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The Calderian Experience

An experience has a unity that gives it its name, that meal, that storm, that rupture of friendship.
John Dewey, *Art as Experience*, 1934

Few works of art offer unique and enduring experiences, except to the initiated viewer who knows where and how to look. Sometimes, appreciation relies primarily on historical knowledge—not so, with a Calder. Born in 1898, Alexander Calder is considered nonetheless a contemporary artist three decades after his death in 1976 and six decades after the wild popularity of the art form he had invented in the 1930s, the mobile. Why is this artist's sculpture so relevant today? Is the contemporizing inducement more related to the pleasure of fashionable trends (in kind with Manolos and Dachshunds), changes in the signification assigned to Calder's art, or inherent features of the work itself?

A fashionable preference can be the hinge that fastens in place a particular approach to an aesthetic object. Our judgment is always hung (out of balance) with associations gathered from hither and yon—glued to our current mood, the present company, context, and so on—to create familiarity in the present moment. Memory—synaptic actions from prior years, months, milliseconds—generates significance in the here and now. Art with easily discernible content is said to be "accessible"; likewise, with practiced neural pairings, or memories.[1] New sights or novel combinations of old sights conjure fewer associations. This accounts somewhat for the difficulty kenning abstraction. The more recycled the constituent parts, the quicker and more (subjectively) certain our understanding. Mimetic associations are always substitutions of the past for the present. To look at a small white ball and think of a moon is to revisit—not directly experience. Calder's nonobjective sculptures are *experienced* because they allow us layers of associations (with architecture, industry, the natural world, a previous encounter with enjoyment) while confronting us with immediacy (color contrasts, widening consequential movements, small surprises, sudden insights).

It is a mistake to assume that our conclusions about a work of art, no matter how consensual or satisfying, are in any sense objectively true. Science has demonstrated what psychologists, philosophers, the justice system, and the "man on the street" have long intuited, that what we conclude to be the meaning of an event—any event, including an abstract sculpture, i.e., art event—is only the tip of our internal, unperceived iceberg. Currently, in the "decade of the brain," there is a trend in psychological science toward interdisciplinary curiosity. Emotion researchers study the neurology of music; psychophysicists and cognitive psychologists research human-object interactions. Neurobiologist Vilayanur S. Ramachandran has declared, "We need a coherent biological perspective for thinking about the laws of art."[2] The neurobiological terms he used—grouping, contrast, abhorrence of coincidences, repetition, balance—could easily fit an objective explanation of a Calder abstract sculpture.

In his 1934 treatise, "Having an Experience," John Dewey wrote, "Where everything is already complete there is no fulfillment."[3] This appealing assertion is oddly both intuitive and counterintuitive, grounded both in contradiction and confirmation of human fundamentals. Humans strive for a fulfilling conclusion, the absence of which plagues many art audiences unable to find a focal point for their attentions amid nonobjective geometrics of abstraction.[4] Dewey advised that a thinking experience has its own aesthetic quality. Likewise, an aesthetic experience has its own quality of thought, specifically a drive to conclusion. We want to complete an experience. Try as some might, attempts to appreciate a nonrepresentational sculpture can lead to a deflation of effort. We turn away slightly shamed by regret or resentment, unless afforded an association where we can prematurely hang our hat: a suggestive title, an anthropomorphized resemblance—we resign ourselves to an unsatisfying settlement. Every moment seeks resolution, while continued relation requires change. The human face, movements of the natural world, private emotions—none are complete, yet all are fulfilling in their flickering moments and their culminations. Neither are conclusions complete, since they reach back recursively to validate their premises. It could be said, though, that the opposite of completion is not persistent variation but incoherence, which in extreme abstraction can leave the viewer in a precarious spot.

While humans strive for constancy and comprehension, we are also attracted to novelty and surprise. All of these states strike us when we stand in the vicinity of a Calder abstract, indicating immersion in an attempt to grasp our world, to grasp the experience of creation. Semir Zeki, professor of neurobiology, wrote that the function of the brain's visual system is to "seek knowledge of the constant and essential properties of objects and surfaces when the information reaching it (illumination, distance, viewing point) changes from moment to moment."[5] The brain is able to calculate the effects of these changes in order to categorize a thing as a dog not a house, a sculpture not the next-door neighbor.[6] A museumgoer plunges into the alternation of reflective taking in (observing) and acting out (hypothesizing) to which one must surrender, if one is to converse in a rewarding manner with a sculpture. Dewey writes of the "intrinsic connection of the self with

P. 36 *Untitled* (1936), set in motion, c. 1943
Photograph by Herbert Matter

the world through reciprocity of undergoing and doing."[7] By permitting input and correction to ebb and flow, uncertainties, conflicts, and confusions will merge into acquisition of knowledge—real experience—as they do in a fulfilling conversation with an enthusiastic friend.

Calder's work is as easy to pin down as the face of the person across the café table whose animated conversation alternately delights and disturbs—which is to say hardly at all. The eye is the camera that picks up colored dots and relays them to the brain for processing. Seeing begins in the brain, with information from both hemispheres compared and controlled in a thick band of millions of nerve fibers running from side to side (the corpus callosum), and a devoted pattern recognition region for faces on the right side. Circuits linked with emotion can determine both where our brains point our eyes and what our sight (eyes, brain, the entire process from optical photon reception to cortical decision-making) finds there. We perceive and differentiate objects based on either a single feature (a featural process) or the relation between features (a configural process).When we look at another human face it is not the individual features but the relation among them to which we are especially sensitive. Our eyes land on and leap over the moving parts and periphery—eyes, lips, hairline, nostrils—scrolling up, down, across, forming repeated tracings even on a face held completely still. (It appears that the eye in relation to the brow is effective information for gender identification.) This mode of visual data gathering might be ideal for quickly identifying a face in the crowd, but it would be poor strategy to apply to abstract objects, particularly a mobile in motion. In fact, there is little configural processing for objects (or for inverted faces, suggesting that [initially, until we gain familiarity over time and experience] we see an upside-down face as an object). The exception is those with expertise, such as dog show aficionados who can tell one schnauzer from another. A brain with object expertise is able to see the object the way we see faces, as recognizable configurations of spatially related features. This could explain initial resistance to art that breaks with convention: we literally can no longer *see* it as art. New experiences strike us because they are unfamiliar. Despite the excitement of novelty, our first impulse is to anchor new environments to existing memory ground—we think, "This reminds me of that time in…." We experience a Calder to lesser or greater extent depending on our familiarity with the parts of the whole. Expertise grows with attention applied over time. How do we configure the parts of a moving sculpture to recognize its whole? How can we achieve Calder object expertise at an appreciator level? By deliberate placement of our attention, by knowing where to look. (By complying with the artwork's premises, we *learn* where to look.)

Untitled (c. 1932, pages 108-9) is a hanging mobile exhibited for the first time here in Rome. Its stepped arrangement gives the sense of a less objectively accessible work than *Parasite* (discussed below), but it presents an equally experiential interaction—an intimate struggle, really, if we indulge the sculpture rather than yield to our energy-conserving visual neural system. An early foray into the art event that became known as the hanging mobile, *Untitled* is deceptively simple, its effect fearsome. Four steel rods of different lengths are hung one below another, tilted from the horizontal by wooden balls attached to the lower end of each rod. The wires connecting the rods are vertical, and the rods obliquely balanced in parallel, so the balls stop at the logical, gravity-pulled lower points. Our eyes are led in graduated downward progression from rod to wire, rod to wire, an orderly descent. Initially it all makes sense, almost. *[Warning: plot spoiler ahead]:* The first surprise, a small shock, is the sudden climb of the lowest rod. Our focus is yanked precipitously upward by this last diagonal, up beyond the sculpture's original height, and plopped abruptly on a small red wood ball (made red to call our attention to it). Perched irresolutely, our startled physiology responds (sweaty palms and quickening heart: the brain signal that something unpredicted has occurred; we are possibly in danger or at least in novel territory where it behooves us to employ our dilated pupils to *pay attention*). *Untitled* is wider than tall, as the arrangement of the rods foretell, but because of the sudden rise of the last rod it *appears* to span in the wrong direction, vertically high and horizontally narrow. This momentary confusion sets the rods up as misleading cues. Also, the lowest rod is slightly off-parallel from the other rods, its angle a touch higher and more acute, drawing our attention to what we perceive as another inconsistency and infuriating our attempt to find a neat pattern. We check the sculpture's action once again and come up with a fruitful detail:[8] the spheres at the end of their rods get slightly smaller as they descend, contradicting the visual expectation that what is closer will appear larger. (This effect depends on how high the mobile is hung; if above head-height, we would expect the lower spheres to be larger because they are closer—not the case.) *Untitled* causes us to check and recheck, and in this communicative process we become more familiar with the workings of the sculpture, the artist's actions, his contributing intentions. The sculpture is teaching us to see it, and by seeing to know it more fully. Hooked by immediate engagement our eyes search for more information. We notice that the white spheres appear lighter, less subject to gravity, than the tilt of their rods would indicate; that the rods' odd jutting, as they swing away from their centers, describes a delicate, joyful blooming; that *Untitled* manifests a larger metaphysical ambit than its 146 x 58 physical inches circumscribe. In experiential

terms, *Untitled*'s size is a false reality occurring in a frozen moment; the sculpture occupies more space in its perceived motion. No longer sightseers, we have become participants in the sculpture's complexity—in cahoots with the thing itself.

An artistic "event" is a finished art object perceived by a spectator—an integrative concept in which artist intention, the art-making process, viewer perception, and the view-making process participate, each reverberating in the object of scrutiny. Convention advises an intellectual approach to abstract art, but an encounter with a Calder abstract sculpture is an escapade in real time. Like the work of Duchamp, much of Calder's art chooses play over pedagogy, so it is less fixedly manifest than, say, a Picasso or a Mondrian. With a Calder, we do not so much interpret as *experience*. However, surprisingly, emotion adjudicates abstraction. Despite titles such as *Parasite* (1947, pages 152-53) or *Scarlet Digitals* (1945, page 137)—added after creation of the work simply as physical descriptions of a feature and not as assets for interpretation—the animacy of Calder's work arises not from resemblance to a known thing but primarily from the uncertainty of the relation between what we see and our struggle to draw conclusions. A Calder mobile, such as *Scarlet Digitals* or *Parasite*, for example, is a visual environment too complex to scan at one time. Our brains continuously assess our environments, automatically and unconsciously evaluating incoming stimuli and determining, in under 200 milliseconds (more or less the speed of thought), what information it will devote more cognitive effort to processing. Neurons take it in: the steel and wire shapes, their dimensions and painted surfaces, the elements' locations, their small movements and the arc of sculptural motion, the interactions and implications of relation, and the surrounding context. Internal responses to what we see direct our attention more selectively. A collection of nuclei organized into different divisions—two amygdalae positioned one on each side of the brain—register the sensations that, if we could feel them, we would name emotions. Along with color, contrast, disparity, motion, and size, our emotional responses direct our attention further, collapsing onto detail and then widening to select more global views.

Reflection—critical to observation—calls for active cognitive effort. Like a mobile, our essence is locomotion: animal perception *leads* somewhere. Calder's sculptures thwart passive viewing, yet reward reflection mightily. But the open-minded, time absorbing stillness obliged by reflection vexes our animal enthusiasm for immediate response. To open one's mind to the dynamics of *Scarlet Digitals*, for example, is at first confusing and uncomfortable. Black horizontal elements are grouped disparately on wires at the end of a high horizontal bend in a vertical wire that meets a second vertical wire. At this junction a shorter wire sticks out, and three red triangular fingers form a shape at the end. A low wire curves to a lower set of orange elements. Below it all are three large black elements, ominous in their positioning and irregular shapes. Flat shapes occupy not only different colors and sizes but also different planes. The elements sweep, tilt, twist, bob, rotate, flutter and hang. Our eyes slide up the stalk and down, out to the three red points—is that a crown?—and back down to the black forms—how do *they* relate? The thing is about seven feet high and eight feet across, a monstrous flora. The hanging assembly is growing from the ground, as if those shapes are roots. To stand aside or under (as amidst as is possible in a museum setting) *Scarlet Digitals* is a pulsing buzzing sensory experience, like being encased in organic growth, a breathing experiential potion. As we isolate its parts in order to reconfigure our minds around their interconnectedness, we learn to see. Using working memory (conscious short-term immediate memory) to hold the large bottom shapes in mind while we glance at the flurry of small black elements above, we see that the two groups move differently, at both fluttery and sluggish speeds. Each movement is defined by its visual and material character. With such small attentive steps—the taking in and giving out of active reflection—we can override easy conclusions and crudely constructed premises. The worthy effort creates a full perception of the work itself. The payoff is vividness, a vertiginous *real* lasting encounter.

Brains only sometimes know the difference between an inanimate object and a living creature. We are tuned to perceive emotional expressivity in biomorphic movement. A computerized game of catch that is used in labs to measure social anxiety and sensitivity to rejection can make any of us feel shunned by the stick figure who unexpectedly throws the ball to the third player when it is our turn. A pair of yellow triangles that touch and turn in particular ways can appear to be "in love." We "feel" for them, and our brains fire up the same neurons and release the same chemicals as if the triangles were a young human couple. Faced with Calder's art we naturally attribute human characteristics. Far from unwelcome, to anthropomorphize is to register connection, relationship, the potential for insight.

Relationships convey meaning; they rely on the discernment of intention. An artist from childhood, Calder was an applied scientist before he devoted himself to art-making professionally. Not recreator of a universe, emulator of nature's progeny, uncanny suggestor of the singular lines of animals and plants, or material impersonator of characters in the human bestiary, Calder was an artist who employed the forms and gestures of nature to sculpt along the dimensions of human object-perception. The result is an experience of intention, the intention a communication of both the universal and the particular. It cannot be accomplished easily. Not by this artist, whose skill is legendary; not by the viewer. It is our responsibility and our sublime pleasure not merely to view a Calder sculpture, but to allow it to work its way with us, to experience what Dewey refers to as the "intimacy of connection." We know the world through empathic understanding: knowing what we would feel if we were in the same position as the (living) thing perceived. Social cognitive psychologists study "empathic accuracy" (being right about what someone else is feeling). By observing gestures and facial expressions, people can intuit other people's feelings and even their intentions. There are suggestions in science that circuits of cells in certain brain regions map another's expressions onto the observer's brain. The brain then "mirrors" what the other is experiencing.[9] The same brain regions fire when monkeys (and humans) reach for an object as when they watch someone else do the reaching. People who cannot move their limbs (limb apraxia) also have trouble identifying the gestures of others. Movement, intention, and human understanding of the environment are intricately, intimately linked. Ideally, Calders would exhibit in rooms that grace the sculptures' natural inclinations with subtle, well-placed ventilation; as it is, some museums forbid blowing on a mobile. Too bad, because movement is the medium of experience.

Fig. 1 *The Jealous Husband*, c. 1940
The Metropolitan Museum of Art, New York
Photograph by Maria Robledo

Our brains and bodies (to make an awkward distinction) collude to keep us alive, so that every situation, every event, every object, no matter how simple—a red disc at the end of a black wire, for example—is an invitation to predict the next move, and to react accordingly. Neural efficiency compels us to accept the quick and easy solution first, so we might be excused for our facile tendency to turn abstraction into representation—"It *does* move like a spider!" The sequence of recognition is humanly protective and efficient. It begins with the prominent, meaning the most generally obvious feature to the most people, and proceeds to the elusive, or the particularly personal. Physiologically, for the brain to operate beyond its hard-wired evolved-for-the-quick-and-easy pathways, it must call for additional blood supply, using up much of the body's limited ready energy. So, cognitively speaking, we might first consider everything either a threat or a pleasure, including a work of art. Although Calder's spiky, enflamed, oversized necklace, *The Jealous Husband* (c. 1940, fig. 1), seems to hiss and swirl at the viewer *and* the wearer, so long as it is not toppling onto us or rushing forward bedecking an angry neck we need not fight or flee a sculpture. Our brains quickly grasp that the threat is merely expressive, creating a neural *frisson*. Yet "merely" is misleading. Follow-up firings of brain cells allow us to approach an understanding of the thing, and this interpretive leap is where experience becomes enriched, though sometimes muddily so. We can begin with general context (leading to stereotypic classification: in a museum it's art, not toy or dinner). We then narrow the category (a sculpture not a painting), identify features (bent wire with ears, neck, and snout), and reclassify according to newly recognized details (oh—a drawing in wire of an animal and people). Finally, through memory's mechanics, we create links to learned associations and arrive at: wire sculpture of *Romulus and Remus* (1928, pages 90-91). Instant delight. Through a fast interactive sorting and comparing process, we have resolved the mental discord set into motion 100 milliseconds or so prior (a long time in terms of the brain), when we first laid eyes on those incomprehensible lines and suggested dimensions.

We all vaguely sense the truthfulness of Calder's art, and are uneasily pleased to discern the literal in the abstract sculpture. Faced with abstraction, our brains pigeonhole at the outset (we must, or the environment would be continuously incomprehensible; art, poetry, culture in general, might not exist without the expediency of neural sorting and typing). But incident diminished by distrait or misdirected effort can lead to a lethargic landing. We smile, point out resemblances, but are left feeling disturbed by their inconclusiveness. It is similar to the squirmy guilt-ridden feeling of compulsion that reminds us of grappling with insufficient language when we try to explain our experience of a spectacular sunset. Instead, we attempt to ignore our discomfort with abstraction with a glimpse at the wall label and a stock phrase allowing that we "don't get it" or we "get" *something* and are therefore permitted to walk on. Precisely the problem with abstract art: what the eye easily sees, the brain works to grasp—*what does it mean?* The fact that a sunset could be experienced as profound and original awes us; that we have to label it (beautiful, amazing, serene) leaves us remorseful, and rightly so. We have identified without receiving, recognized without perceiving. Recognition is passive, a thin semblance of experiential perception—"perception arrested before it has had a chance to develop freely," devoid of the "inner commotion" of experience.[10] To perceive deeply and thoroughly is itself an act of creation, of forming alliances, intimate relations among the steel elements, the spheres and dangles, the motion and its repercussions.

Brains want to classify. Humans want to understand. Failing comprehension, we settle for identification. Memory's associations ensure that a walk across the living room will hand our sensory processing systems chairs instead of hungry beasts, and a rug, not a bog, underfoot. Without automated neural circuitry, abstract art would be merely another novelty to fight, flee, eat or ignore. Which is precisely the reason that critics and art-goers tend to lean back onto the benign familiarity of simile. Just as suggestive titles attached to Calder's sculptures are only the tip of a substantially larger phenomenon, interpretations we affix to any sculpture (by "affix" I intend no diminution of the art viewers' urge to make meaning; we recreate the object of our attention every time we interpret an existing representation) indicate the level of experience missed. The coherence of *Parasite* and *Scarlet Digitals* seduces us into believing that the linkages we see are those that exist in the thing itself. What else can we believe but what we are aware of?

Sculpture is visual but vision only an opener. The sculptor's expert grasp of the mechanics of natural forms and the rules of their movements results in hard questions for humans. It is tempting to regard Calderian sculpture as belonging to the realm of physical philosophy, where what is regarded light, spontaneous, humorous, and lyrical is cause for fundamental questioning of the human project in the natural world. The question "what is it that I am looking at?" always translates to: "What does it mean *to me*?" At the point where we ask, we must then act by answering. This responsibility to achieve the goal of looking at and e*xperiencing* nonobjectivity encumbers us with work that can release us into glee. We lay our attention on a concrete or objective cue that can lead us into what broils below the surface of our admittedly inertial tendency to stop at visual thresholds. By fixing our eyes on a detail not initially captured by more heuristically salient vision cues, we entertain the possibility of the fuller experience. *Parasite* is a standing mobile from 1947 that has been exhibited many times,

each time with the renewed power to captivate. Where do you look when you admire *Parasite*? Where exactly we spectators cast our eyes is intimately linked to our concluding perception. Whereas the objective title might nudge us to look to the collection of dangling discs (parasite) at the far end of the wire that leads away from the solid base (host), and to consider the ingenious means by which the parasitic relationship is represented in this beauty of stasis and motility, if we halt there, satisfied at having discerned a subtle representation, we will have missed the relational balance point: the tip of *Parasite's* upsloping base poking through the floating disc. When we grasp that the tip is the fulcrum on which the extraordinary grace of the sculpture depends, we shift awareness onto an experiential plane.

The title *"Parasite"* misleads toward resolution by shortcutting—ah, there is the parasite and that must be the host. On the other hand, giving oneself over to the nonobjective might elicit this sort of internal monologue (yours would be different, each is particular):

> *Harmonious interdependence. Circles, perforations, and opposing curves express material presence and absence. A performance of borrowing, stealing with benign intent. Graceful black three-footed base curves up to a slender tip. Tip protrudes through an off-center hole cut in the encircling grey horizontal disc. Disc appears to float just below the upper tip of the base. A wire leading out from the tip dips and then curves up through a second floating disc, this one white, before reaching further to become the main lead in a spread of eight wires of diminishing length sprouting at their ends eight smaller and smaller discs. Holes in the base and the discs find themselves in each other and in the far-flung mobile elements; the three planar spines of the base curve in subtle opposition to the exploring wire; even the delicately poised feet of the base find semblance in points of attachment. What is it like to watch it move? The base stays, the angles and points of movement increase the further away from the base one looks.*

Contrary to Picasso's line, "Art is a lie that makes us realize the truth,"[11] Calder used the materials of art-making to present the visual truths of the process of perception, our visual heuristics, while obscuring the truth and forcing us (if we are game) to confront the inevitability of conflict. At the same time, in concurrence with Picasso's line, Calder used the stuff of the material world and the mechanical rules of our visual processing system to create new psychobiological experiences, thereby capturing the essence of the human experience of the natural world. It is not we who decide that the moving discs are planets or the extended tapering arcs are legs of a crab; the artist has led us toward the beauty of fulfillment while refraining from a specific conclusion. Calder was an engineer, an excellent mathematician. A scientific artist, he used the elegance of parsimony to present and explain, in human experiential terms, truths about our perceiving natures.

We largely see what we expect to see, and we expect to see what we are accustomed to seeing. Commonly, after ogling van Gogh paintings for an hour we exit the museum to find greener-purpler-oranger grass, brush swirls on car doors, trees textured by the sun. A contemporary sculpture show leaves us squinting at the humidity gauge on the gallery wall as a possibly Duchampian inclusion. Framed looking transmogrifies ordinary objects into art, and can also reduce art to ordinariness. Imagine a finely displayed object with a compelling shape which turns out, on close examination, to be a curve of driftwood unaltered by the hand that placed it on the pedestal. The object completes a mental transformation from art to oddity, a "curiosity" as Dewey would have it, belonging to a museum not of art but of natural history.[12] It is correct to say that the object has altered, because our brains create the world in the image of our perceptual predispositions. The object remains passive. Receptivity is an active, effortful condition that, via the medium of the found object, switched our expectation of interaction with the (driftwood) artist's intention to mere recognition. Randomness replaced intention, foiling interaction. A curve of wood, merely pleasant, its single expression without controversy, therefore nearly mute. No potential for emotional hubbub.

We do not suffer psychological conflict well. Conflict confuses our predictions. Here viewers and critics can falter, through lack of prefrontal cortical effort. Not-knowing what to make of something, and therefore what to *do* with it, is distressing to humans. When faced with Calder's massive stabile, *Man* (1967, fig. 2, page 172 [maquette]), we might see a crown, a mountain, tall tree trunks or architectural columns, legs, an animal, the sweep of a gown or a grand gesture: nobility, stability, soaring possibility; the human world and the human imagination scaled to awe. We are not wrong in our assumptions; but not exactly right. Dewey again: "In recognition we fall back upon a stereotype, upon some previously formed scheme…adequate yielding of the self is possible only through a controlled activity that may well be intense."[13] We must endure the chaos of uncertainty created by our perception, for—it is worth repeating—while the environment of abstraction resists resolution, the human strives for it. We must wait, mull, decode, act upon, conclude, reject, and reconsider. It can be a struggle, but we are goal persistent (we have come to the museum with a purpose). We attend; we wait, resisting distrac-

Fig. 2 *Man*, Montreal, 1967
Photograph by Ugo Mulas

tion, opening ourselves to discomforts of irritation and frustration: observational conflict engenders emotion. In twin acts, we narrow to detail while we broaden to alternatives. We need not notice that terms applicable to the state of our considering minds are shared by the manifest turnings of *Untitled*'s limbs and joints, a protracted demonstration of cause and consequence. We blow on the second ball from the top and consider the thing:

> homeostasis, suspense, expectation, error, correction, motion, contraction, inhibition, reappraisal, pause, temporal, spatial, attention, emotion, conflict, threat, neutral, positive, negative, valence, peripheral, covert, overt, coherence, correlation, loss, novelty, startle, realization

Research suggests that the brain's transit system is the carrier of consciousness, the brain's ability to be in a complex state.[14] The cortex of an anesthetized patient can respond to a stimulus but cannot move signals around to other parts of the brain to create a single unified experience. That imagination can effect a visceral sense of having participated in movement only underscores the criticality of movement to experience. To fully capacitate the visual mind, make your body inexpressible. Lock yourself in so that imagination and a roving eye is all you have to use. You are in a museum, a gallery, in reach of inherent eminence. Approach and let a mobile have its way with you. Lock out distracting movements, inconsequential comments, yours and others': you aim toward complexity—music, not noise. Place your eyes here…here…there. Feel yourself squirm under the imposed narrowing of sensation. Seek alliances and contingencies between the sculpture's close elements and constituents farther apart. Remember, meaning is in relation. To create a unified experience with a Calder sculpture is to have an interaction with the complexity of consciousness. Unconscious or automatic reactions serve their efficient purpose, with lowered awareness and categorical guides. By way of effortful intent, conscious interaction permits reciprocity between art and audience. The consummation is heightened awareness, memory, and expertise: *an* experience.

[1] "Cells that fire together wire together" (Hebbian learning) is a notion of the plasticity of the learning brain—our ability to form new associations—which also illustrates the tendency to think conventionally rather than anew. The increased efficacy of sensations repeatedly linked with specific thoughts ("looks like a moon" with "it's a small white ball"), emotions (happiness with the sound of wind chimes), or behaviors (observing sculpture always from the same distance relative to its size), makes those pairs the ones most cognitively available and apt to come to mind in a new situation, which is why it is hard to think new thoughts. To push afresh takes intention, time, inhibition of impulses, persistence, emotional discomfort, tolerance of uncertainty—it takes literal brainpower and consumption of neural energy.

[2] Vilayanur S. Ramachandran and William Hirstein, "The Science of Art," in *Journal of Consciousness Studies: Art and the Brain* 6, nos. 6/7 (1999), edited by Joseph Goguen.

[3] John Dewey, *Art as Experience* (New York: Perigree Books, 1980), 16. Originally published by Dewey in 1934.

[4] Neuroscientists describe an electrophysiological model for how we are able to *select* what to attend to and what to shut out: inhibitory neurons in the brain's primary visual cortex (V4) "dampen" our awareness of potential distracters. They do this by first detecting a particular firing pattern coming from neurons in the "focus of attention." The inhibitory neurons then suppress the response of other V4 cells—those associated with visual stimuli *outside* of the focus of attention. Without cell response, we would not "see" any thing-in-particular, even though our retinas would have registered the image and sent it on for higher processing. See Ernst Niebuhr, Christof Koch, and Christopher D. Rosin, "An Oscillation-Based Model for the Neuronal Basis of Attention," *Vision Research* 33, no. 18 (1993), 2789–2802.

[5] Semir Zeki, "Essays on Science and Society: Artistic Creativity and the Brain," *Science* 293, no. 5527 (2001), 51–52.

[6] Our environment is inferred through the electrochemical signaling of cells, not directly apprehended. Visual perception is a combination of raw information that hits our retinas and the processing we do to figure out what the resultant image means, in our world. Comprehension is accomplished using a set of visual rules that generally hold sway for humans on planet Earth: more distant objects look smaller; shapes with edges in common are attached; light comes from above; a drifting circle remains a circle even as its shape becomes oval. Calder might have been an exceptional seer but he employed no optical tricks—(optical illusions confuse our visual cortex by violating such heuristics)—even as his skillful use of visual disparity generates psychological conflict in our viewing minds.

[7] Dewey, *Art as Experience*, 247.

[8] When exposed to a visual display our consciousness first registers (within 100ms) the large shapes, patches of color, general layout, type (beach, person, mobile) and a few eye-catching details—the *perceptual gist*, absent informative meaning about our relation to what we are observing. (Gist, in neuroscientific terms, means a partial sensory experience that occurs before we have a chance to employ semantics and assign conceptual meaning.) We then use focal attention to search within the scene for further details, which give rise to hypotheses, opinions, and emotions, which altogether generate our concept, our relationship, with what we are perceiving.

[9] Research suggests that people use multiple brain networks to replicate another person's experience. Columbia University researcher Jamil Zaki says the mirror neuron network probably helps explain what might be called "affective empathy"—the simple ability to feel what another person is feeling. A separate network underlies "cognitive empathy," a more complex process that draws on life experience and contextual information to decide what someone else is feeling in a particular situation. From Michael Haederle, "Brain's Indiana Joneses Search for Empathy," *Miller-McCune*, 14 August 2009, http://www.miller-mccune.com/science_environment/search-for-empathy-1377.

[10] Dewey, *Art as Experience*, 52–53.

[11] Marius de Zayas, "Picasso Speaks," *The Arts* (May 1923), 314–326.

[12] Dewey, *Art as Experience*, 50.

[13] Dewey, *Art as Experience*, 52–53.

[14] Giulio Tononi, "An information integration theory of consciousness". Abstract in *BMC Neuroscience* 2004, 5:42, http://www.biomedcentral.com/1471-2202/5/42.