THE ART of IS

IMPROVISING AS A WAY OF LIFE

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All About Frogs

One afternoon I was giving a talk at a university religion department. My host asked me to talk about the Tao, creativity, and music. I wanted to begin with a little meditation. In this crowded classroom full of random furniture and people, we managed to get silent and still, allowed ourselves to become comfortable wherever we were — sitting in chairs, squatting on the floor, standing straight, sitting on someone's lap, leaning on a ledge. Settled and quiet, we found our balance and let the concerns and preoccupations that we had brought with us leak away. I felt like a pendulum freed from outside impulse, swinging more and more slowly, less and less erratically, gradually coming to rest.

Imperceptibly, we became conscious of a bass hum in the heating system as it whirred away in the ceiling. In the

silence of this room, the sound of the motor became very strong. Normally, while talking and listening, thinking and worrying, we don't notice such noises. That motor reminded me of a wonderful realization I'd had in the hotel room where I'd slept the previous night. There was a rickety little refrigerator in the room and, as refrigerators do, it turned on and off as its thermostat switched in and out. I was lying in bed, feeling tense, almost unaware of the low, rattling drone, when suddenly *pop!* — the refrigerator turned off. The machine's noise was subtle, but its cessation was like the moment in old slapstick movies when someone has been beating you over the head and then stops. How good it feels! The acute silence that occurred when the refrigerator shut off was beautiful, as I lay there in the dark smiling with contentment. It sounds silly. But spiritual realization is often sparked by the most humdrum events.

As we sat in our afternoon meditation, someone coughed. What was amazing, and just as silly as the refrigerator, was how beautiful and resonant that cough sounded. When we're going about our business and someone coughs, it's just noise, a distraction; but against the background of silent concentration we shared, that cough was a marvelous sound that expanded into the universe. It lasted only half a second, but we could hear the different phases of the cough so that it became something rather intricate and interesting. Later on, we will return to the cough and the silence of the refrigerator because they are of fundamental significance to our purpose.

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Now let's talk about frogs. In the late 1950s at MIT, Humberto Maturana, Jerome Lettvin, and others were trying to figure

out how vision works at the level of single nerve and brain cells, how *information* arises from the raw stimulus of light and darkness. In particular they were studying the retina and visual cortex of frogs. They invented tiny, hair-like electrodes that could detect the firing of a single nerve cell. With such electrodes in place, they showed various visual stimuli to the animals, to see which cells fire under what conditions.

One of the seminal papers that came out of this research was called "What the Frog's Eye Tells the Frog's Brain." Previously we had thought of the eye as though it were a camera that passively takes in patterns of light; the information about the light is transferred up into the brain, which then does processing on it and distinguishes faces, letters of the alphabet, all the things we are used to recognizing. In the case of the frog, the recognition happens before the signals even get to the brain, in the nerve cells of the retina at the back of the eye. These cells are predisposed to fire most strongly when they detect small, dark dots moving around. This, of course, is because frogs eat flies. Finding flies is vitally important to frogs, and what the frog's eye tells the frog's brain is whether or not flies seem to be present. Everything else is secondary. The researchers put various types of stimuli in front of the frogs — big, open areas of color or different shapes with different rates of movement — and they would all produce some mild excitation in the nerve cells in the eye. But the nerve cells would really start jumping around when something was presented that could have been a fly: a moving black dot that subtends about one degree of angle.

Before the information even gets to the brain, the frog's eye has an epistemology. *Epistemology* normally refers to the theory of knowledge: a branch of philosophy that asks,

How do we know? What do we know? What is real? What is important? How do we sort our inputs into knowledge versus nonsense? Gregory Bateson transplanted this word into biology, realizing that even a rat in a learning experiment has an epistemology, an internalized theory of knowledge that calibrates its perceptual biases. Epistemology thus becomes greatly extended in meaning, to an activity inherent in all sentient beings. Neural filtering sensitizes a frog's eye to movements of small dots that are likely to be flies and disregards other information. Epistemology is how we parse the world: *this* is information, *that* is noise. Likewise, cultural filtering predisposes a person to believe or disbelieve in miracles, or in economic determinism. In an age pervaded by propaganda, epistemology has suddenly turned into an explicit preoccupation of our entire society: what we know, what is real, what is important.

Imagine a pond at sunset, the beautiful lily pads, the blazing sky, the frog. The frog sits there thinking, "Not-flies."

We humans believe ourselves to be much grander than frogs. We are general-purpose organisms who can adapt to many settings. We don't have a frog's specific hardwiring for flies, but nevertheless human retinas are hardwired to spot edges and differences. When we look around a room, our retinal ganglion cells fire more strongly when they see borders and contours than when they see the blank middle areas of uniform color. As the information gets bumped up through higher levels of brain cells, those edges yield more information — tuned by our predispositions. We are sensitive to the outlines, because that's where the news is. A blank piece of paper may not contain much to attract us, but if we draw a single line across it, now *there's* a piece of information and

our eye gravitates there. The line has divided the field into two pieces. Information is measured in bits or binary digits, a single distinction. So this mark creates one bit of information — either yes or no, on or off, one or zero, this side of the line or that side. In the light of common themes from logic, philosophy, neurology, psychology, and computer design, Bateson established that the fundamental unit or atom of mind is a single *difference*.

In the Bible, the universe begins with a single binary distinction. "Let there be light" cleaves the unformed void into light and darkness, and everything develops from there. If you look at the first page of Genesis — the page that is consonant with the theory of evolution — we see more advanced life-forms evolving from less advanced forms. By *advanced* I mean more differentiated. First there's the division between light and darkness. Then the division between above and below. Then the division between wet and dry; between land and sea; living things and nonliving things; plants and animals; and you know how it goes, by powers of two. After three or four billion years of divisions, you are a complex, sentient organism, composing a book about your life's work. It all stems from one distinction, one binary division, one mark on a blank page.

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Now leap from the realm of retinas, brain cells, and epistemology to a frog painting by Sengai, the great Japanese painter-priest (1750–1837). Frogs were a favorite subject of Zen and Taoist masters throughout the centuries. This painting is partly a comment on the famous haiku by Bashō (1643–1694):

old pond —
frog jumps in.
Plop!

That *Plop!* is like the moment of shocking, blissful clarity that came for me in the middle of the night when the steady background noise of the refrigerator suddenly ceased. Or, yet again, from Genesis, "Let there be light" — that stark moment of illumination, literal enlightenment, when something arises from nothing and the universe comes into being. *Plop!* is Bashō's Zen equivalent of "Let there be light," a moment of creativity that is potentially available to us anytime, right before our eyes, right under our fingertips. But usually we are too busy looking out for flies, or lamenting their absence.

In the case of "what the frog's eye tells the frog's brain," there is a predisposition to see the universe in terms of one question. That question is hardwired right into the nerve cells of the frog's eyes, and for good survival reasons, for frogs must eat. But there is much this limited epistemology excludes: the clarity of cool water refracting light, the generations and empires of pond scum sliding over rocks, hungry birds circling above for frog-shaped dinner.

Many institutions have their own version of the frog's eyes, parsing the universe in terms of a single question, "Is there a profit there? What's the bottom line?" while ignoring the proverbial birds. This is how we end up fouling our own environment in pursuit of short-term return on investment.

Thus we see weapons industry lobbyists with senators in their pockets. This is how people can get so focused on accumulating money that they don't realize it isn't making them any happier. There is nothing wrong with pursuing profit. However, pursuing it at the expense of all else harms the social fabric and is deeply self-destructive. If we operate within an unexamined epistemology, then our choices are made for us in advance — like the frog's brain vibrating with excitement on seeing a fly. We may not even realize how constricted our perceptions (and thus our actions) are without investigating their basis and the assumptions they contain.

Life depends on our transcending the premises that have confined us. The crucial moment is identifying them. Freedom from our presuppositions is and always has been an option. That realization is the *Plop!* of Bashō's frog.

We don't need to take exotic journeys to realize this experience. It is available to us here, now, at every instant of our lives. In meditation, in the practices of art and science and other pursuits when undertaken creatively, we attempt to get behind and before the epistemological distinctions that we normally accept. We are trying to get back to what was on that piece of paper before we drew our line. What face did you have before you were born — before all those millions and trillions of cell divisions?

Here is a text by Seng-Ts'an, the Third Patriarch of Zen in China, called the "Hsin Hsin Ming" ("Verses on the Truthful Mind"):

The Great Way is not difficult
just avoid picking and choosing.
When love and hate are both absent

everything becomes clear and undisguised.
Make the smallest distinction, however,
and heaven and earth are set infinitely apart.
If you wish to see the truth
then hold no opinions for or against anything.
To set up what you like against what you dislike
is the disease of the mind.
When the deep meanings of things are not understood
the mind's essential peace is disturbed to no avail.

The Way is perfect like vast space
where nothing is lacking and nothing is in excess.
Indeed, it is due to our choosing to accept or reject
that we do not see the true nature of things.

We are looking at strange and wonderful puzzles here. Seng-Ts'an is saying that you can find the Great Way not by going beyond preferences but by having no preferences. This, of course, is a paradox: you actively chose to open to this page at this moment, and that's why we are here listening to Seng-Ts'an talk about how eye-opening it is to have no preferences. We had preferences to put on certain clothes this morning, to take every step that led us to this moment. Life is compounded of preferences. Every time we open our mouths we express preferences. Hardwired as our brain cells seem to be, we can get beneath that programming to a place of seeing freshly, as though for the first time — and noticing that we often make choices without even realizing.

We all have had the contrary experience, of having our understanding of something *stopped* by knowing the name for it. When Ronald Reagan was running for governor of

California in 1966, he stated, "If you've seen one redwood tree, you've seen them all." This was his justification for allowing the logging companies to come in and chop down forests of thousand-year-old sequoias. From his limited point of view, he was right, because as soon as you put the label *tree* on a natural phenomenon, you begin to see the name and not the thing itself. It is easy to look around the world, put names and concepts on things, and dismissively say, "I know what that is, I've heard that before, it's old hat." In 1799 Blake wrote, "The tree which moves some people to tears of joy is in the eyes of others only a green thing that stands in the way."

Today we know that a tree in a forest is not a single entity at all but a member of a widely interdependent and interactive community of many species. Everyone knows that a tree is a tree, but it is quite another thing to actually walk into the redwood forest and see the unique, minutely delineated structure of each of those ancient living beings, to see them as individual elements in the amazing ecological system in which you are standing, to see how the tiny insects and the huge sequoias are feeding each other, to see how all the species of plants and animals are interconnected into a single biological circuit so intricate that if you take one piece out, the whole system can collapse. If you place a simple ticket of identity on the redwood tree, then the tree loses the richly detailed fabric of its being and its context. The consequences are immense, because in your mental stuckness you give permission for the forest to be killed, and the costs of that act of killing flow back disastrously to affect the viability of entire species, including ours.

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Back to frogs. The world becomes dangerously simple if all you're looking for, all your epistemology encompasses, is flies or not-flies. The frog can be tricked into swallowing other moving dark objects that are not flies. Human beings are just as easily deceived. We greedily swallow many things that are not nourishment. One antidote to an unbalanced epistemology is practice, in its many forms. We can practice going behind our predispositions to experience the nature of our own minds. We can practice by walking in a forest or by a tide pool, learning the intricacy that is in front of us, without a priori placing labels on it. At some point we may want to communicate our experience to other people — and to do that, we use words, labels, and concepts. We can enjoy the delicious, variegated play of concepts given to us by our languages and all our academic traditions — but we can learn to use them in a provisional way, understanding that we are looking at a map of reality and not at reality itself.

"There is nothing either good or bad," says Shakespeare's Hamlet, "but thinking makes it so."

The Maturana-Lettvin experiments reveal the normal functioning not just of frogs or isolated neural preparations but of ourselves. Like the frog, we are looking not at reality but at a map of reality that predisposes us to see in a certain way. Bashō's *Plop!* is about breaking through perceptual and experiential barriers. *Plop!* is the sound of breaking through the surface of things so we can see and hear more. The

surface of the pond is the surface of consciousness — the mysterious watery barrier between reflection and reality.

Psychologists in the time of William James coined the term *anoetic sentience* to describe this state of mind — in other words, sentience that is without or is prior to cognitive processing. It can be an eye-opening revelation to simply *be* where we are, to see and hear what's here without putting labels on it. We can experience the difficulty of this if we look around us as we go through our day. We cannot help recognizing the faces of our friends; we know that a chair is a chair, and we know many things through the elaborate concepts and shortcuts that have been trained into us. Yet it is possible to some extent, provisionally and for a while, to go underneath that level of experience. Anoetic sentience is literally impossible, but we can get a bit closer to it than we usually are, eliminate some barriers, some surfaces, see a little more cleanly and deeply, become a little less muddled by the mind's constant activity of picking and choosing.

Anoetic sentience is a paradox, because if we were to somehow neutralize all our neural, educational, cultural, and evolutionary wiring and see just what's "out there" — the thing-in-itself, as Kant called it, we would discover that thing-out-there to be empty of inherent existence. This is the fundamental insight of Buddhism, *shunyata*, the emptiness of inherent existence. The existence of things is not *inherent* in each but rather *interdependent*. Everything exists in a network of interdependence with every other element of the universe through complex chains of cause and effect (karma). Perhaps the best model we now have for

understanding this is the notion of ecosystem. The existence of the pond depends on everything else, including the rigid wiring of the frog's retinal ganglion cells. That is why Ronald Reagan's notion of redwood trees is the most destructive and at the same time most common epistemological error. The English physicist David Bohm tells us: "Of course, there is a real need for thought and language momentarily to focus attention on one thing or another, as the occasion demands. But when each such thing is regarded as separately existent and essentially independent of the broader context of the whole in which it has its origin, its sustenance, and its ultimate dissolution, then one is no longer merely focusing attention, but, rather, one is engaged in breaking the field of awareness into disjoint parts, whose deep unity can no longer be perceived."

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I have found that music is a profound path to going behind that kind of processing, because it is essentially and fundamentally nonverbal, empty of the utilitarian meanings and purposes for which our frog's eye is always scanning.

Many people play instruments, sometimes beautifully and with great skill, under the illusion that they are playing "notes." Here are two completely different words made of the same four letters: *n-o-t-e* and *t-o-n-e*. A *tone* is the actual sound that you make on an instrument, the actual sound that we hear — the sound of the refrigerator or the cough we talked about earlier. A *note* is a notation. It's a little symbol

that we might call "B-flat." It is specific to Western culture, does not necessarily have any meaning in another culture, and doesn't have any meaning in terms of sound waves; it is a way of classifying a tone and communicating it to other people. If you play an instrument like the violin, or the double bass, or the slide trombone, or your vocal cords, which are analog instruments that can be varied continuously, you discover that "B-flat" actually represents an infinite range of tones. It's easy to see this on a big instrument like the double bass because the strings are so long. You put your finger down on the string here for a B-flat and there for a B. The distance between B-flat and B is a couple of inches. What's going on in those inches? Is it no-man's-land? No. There is a continuous variation of finger positions and tones; they're all real sounds whether or not they have names in our particular symbol system. The cracks between two adjacent piano keys hide fine gradations of tone, which a tempered instrument like the piano cannot play. The symbol system cannot contain the musical reality.

When a frog jumps into a pond, the surface radiates waves and ripples. The plop makes neither a B nor a B-flat, though we the observers may classify the sound that way after the fact; we transform sound into Bs and B-flats just as the frog's eye and nervous system transform patterns of light into flies and not-flies.

Music to some extent is described by a symbol system, but the real music, the actual sound that we hear, cannot be described. It can only be experienced. A riff on the piano or saxophone is utterly meaningless, hence utterly real. *Plop!* Down we drop, to that deep pool of anoetic sentience, before news of the fly enters the frog's eye and brain, before the first distinction separating the first light from the first

darkness — our act of creative engagement dips us into that realm of unclassified direct experience. Attempts to talk about this are necessarily clumsy and inadequate. This direct experience is attainable to some extent through music and other artistic modalities. It is attainable through dreams and myth, which undercut the limitations of consciousness and go to a deeper level. You may ask if it is ever possible to listen to music without some type of thinking or classification. On hearing a piece of music we instantly think of categories: classical or country, Indian raga or Japanese gagaku. A highly trained musician may have trouble listening to any piece of music without analyzing the rhythms and harmonies. But while music rests partly in a cognitive and cultural space, it is also pure sound, indescribable and indefinable. An arm of the music dips us into the anoetic or spiritual space of *emptiness*. That's where the known is commingled with the unknown.

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We are constantly being taught by small children about how continually surprising, malleable, and funny our universe is, how easily we can see things from a new angle. Here is a verse from the great Taoist Chuang Tzu that I would like to add to the images we've been contemplating. He has Lao Tzu say to an apprentice:

> *Can you become a little child?*
> *The child will cry all day, without its throat becoming hoarse; — so perfect is the harmony of its physical constitution.*
> *It will keep its fingers closed all the day without relaxing their grasp; — such is the concentration of its powers.*

It will keep its eyes fixed all day, without their moving;
— so is it unaffected by what is external to it.
It walks it knows not where; it rests where it is placed, it
knows not why; it is calmly indifferent to things,
and follows their current.

Lao Tzu's disciple asks, "Is this perfection?" Babies are inspiring, they point us to a profound kind of bliss, but should we just laugh and cry, indiscriminately sticking anything and everything into our mouths, and forget everything we have learned through our schooling and our experience as grown-ups? In Zen art there are many pictures of frogs, partly because the sitting frog looks like a person sitting in zazen posture. The Sengai frog painting we examined earlier has a double meaning: yes, the frog jumps in and makes his *Plop!* but Sengai added an inscription to his painting stating that if all there was to spiritual attainment were sitting contentedly and naturally, then frogs would themselves be enlightened buddhas. My baby sons needed an adult to help them discriminate between swallowing food and swallowing thumbtacks. Is this perfection?

Lao Tzu replies, "No. This is what we call breaking the ice." It is only the beginning. We cannot avoid growing up and developing our minds, and it is unquestionably good to discriminate between nourishment and its opposite. Still, let us try to recover, to some extent, the vast consciousness of the infant, who sees everything for the first time. This baby-consciousness melts the ice on the path to real mastery, so that we are able, finally, to be grown-ups, know what we know, use language, use experience, but do so in an open, provisional, easygoing fashion that allows us to see what is really in front of us.

William Blake taught that we find enlightenment in the "minute particulars" of creation, like a child closely studying the worms and bugs and frogs, freshly seeing the details that are there, unclouded by our programming, our "mind-forged manacles." Keys to awareness are ever-present, in the simplest things. The great ninth-century Zen master Chao-chou asked his teacher, "What is the Way?" Nan-chuan replied, "Your ordinary mind is the Way." That is why I have devoted so much time to talking about refrigerator noise and a cough.

The cough that I found so instructive when we did our little meditation at the beginning of these pages could, in another context, have been just an annoyance. But instead it was something exquisite, like the cessation of the refrigerator noise. *Plop!*

The composer John Cage was famous for his view that all the sounds around us can be music, and for inspiring many other artists to expand the possibilities of what and how they might create. Cage lived in New York City, and to him the engine sounds, the honking and the screaming and everything else, were music. He believed we live in a continuous texture of noise-as-music. One afternoon I was visiting John, and as an ambulance screamed past, he said to me, "When I was younger, I used to be interested in sounds like traffic noise and sirens. But now that I'm old I'm interested in more subtle sounds like the refrigerator turning on and off." As he said that, I inwardly scoffed, "Well, that's very nice, John, but I still get more pleasure listening to Sonny Rollins play 'Autumn Nocturne' than listening to the rumble of the washing machine." At best I found his words a charming

statement, made by a man who understood how to be at peace with the universe. But I was wrong; it was more than a charming statement. I never understood what John was saying until that night in the hotel room ten years later, when the refrigerator turned off and the silence was delicious.

Buddhists speak of the Third Noble Truth, the cessation of suffering. Suffering, great and small, is an inherent part of life, but it can lift, the moment we wake up through clarifying mind and seeing what is before us: a complex world of interdependent, coevolving beings that cannot be contained by names and concepts, cannot be pinned down as flies or not-flies, profit or not-profit. *Buddha* means "one who woke up." The cessation of the refrigerator noise was the tiny cessation of a tiny suffering. Yet through these little teachings of everyday life we wake up and know that such cessation is possible. *Pop!* goes the refrigerator, *plop!* goes the frog, and we wake up.

That cessation was a musical sound in itself, the sound of silence, with its own beauty, like the cough that resonated through our meditation earlier. When we quiet ourselves and tune up our senses, every sound, or the cessation thereof, is crisp and clear.

Bashō's frog may or may not have found flies, but with an exquisite startling little noise he *Plop*ped into that pond, breaking through the reflective surface of mind and nature. Bashō woke up, and we with him.

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Contents

III. ART AND POWER