cognition is that we do not even have “things” except through an activity of thinking — not necessarily a conscious thinking, but rather a thinking that, ever since childhood, has increasingly informed our senses. This thinking often shapes what we perceive without our being aware of the role of thought.

But, with proper attention, it is rather easy to catch this thoughtful, formative activity of perception “in the act” so as to become aware of it.<sup>3</sup>

Finally, whatever the processes of human cognition, we should not think that the world itself has distinct “parts,” the sensible and the thoughtful. We can no more imagine something sensible without thought than we can imagine substance without form. We can, of course, distinguish between the two aspects. But as soon as we ask “what it is” that meets our senses quite apart from its thoughtful coherence, we

have a problem. To say anything at all about what it is would be to characterize it with thought, so we would no longer be talking about a sensible content apart from thought.

I don't think there is any way around this, nor need there be. The world is a unity. It resists every rigid dualism. But surely we can say — as a matter of distinction rather than pulling apart — that whatever meets our senses must be inherently bound up with thinking, much as substance is inherently bound up with form.

## Is the World a Dualism of Appearance and Reality?

We have seen that the only world we could ever know is known interiorly, through sense perception and thinking. It is a “marriage of sense and thought” (Edelglass et al. 1997). Of course, our knowing of the world requires other interior capacities as well, such as those of imagination and will. But the main point at the moment is the rather obvious one that all our knowing calls upon interior capacities — powers of inner activity that presuppose consciousness<sup>4</sup>

Since both our perceiving and thinking are functions of consciousness, the manifest world is a world consciously experienced. And since we all share the practical, day-to-day conviction that the world of our conscious experience is, in a direct and unmediated sense, the real world — a world with which we routinely, fully, materially, and consequentially engage in the immediate terms of our experience — the most straightforward and consistent conclusion is that the world itself, *in its own nature*, is phenomenal. It is a world whose true substance lies in its power of *appearing* — that is, in its having the character of a content of experience. Qualitative and thought-full, it comes to its own characteristic expression — achieves phenomenal reality, or existence — only within what we might call the *interior dimension*.

But this straightforward conclusion collides with a centuries-long mental habit that tells us we look out upon a world of mindless objects utterly independent of, and unlike, our cognizing selves — objects wholly alien to our own inner being. In fact, these objects are imagined to be so alien that our perception of them cannot be trusted. Who has not heard the subjectivity of human perception contrasted with the solid reality of mindless physical objects?

The common suggestion, then, is that we have two different worlds: the *subjective* world of appearances — appearances not only mediated by, but also unknowably transformed by, our nervous systems — and a world of *real things* somehow hidden behind the terms of our experience. This gives us a secondary dualism — one of appearance and reality — descended from the primary “Cartesian dualism” of mind and matter.<sup>5</sup> From this point of view,

untrustworthy appearances are all we have, at least in any direct sense. Objective reality, on the other hand, is — well, it is presumably out there *somewhere*.

## Our Cognition Places Us in the World, Not a Mere Representation of It

One rather sticky problem with the appearance/reality dualism is that this would seem to make reality unavailable to an experience-based (empirical) science. But a more immediate issue is that the supposed second reality hidden behind the appearances contradicts our natural, seemingly irrepressible, and well-supported conviction that we directly experience the real world.

Regarding this last point: nothing in our perception hints at the existence of a second world — a *real* world contrasting with appearances. A perceived tree appears *itself to be* the tree. So also the stream I sometimes sit alongside. If I pick up a small stone and toss it into the water, I perceive both the object and my own arm in picking up the stone and throwing it, and I likewise perceive the trajectory of the stone in relation to earthly gravity, the wind, and the energy at work in my muscles. I can be sure that, exactly as observed — and exactly where observed — the stone and all the other elements of the scene, from my arm to the water, are fully “respecting” the laws of nature. That is, these elements are lawful *in their own immediate, experiential terms* — without my needing to refer to some hidden, non-qualitative, non-experienceable reality behind the appearances<sup>6</sup>

So the world I perceive shows no sign of actually being inside my head either literally, or as a reduced representation, or as an illusion, nor any sign of somehow referring to an unknown substratum lying behind the appearances. Rather, perceived objects testify with overwhelming force to their occurrence, *in their full-bodied presence and reality*, right where and as they are given in qualitative, thought-full experience. In other words, when you and I try to picture the “interior” space of our consciousness, we must imagine a space substantially (but not wholly) shared with others; and within this shared space of consciousness we find the reality of the material world.

We can put this in either of two complementary ways. We can say, in the first place, that our experience of the world occurs not merely “in here,” in some purely private space, but rather occurs in the world itself. Or we can say: the world itself naturally occurs within the *interior dimension* of experience in which we all (along with other creatures) participate.

The private aspects of the experience stem in part from the fact that it comes to us via our personal sense organs, located in space and giving us, for example, a particular angle of view upon a tree. Subjective aspects may also stem

from, among other things, defects in our sense organs, such as the severe tinnitus I experience. Likewise, if I were a person who is blind or deaf or who has had traumatic encounters in nature, I would have experiences of the world differing from those I now have. Mozart would have experienced the world of sound and music to a depth I cannot imagine, just as Picasso would have experienced the world of visual form in ways incomprehensible to me. I do not have a bat's sonar-like sense, nor an insect's infrared sense. The world lends its potentials of experience to all creatures according to their capacity. But we all find ourselves living side-by-side in *one world* — a consistent and shared world with diverse yet harmonious potentials of experience.

This interior character of the world would make no sense — would find no realization — in a universe that was not fundamentally a universe of beings rather than things (which is, of course, the way the universe has been understood throughout almost all of history). Not many are interested in at least inquiring whether there might be something pathological in our strong inclination today to imagine a world of things rather than beings.

The subjective aspects of our experience do not bring into question the objective character of the world we share with others. The English philologist and philosopher, Owen Barfield, has put it this way:

I am hit violently on the head and, in the same moment, perceive a bright light to be there. Later on I reflect that the light was “not really there.” Even if I had lived all my life on a desert island where there was no-one to compare notes with, I might do as much. No doubt I should learn by experience to distinguish the first kind of light from the more practicable light of day or the thunderbolt and should soon give up hitting myself on the head at sunset when I needed light to go on working by (Barfield 1965, pp. 19-20).

We have no ability even to conceive how an objective thing might exist outside the possibilities of experience. To conceive its supposedly alien character in order to announce our belief in it would be to realize it in the only place it could be realized — within consciousness. So it wouldn't be alien after all.

I have already mentioned that, in the daily routine of our lives, we are all convinced that our experience as knowers presents us with the actual contents of the real world. We are given *within consciousness* things we know at the same time to be objectively *out there*. But we do not succeed very well, intellectually, in holding on to this double aspect of our experience. The effort to do so, therefore, can be an excellent exercise. We can try to grasp simultaneously both of the following truths, each of which by itself seems a self-evident

aspect of our experience, whereas the two conjoined do violence to our most entrenched habits of thought. Looking out upon a natural scene (preferably one with movement, as of clouds or a stream or wind-blown trees), we can think:

- *This presentation of nature, with its objective and collectively verifiable aspects, is itself the real material world in which I and others live, write poetry, and do scientific experiments.*

But also:

- *This presentation of nature is occurring within my consciousness.*

The ultimate demonstration of the compatibility of these two truths is up to those individuals who actually make them a matter of experience. The exercise is best done briefly and repeatedly, but with thoughtful concentration, over a long period. But be assured: at the point where you have deeply taken in both truths and have been able to hold them together in harmony, you will have overcome much of the pathology in modern human experience.

All this is extraordinarily important. But it is also extraordinarily difficult for contemporary minds to accept. Nevertheless, allow me to state the matter once more: the “view” of the world we are given through our thought-informed senses is not just a view, or representation, of the world. It actually *is* the world — the world in which we are present and from which our own bodies are made. Or perhaps it would be even better to say (with a view toward the following section): it is our direct participation in the creative activity giving rise to a world possessing the character of contents of experience — a world that is from the beginning an expression of interior activity and that can be creatively participated in by means of our own interior, expressive activity.

## We Cognize the World by Participating in Its Creation

There can be no overstating how dramatic and unexpected is the view set forth above. It is one thing to imagine that our eyes are little camera-like devices producing an image that someone, somewhere, somehow, manages to view and interpret as a representation of a mind-independent world. But it is quite another to recognize that, through our eyes and other senses together with our thinking, the world itself takes up its existence in the only place it can — *within living experience*.

During the first third of the nineteenth century Samuel Taylor Coleridge had to have come to terms with the difference between reality and a representation of it when he suggested that our power of perceiving and knowing the natural world is a repetition in our own minds of the very

same creative activity through which the world came to exist and is sustained.<sup>7</sup>

In other words, so far as we truly and imaginatively perceive the world, we do not merely encounter it from outside. With our cognitional faculties, we stand within it, as in some sense our own creation. After all — as I have been suggesting above — it is not that we “snap a picture” of an independently existing world. We have the very world itself through our cognitional activity. This suggests that, through the creative aspect of our perception, we may “do our own bit” in shaping the world’s coming to reality, just as each of us plays his own role in making human society what it is. On this, see “The Evolution of Consciousness” (Talbot 2022).

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*So far as we truly and imaginatively perceive the world, we do not merely encounter it from outside.*

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How much we have had to pay for the anemic belief that our senses give us mere picture-like representations of an alien world! But everything changes when we realize that, just as a boulder on a mountainside is fully and seamlessly embedded in the surrounding world of wind, water, light, and gravity, so, too, our own cognition and expressive powers embed us as knowing participants within a reality of universal expressiveness, and do not confront us with a mere representation of it.

We can notice in general that everything we make into a content of our own experience requires a re-enacting of something like the interior activity that first produced that content. This re-enacting is, for example, the way one human being experiences the content of another’s mind. If we attend a lecture (and are paying attention), we follow along by bringing the speaker’s thought-content alive as the content of our own minds. So far as we do this faithfully, we live within the same thought-world as the speaker, not a copy of it.<sup>8</sup>

But something like this must also be true of the qualities and thought that constitute the interior dimension of the world as a whole. Here, too, our possibility of seeing and understanding depends on our ability to re-enliven the one world’s interior by participating directly in it through the activity of our own interior — in particular, our sensing and thinking.

Coleridge’s remark can help us keep in mind just how radical all this is. If we, in bringing the contents of the world alive within our own experience, must participate in the creative activity through which these contents are originated and sustained, and if this means not creating some kind of private copy, but rather being active in the one world’s original and ever-evolving manifestation of itself — well, then, this places us in a position of high responsibility indeed.

## NOTES

1. For the moment I will add this: There are two possibilities. We *could* simply stay with experience. That is, we could be content to say that what the world gives us in the wood of a tree trunk is, among all its other qualities, a sense of pressure or felt solidity. If we are of a certain inclination, we might imagine the pressure or “force” involved as being an activity of will associated with whatever creative power of becoming constitutes the world’s material substance. Since “force” has long been a troublesome concept in physics — and given that the material world is of such a nature that it presents itself to us “interiorly,” through qualities — it seems reasonable to investigate whether forces can best be thought of as another sort of interior expression.

But the second possibility is the nearly universal one: we gratuitously invent an addition to our actual experience. We want *something there* to buttress the world given in experience — something mindless and utterly unlike mind, with its qualitative experience. But, of course, we also want it to be “hard bits of stuff” ... like what? Well, of course, like the only hardness we ever know or could know, such as that of the solid trunk of the tree presented in experience. And so we invent the notional realm of “particles,” assumed to be like tiny bits of the actual, felt world, while at the same time being conceived as non-qualitative and completely unlike the actual, felt world. And the world itself (about which we are correspondingly ambiguous, sometimes referring to the felt or sensible world, and at other times referring to a second world hidden behind the sensible one) is supposed to be “built up” from these self-conflicted bits.

A tall order. Physicists, depending on the conversational context, know well enough to disown these notional particles. Biologists, it seems, haven’t gotten there yet. And so they project their “particles” (modeled after our sensible experience of solid matter yet assumed to be mind-independent) into a realm where we can have no sensible experience. This reinforces their conviction that organisms are, at bottom, beings altogether without interiors.

We certainly can, for example, use an atomic force microscope to measure forces far beneath our powers of sight. But what is the machine doing, if not giving us an extraordinarily tiny measure of the resistance we feel when we press our hand against the tree trunk?

Forces, although they can have centers of activity, are certainly not particles, as we commonly imagine particles.

2. The philologist and historian of consciousness, Owen Barfield, in the second lecture of his little book, *Speaker’s Meaning*, pointed out that, up until the Scientific Revolution, the conviction that ideas were the private property of individuals would have been fully as unapproachable as would be the conviction, for us, that ideas belong to the objective world. The “common sense” of every age can be remarkably difficult to come to terms with, or even to recognize as such. So we tend to be trapped within our own cultural era. The best escape from the trap is to become literate about how earlier eras differed from our own. And that literacy is not achieved merely

by spinning childish tales about our own triumphs over the universal ignorance of our forebears (Talbot 2022, “The Evolution of Consciousness”).

3. See in particular the section, “How do things around us become what they are?” in “All Science Must Be Rooted in Experience” (Talbot 2020). If anyone should remain skeptical of this, I would strongly suggest reading Chapter 4 (“Intentionality”) by philosopher Ronald Brady in the online, freely accessible book, *Being on Earth: Practice in Tending the Appearances* (Maier et al. 2006).

4. With respect to humans: by “consciousness” I include everything on the spectrum running from the unconscious to those contents of which we are most fully aware. What unites everything along this spectrum is its potential for being an interior content we are aware of. Which is to say rather paradoxically that the unconscious shares in the nature of consciousness. We do in fact find ourselves often raising to consciousness interior contents that *had been* unconscious.

5. During the first half of the 1600s, the French philosopher René Descartes distinguished between “extended stuff” and “thinking stuff” — and did so as if they were separable and disconnected substances having little or nothing in common. This is said to be the source of the “dualism” that so many today, for good reason, would like to disown. Having echoed down through the last several centuries, dualistic thinking has crystallized especially in what we think of as the mind/body problem and, more generally, the mental/physical dichotomy.

Nearly all scientists today disavow “Cartesian dualism,” yet nearly all live intellectually by means of it. There is a very real sense in which Descartes’ cleaving stroke through the heart of reality has been almost universally accepted — perhaps most of all among materialist-minded biologists. That is, they seem to have felt they must accept the stroke as a kind of *fait accompli* and then try to live with the violence thereby done to the unity and harmony of the world. They merely choose: which half of this improbably fractured whole shall they accept and which half reject? And so the “material” they embrace is dualistic material, bequeathed to them by the Cartesian sundering of mind from matter. Likewise, the mind they reject is dualistic mind.

Materialists they may be, but their materialism is defined by the dualism that has been drilled into our habits of thought and perception. Instead of going back and searching for a different, non-dualistic way forward, they have accepted the original, dualistic fractionation of a living, unified reality, and been content merely to carry a torch for just one of its mutually estranged aspects.

A way forward has already been indicated in the foregoing. Instead of a dualism of mind and matter, we could acknowledge the actual process of our knowing, with its intimate marriage of thought and sense. Our own experience presents us with nothing incompatible or problematic about this marriage. The only problem is that we have been trained by our dualistic habits to think of material substance as inert, mindlessly solid “stuff” whose inherent, well-formed powers of lawful (ideal) interaction can be conveniently ignored whenever we are considering the nature of material reality.

But, contrary to this prejudice, we find it impossible even to conceive a substance, or interaction of substances, that is not already an expression of meaningful form. This is the point made in the previous sections — that we perceive nothing without the aid of form-giving thought. We should ask ourselves: “Where do we ever encounter substance that is not a manifestation of specific, intelligible form?”

The obstacle for our understanding of all this lies in the unconsidered *presupposition* that the problem of knowing is the problem of how our “minds in here” can apprehend “mindless substance out there.” But this is a dualistic assumption made *before* one looks at the actual process of knowing. The dualistic stance is imposed on the analysis in advance, defining the entire shape of the philosophical problem.

The philosopher Ronald Brady, in a posthumous treatise titled “How We Make Sense of the World” (Brady 2016), succinctly summarized the issue this way:

- “If the question is: ‘how can we know the world?’ or ‘how does the act of cognition take place?’ we cannot begin with the very ‘knowledge’ that this investigation should justify, or we investigate no more than the logical implications of our presuppositions. Epistemology ... cannot begin from any positive knowledge of the world, but must suspend all such ‘knowing’ in order to examine the act of knowing itself ... if we do begin from such ‘knowledge’ our epistemology will necessarily validate present sciences, and deny the possibility of any other form of science.”
- “Most modern approaches, for example, take their starting point from the apparent distinction between the thinking subject and the world external to that subject, and thus formulate epistemology after a Cartesian or Neo-Kantian framework. In this formulation ... the basic question of epistemology becomes: ‘what is the relation of thinking to being?’ or ‘what is the relation of subjective consciousness to external or objective reality?’ These questions arise from the assumed separation of the two — that is, thinking attempts to know the world of objective reality, which world is itself totally independent of thinking. In such a formulation, however, we [assume that we] already know something of that world (such as its difference from thinking), and the problem is created by what we know — that is, the distance between the thinking and its object.”
- “Since we cannot take the results of previous cognition for granted when we attempt to grasp cognition itself, another formulation of the problem is necessary. If we simply propose that knowledge is immanent in human consciousness (if it is not, then we are not speaking about anything), the basic question of epistemology could be simply: How? What is the act of knowing? Thus we face toward our own act of cognition, and the investigation turns on the *self-observation of thinking*.”

6. We are free to theorize in terms of non-experienceable constructs. But we typically do so by at least implicitly making

models out of them, *as if* they were experienceable things (such as the “particles” of particle physics). And such models — because they are based on non-experienced constructs abstracted from appearances and falsely conceived as if they were themselves actual appearances (phenomena) — always turn out in one way or another to be false to reality (Talbot 2020, “All Science Must Be Rooted in Experience”). They also vex us to no end, as in quantum physics.

There is no reason we should not investigate the appearances in all directions available to us, without limit. We can, for example, use instruments to explore the structure of forces at a level beneath the possibility of actual sight or touch. But the physics of the past century has taught us very well that we run into crippling trouble when we try to clothe unsensed theoretical constructs with sensible qualities, as we typically do when we talk about “particles” and then assume that these must be capable of traveling through space, like sense-perceptible things, from point A to point B. If the world is by nature an *appearing* world, then we abandon reality when we talk about non-appearing things as if they were real phenomena.

7. Coleridge wrote: “The primary Imagination I hold to be the living Power and prime Agent of all human Perception, and as a repetition in the finite mind of the eternal act of creation in the infinite I am” (Coleridge 1906, Chapter 13). Coleridge was speaking from a deep Christian faith. I do not know any grounds for disparaging his way of stating the matter, but for the sake both of simplicity and of remaining as far as possible within the terms of our contemporary powers of scientific observation and analysis, I have paraphrased his remark in the main text. Coleridge also wrote that

the productive power, which is in nature as nature, is essentially one (i.e. of one kind) with the intelligence, which is in the human mind above nature (Coleridge 1969, p. 497-8).

Coleridge (quite rightly!) considered this statement rather obscure. Fortunately, we can expand the remark in line with his own written annotation of it: the productive power of becoming which we discover in (or above) the finished products (phenomena) of nature is a power we can call “Nature,” or “Agency.” And this Agency above nature is akin to the intelligent Agency of the human being, which also stands above nature. And to this we might add: it is because of this kinship that our own imaginative, perceptual, knowledgeable apprehension of the phenomena (appearances) of nature reflects our nascent creative powers participating along with “the productive power of becoming which we discover in (or above) the phenomena of nature.”

8. Regarding our attention to a lecture: it is also well known that we tend to mimic the lecturer’s physical speech subliminally within our own vocal apparatus. As for copies of thoughts, it is well to realize that the conceptual elements are not material structures, and we cannot create multiple copies of them. What would be the “thing” we are copying? If we are paying attention to our own thinking and not theoretical brain states or whatever, we can hardly help realizing that, no

matter how many times we return to the same concept, we are not multiplying copies of it, and the same is true when different people take up the same concept. We may accompany a concept with varying mental imagery, but the images are no more the concept than our pictures of a straight line are the concept of a straight line. All instances of the concept, as pure concept, are the *same* instance; they are numerically one, not many. Through our thinking we share, as it were, in “one spirit.” It is a useful exercise to think of a pure concept (say, that of a straight line) while asking yourself, “How might this concept, *as a concept*, not as a mental picture, be multiplied?” It is difficult to imagine even what this might mean — or, at least, it is, so long as one stands within the actual experience of thinking, and not in some materialized image of it.

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“I have oftentimes found the curious twining lily climbing its branches, showing no fear but rather congenial companionship. Sheep eat it without apparent ill effects; so do horses to some extent, though not fond of it, and to many persons it is harmless. Like most other things not apparently useful to man, it has few friends, and the blind question, “Why was it made?” goes on and on with never a guess that first of all it might have been made for itself.”

— John Muir, *My First Summer in the Sierra*