

EXPERIENCING OUR ALIVENESS: THE SENSES

Background and Context

We, of the industrial growth society have lost touch with the sensuous world. Most of our time is spent in a fabricated social construct where we are oblivious to the rhythms of nature. Science has led us to think that instruments and gauges read by specialists are the only valid method for understanding our surroundings. We have been told, in the objectivist spirit, that the senses are not to be trusted (Abram, 1996). Therefore, we have put them on the shelf, and as a society, we have gone to sleep. Tom Brown (1977), a tracker and naturalist sees it this way:

Since we are no longer hunter-gatherers, it is not as important for us to be so aware and alert to nature. Our society does not place much premium on nature awareness because modern conveniences have taken away its survival value. But we pay an unseen price for our comforts. Our senses, like unused muscles, either weaken and atrophy, or never develop to their full potential.

The only way we can truly connect with the natural world is through our senses. What follows are some explorations that are designed to increase one's receptivity to the sensuous world.

Setting the Scene: Making the World Blaze Up

Have students pace about the room shouting out the wrong name for everything that their eyes light on. Maybe there's time to shout out ten wrong names before I stop them. Then I ask whether other people look larger or smaller--almost everyone sees people as different sizes, mostly as smaller. Do the outlines look sharper or more blurred? Everyone agrees that the outlines are many times sharper. What about the colors? Everyone agrees there's far more color and that the colors are more intense. Often the size and shape of the room will seem to have changed, too. The students are amazed that such a strong transformation can be effected by such primitive means--and especially that the effects last so long....

From: Impro: Improvisation and the Theater, by Keith Johnstone, 1987, pg. 13.

Check In

What is something that you notice or sense, or enjoy sensing, that others around you do not or tend not to?

Warm-up: Seeing Each Other

Have the group partner up in twos. Instruct partners to face each other and observe the other person in silence for 15-20 seconds. Next, instruct them to turn from each other and then change something about their appearance. This could be an expression or an alteration in clothing/apparel, (i.e. take an earring off, button or unbutton a shirt slightly). When this is done have partners face each other again and find what is different. Do this several times.

This exercise encourages us really to look at another person. This is something that as a culture we don't often do, especially with people we don't know too well. Why are we doing

this? Because even if our world is originally constricted by the range of our senses, it is secondarily restricted by the use of those senses. We have eyes, but do we see? For however many weeks, we have been surrounded by our fellow classmates, but have we ever really seen them?

The Senses

If a person is especially adept to the world around them, one might say, "S/he has a sixth sense," for it is common knowledge that we have five senses. Yet, *what really are our human senses?* How many senses do you, as a human, have? Keep going. Keep going.

Now, consider these facts: Some snakes can sense heat, that is, they can "see" in the infrared wavelength range. Some birds and bees can see in ultraviolet. Sharks, rays, and some fish can sense electric fields. That is, if you jumped in the water with them and they were blind, deaf, and without the sense of smell, they could sense you just by the electric field of your heart. In essence, they can sense life. And, of course, bats and whales echolocate. What can you do? How many senses do you have?

Sight	Hearing	Touch	Smell
Taste	Heat	Hunger	Pain
Vibration	_____	_____	_____
_____	_____	_____	_____

Activity One: A Focus on Vision

Sight is the ability to perceive a range of the electromagnetic spectrum. That is, we see energy. Our eyes are composed of two different kinds of energy receptors: rods determine brightness and cones determine color. Thus, the "sight" that we normally consider to be a sense, is really a merging of two senses. And, the perception of color, alone, is normally dependent upon three different types of cones, each one having a peak sensitivity at a different wavelength. Their combination is similar to that of a computer's RGB (red, green, blue) or a printer's CMYK (cyan, magenta, yellow, black). Thus, most humans are trichromats—"Three-Colors". Those who are color blind may be dichromats—seeing in two colors—or, even, monochromats—seeing in one color. (Note: color blindness is expressed in a variety of ways).

The cones in your retina can each determine approximately 100 different gradations of color. In combination, this means you are capable of seeing 1 million different colors— $100 \times 100 \times 100 = 1,000,000$). Although those with the most commonly known forms of color blindness see an exponential factor less (10,000), there are some who see an exponential factor more. That is, due to genetic variations on the X chromosome – of which only women have two – a small percentage of women are tetrachromats, and a small percentage of these, are "strong" tetrachromats – meaning the genetic variation yields a perception of a wavelength far enough away from the other three to add "meaningful" data to their visual world. These women see 100 million colors— 100^4 .

For some time, ornithologists were puzzled as to why the males of one species of bird did not have a brighter plumage than their counterpart females—the scientists thought they should. Their puzzlement ended when they looked at the birds through ultraviolet detectors. Birds are

tetrachromats—though seeing a range of colors different from those a human tetrachromat sees—thus the color of their plumage WAS different, humans just couldn't see it with their own eyes. For a human tetrachromat, the world is similarly different.

Here's a glimpse into their world: When you look at a natural rainbow—white light divided into its spectrum—you can probably differentiate five or six colors. Most likely, they would be: red, orange, yellow, green, and blue. When a tetrachromat looks at a rainbow, she sees at least ten different colors.

Classroom Study: Look at the rainbow of white light scattered through a prism. How many colors do you see? What are they? What do your classmates see? If your best friend is colorblind, how is it that s/he sees the world? Question your assumption. We may all be in the same room, but we're living in different worlds. Your senses are at the bottom of it all.

Activity Two: Pheromone Perception

While it is true that a dog—which has 230 million olfactory receptor bulbs—has a stronger sense of smell than a human—who has but 10 million receptors—smell still plays an integral and perhaps secret role in the life of humans. And how the human smells a range of airborne chemicals may arrive in ways (that is, organs) that go beyond the 10 million receptors of common knowledge.

From the ancient Greek words, *pherein*—to carry—and *hormon*—to excite—we get the English word, *pheromone*. Perhaps you have heard of it? Most basically, a pheromone is an airborne chemical messenger that operates between individuals of the same or similar species. They are not scents in the common parlance, but, for the purpose of visualization, you may imagine that you "smell" them. Did you consider these examples when you scavenged your brain for the vast array of human sense?

Evidence for the Action of Pheromones in Humans

The Menstrual Cycle: Females sharing a living space will synchronize their menstrual cycle—known as “The McClintock Effect”—and females with an aberrant cycle (of length much longer or shorter than the standard 29.5 ± 3 days) will regularize that cycle in the presence of an extract of male underarm secretions. That is, airborne chemicals—pheromones—sent and received among a group of females determines the menstrual cycle of that group. The latter example is the result of a scientific study; it takes little imagination to gather how this operates in the real world. In fact, the study began with the observation—“Women who have regular sex have more regular periods”—and the natural question—Why? The researchers pursued this question, “in light of the nonhuman literature suggesting that a chemical signal from males could be involved.”

The Scent of Emotions: Nonhuman animals communicate their emotional states through a kind of body odor; the same may be true of humans. In one study, scientists placed pads under the arms of 25 men and 25 women on two separate occasions. In the first occasion, the participants watched clips from a "happy" movie or comedy; in the second, they watched clips from a "frightening" movie or horror film. These pads were bottled for a week, then given to roughly 80 new participants (half men, half women):

When asked to select which bottles contained "the odor of people when they are happy," women chose the correct bottles for both tasks significantly more often than chance. Men

chose the bottle which contained the body odors collected when women (but not men) viewed the happy movie more often than would be expected by chance. When asked to select which bottles contained "the odor of people when they are afraid," women and men both chose the bottle that contained the body odors collected when men (but not women) viewed the frightening movie more often than would be expected by chance. The finding suggests that there is information in human body odors indicative of emotional state.

It is a common saying that, "an animal can smell fear." You are animal, too; perhaps, you can also. Yet, why is it that men and women differ in this ability? Is there an evolutionary reason? Is scent perception in the realm of emotions tied to a woman's menstrual cycle as it is in the realm of attractiveness, as the next study will show?

Beauty is in the Nose of the Beholder? Consider this interesting experiment: Both male and female subjects wore a T-shirt for three consecutive nights under a controlled condition. Members of the opposite sex then judged the "sexiness" of the odor of the T-shirt while others (also of a sex opposite to those they judged) judged the attractiveness of the wearer (based on a portrait). There was a positive correlation between sexiness of odor and attractiveness when it came to men judging women—that is, if she looked sexy, she smelled sexy. When it came to women judging men, no dice ... unless the women were in the ovulatory phase of their menstrual cycle. That is, women in heat could smell male "sexiness."

Classroom Study: Break into groups of three. As a group, come up with an experiment that will test this hypothesis: The human body sends and receives chemical messages regarding emotion. If you have time, also devise a way to test a second hypothesis: These chemical messages do not merely carry information to the receiver regarding emotion, but can (subliminally) influence the emotional state of that receiver.

S. Carrubba, C. Frlot II, A. L. Chesson, Jr & A. A. Marino, "Evidence Of A Nonlinear Human Magnetic Sense," *Neuroscience* 144, 2007, 356–367.
 K.J. Lohmann, S.D. Cain, S.A. Dodge, C.M. F. Lohmann, "Regional Magnetic Fields as Navigational Markers for Sea Turtles," *Science* 294, 12 October 2001, 364–366.
 F. Thoss, B. Bartsch, "The human visual threshold depends on direction and strength of a weak magnetic field," *J Comp Physiol A*, 2003, 189: 777–779.
 R.R. Baker, J.G. Mather & J.H. Kennaugh, "Magnetic bones in human sinuses" *Nature* 301, 06 January 1983, 78 - 80.
 M.K. McClintock, *Menstrual synchrony and suppression*, *Nature* 229, 2007, 244–245.
 D. Chen & J. Haviland-Jones, "Human olfactory communication of emotion," *Percept Mot Skills* 91(3 Pt 1), Dec 2000, 771–81.
 A. Rikowski and K. Grammer, "Human body odour, symmetry and attractiveness," *Proc Biol Sci*. 226(1422), 1999 May 7, 869–874.
 J.V. Kohl, M. Atzmueller, B. Fink & K. Grammer, "Human Pheromones: Integrating Neuroendocrinology and Ethology," *Neuroendocrinology Letters* 22, 2001, 309–321.

Activity Three: Bringing all the Senses into Play

Eating provides an unparalleled way to bring multiple senses into play. Thich Nhat Hanh describes the practice of mindful eating:

Mindful eating is very pleasant. We sit beautifully. We are aware of the people that are sitting around us. We are aware of the food on our plates. This is a deep practice. Each morsel of food is an ambassador from the cosmos. When we pick up a piece of a vegetable, we look at it for half a second. We look mindfully to really recognize the piece of food, the piece of carrot or string bean. We should know that this is a piece of carrot or a string bean. We identify it with our mindfulness: "I know this is a piece of carrot. This is a piece of string bean." It only takes a fraction of a second.

When we are mindful, we recognize what we are picking up. When we put it into our mouth, we know what we are putting into our mouth. When we chew it, we know what we are chewing. It's very simple.

Some of us, while looking at a piece of carrot, can see the whole cosmos in it, can see the sunshine in it, can see the earth in it. It has come from the whole cosmos for our nourishment.

*You may like to smile to it before you put it in your mouth. **When you chew it, you are aware that you are chewing a piece of carrot. Don't put anything else into your mouth, like your projects, your worries, your fear, just put the carrot in.***

And when you chew, chew only the carrot, not your projects or your ideas. You are capable of living in the present moment, in the here and the now. It is simple, but you need some training to just enjoy the piece of carrot. This is a miracle. ...

There are some people who eat an orange but don't really eat it. They eat their sorrow, fear, anger, past, and future. They are not really present, with body and mind united.

-The Path of Emancipation: Talks from a 21-Day Mindfulness Retreat, by Thich Nhat Hanh

Instructions:

1. Hold a raisin before you.
2. Be with it; see it—where it has been, who has touched and known it.
3. Place this raisin in your mouth, yet do not eat it.
4. Taste *this* raisin.
5. After a time, chew this raisin ... and continue chewing.
6. When there is nothing more to chew, continue to taste the raisin.
7. When it is time, swallow.

SUPPLEMENTAL ACTIVITIES

Supplemental Activity One: Scent Visualization

SITTING IN CHAIR: Imagine you are sitting in a chair in a room. Try to visualize the scent coming off your body. Think about what that scent is. It is particles of you—who you are. It is molecules of your very essence. Sitting in a room, your scent is coming off you continually.

SCENT AS COLORED: Imagine your scent is colored. Pick a color that appeals to you and seems to represent your scent. I'll use purple here. Scent seeps from your body. Soon the room in which you sit is filled with the color of your scent: a purple glow clings to your chair. Scent glows like an aura around you. It drifts into the far corners of the room, seeps under the door, and glides in wisps and little glowing particles through connected rooms and hallways.

PURPLE SCENT OUT TO NATURE-->PATH: Now take that same model and apply it in nature. Visualize yourself walking down a path in the forest and then standing still in a woodland glade. It is an unusually warm sunny afternoon in early fall, a season rich with new smells. The glade is carpeted with long grass and scattered white pines. Stand with your arms at your side.

RELAX: Relax. Breathe in the fullness of the coming autumn, taking deep breaths, in and out, drawing the warm air in through your nose, into your lungs and diaphragm, then slowly

expelling it through your nose. Keep breathing, slowly and deeply. Close your eyes and feel the warmth of the sun on your skin.

PICK OUT THE SMELLS/DIFFERENT COLOR FOR EACH CRITTER: Pick out smells in the glade: the warm grass, the rich warm earth. Notice different types of plant fragrances: the grass-like smell of ferns, the calming odor of conifers, the fruity smell of ripe wild grapes. Visualize your own purple scent wafting from your body into the glade. It curls into the forest, traveling like pollen on streams of air. In the forest, hidden from you, are animals—foxes, rabbits, woodchucks, deer, bobcat, coyotes, field mice. Colored scent, a different color for each species, is oozing from all of them, swirling through the air in streams.

LOOK BACK DOWN TRAIL: Look back down the path you took to enter the glade. You can see the color of your scent trail. There are purple blotches everywhere you stepped. Visualize your scent clinging to the grasses and branches you may have rubbed against. The longer you stay in one spot, the deeper purple that area appears as it takes on your color.

WHOLE FOREST IS KALEIDOSCOPE OF COLOR: The forest is a kaleidoscope of color, filled with different scents and rich with information about all who have passed here. You can see where a deer walked and lingered by the grapevines. Vole trails are everywhere—ribbons of color cutting and winding through the wet parts of the glade. You can see where a fox has come to hunt the voles. By visualizing scents, we can gain an understanding of what some animals can “see” with their noses. In the same way that we see, many animals smell. Their sense of smell is that clear, that defined.

MESSAGES OF SCENT FOR ANIMALS: Not only do animals have scent information available to them, they are also constantly and purposefully giving and receiving information through the use of their olfactory organs. Using scent, they shout to the far reaches of the forest: I am! My place! Where are you? I’m over here. Its mating time. Keep out—private! And much, much more. Animals send these signals by depositing scent through glands located in their hooves, paws, etc.

-Inspired by Paul Rezendes

Supplemental Activity Two: The Mirror Walk

This is done outside. The procedure is simple: Students form pairs. One student serves as guide and leads the other, who is blindfolded, by the arm or hand, on an excursion, offering a medley of sensory experiences—e.g., smelling crushed pine needle, tasting a wintergreen leaf, touching tree bark, sucking on a twig of sassafras, hearing the sound of leaves being crumpled, running a hand through running water, feeling the gritty texture of soil—anything that stimulates the senses, tickles curiosity or brings delight. The entire walk is conducted in silence, except at certain moments, when the guide takes the head of the person she is leading and points it in a certain direction—e.g., directly facing a large boulder or a spiderweb—and then says: “Open your eyes and look at yourself in the mirror.” Then the one being guided open his eyes and takes in the sight, experiencing, in some measure, that he, literally, is “looking at himself in the mirror.” After about ten minutes roles are switched.

-Inspired by Joanna Macy

OUT-OF-CLASS FIELD STUDY: SENSES

Option 1: Be Sensible

These days I invite my upper level field ecology students to distinguish between measurement and sensory-based observation as alternative ways of knowing. I do this by taking them to a small forest preserve near the Penn State campus. Once there, I present them with a variety of simple measurement devices (e.g., scales, rulers, stop watches, calipers, etc.). Next, I give them each a ten-foot length of twine and send them off into the forest with the simple instruction to wander about until they find a spot which in some way “calls to” or attracts them and then to encircle that spot with their twine. Once they have their spot encircled, their task is spend ½ hour measuring and counting and classifying everything in the circle (e.g., the number and names and sizes of plants, ants, beetles; the types of leaves and fungi and seeds on the forest floor, the abundance of earthworm castings, and on and on) and to record all their “data.”

During the second ½ hour, I instruct them to put away all their measuring devices and classification schemes and, instead to simply explore the life in their circle using their senses—sight, smell, hearing, touch, and taste. This requires that they get down on their bellies—I invite them to think of it as “belly biology”—an opportunity to discover and become intimate with a few square feet of the living Earth. Then, we gather to discuss what they learned and experienced using these two very different approaches. Among other things I ask: Which approach led to more discoveries? Which led to more questions? Which was more demanding? Which was more engaging and fun?

Instructions: The task of this field study is the task of belly biology. Be sensible. How you do this is up to you, though *the point is to focus on one or several of your human senses*. What do you want to “study?” What are the powerful smells, the powerful sights, the things that you quiver to touch? Go out and sense the world.

Perhaps you have a thing for trees? Go out and smell them, eyes closed ... tree to tree, day to day, living tree, dead tree. What do they smell like? How about the sounds of a stream as it flows through the course of hours? Have you ever tasted a glass of rain? Chewed on pine needles?

Explore your senses by exploring the world. Explore the world by exploring your senses. Then take some time to meditate on the experience.

Compose a response piece to this experience, including comments from beginning to end: the ideas for exploration that crossed your mind, why you chose to do what you did, what it was like doing it, what you learned, and what *questions* all this has raised for you.

Option 2: Looking for Life

From: Exploring Natural Mystery, by Jon Young, OwlLink Media, 2001, pg. 34.

Instructions:

Day 1: Use a trigger to awaken to your senses. Notice one thing that happens to you a lot—e.g., 10-20 times a day—and use it as a trigger to bring your attention to the world around you. Then during the day, when you are “triggered” ask: **What is attracting my attention right now?** At the end of the day, **draw a little map** including your meanderings during the day and all the things that attracted your attention. Don’t worry about scale; instead, enjoy mapping the things and natural and unnatural that struck you as worthy of including in your map.

Day 2: **Today, use your trigger today to remind you to look for life.** Any kind of life: birds, trees, mammals, plants, insects, etc. No matter where you go today, really concentrate on finding something alive. Nature is everywhere. Call today's game, "Looking for Life." At the end of the day take ten minutes and turn to the map from yesterday and in a different color ink draw in symbols, words, or sketches that indicate the "life" you noticed today.

Compose a response piece to this experience.

To Look at Any Thing

-John Moffitt

To look at any thing,
If you would know that thing,
You must look at it long:
To look at this green and say
"I have seen spring in these
Woods," will not do—you
must

Be the thing you see:
You must be the dark snakes of
Stems and ferny plumes of
leaves,
You must enter in
To the small silences between
The leaves,
You must take your time
And touch the very peace
They issue from