

THE WONDER OF US SERIES
Making Sense of Our Senses-- #1 SMELL
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OPENING WORDS:

The Wonders of our World. In a time when we understood less, we named a god Apollo and assigned him the responsibility of driving his sun-bright chariot across the sky each day. Today, natural wonders still inspire some to see those wonders as God Tracks. We share their awe and can not prove their celestial connection wrong. And that's OK.

The Wonders of our World – the breadth and depth of them are too much to grasp, to assimilate from all the specialists who devote lifetimes to understanding but small corners of these processes. We can, and some have, built a theology of sorts on this ever evolving, ever changing universe of which our earthly existence is but a small part.

But, possibly, most fun of all is to reduce that universe, universe within universes, until we bring our scope of thoughts down to the universe that is us, you and me. Just look at us, you and me.

What works, what works but not as well as it used to, what doesn't work. Most of us, if we were Fords, would have been traded in long ago. Aren't we amazing?!? We may have some bubble gum and bailing wire among us. But we have no source of new Genuine Ford parts. What you see, in my automotive lingo would be OEM, Original Equipment Manufacture, we get only one set from M.O.M. And the way that one set of parts works is almost magic. Whether creationist, process theologian, or what-have-you, "us" can inspire us to new levels of awe. Today, let's think some on the Wonders of Us.

MAIN PRESENTATION:

Theories abound on what has motivated religion. Among them a need for security – the comfort of a supreme caretaker promising an afterlife. Another is a social need for individual discipline and/or control of the masses – the “fire and brimstone OR streets of gold – You choose” approach – said differently, do the crime and do your time – eternally. Some see religion as derived from a need for group identity – we believe this, they believe that, so let's attack and steal their women (or men, as the case may be). And it may indeed have come from a fun way to tease the brain into mystical ecstasy as my Charlie talked about awhile back – the discoveries of brain researcher, Andrew Newburg, in “Why God Won't Go Away.” There are other theories as to what motivated religion including the chicken and the egg issue that, of course, God initiated religion among his people, chosen or otherwise.

But my favorite is a humanoid sitting on his favorite rock eating a fig and noticing one of his fig pits in last year's pile is sprouting into a baby fig tree – he says Hrrumph! (or the local equivalent of the time) and decides then and there some magical force is afoot in the fields. This isn't altogether different from last winter when Charlie asks me to fix a broken spark igniter for the gas stove in our van. I cut it apart, found more sealed pieces within those sealed pieces. Sat on a rock. Puzzled over the mechanism and, like the fig man, decide there must be some magical force afoot in the fields – in this case, resulting in fire.

Yes, I can relate to the fig man, and being driven to the gods to seek explanation where my senses and knowledge have failed me. The less we know the less we understand, the easier it is to comprehend Apollo driving his chariot of the sun across the sky each day or the tiny guy inside Charlie's spark igniter having just plumb run out of matches. God's that can be considered a figment of the figman's imagination.

Religions typically explain where we come from and who designed all this nature stuff, although few adequately cover her made in China igniter. Most of us, at least most of us UU's, have an appreciation of that which inspires awe in us and a curiosity that drives us to comprehend more and more of our truly awesome natural world. A world we perceive through our senses. The basic five – touch, sight taste, hearing and smell – the five input ports to our mainframe brain. And I find the wonder of how those senses feed us our perception of the world a true wonder. And I would like to invite you to share the awe at the Wonder that is Us.

Awhile back, maybe a couple years, maybe three years ago, we talked – actually you listened politely and I talked – about Swan's on Gary's Creek on the Eastern Shore. And then drifted into the magic of how our hands touch, feel, and “see” what's around us. Swan's and hands, you say? You'll have to get a copy of the talk from Shirley to know how they tie together – or wait until the last of this series of five “Wonders of Us” talks that will once again focus on our magic hands and touch. But as we got into the amazing capabilities of touch – able to detect a bump 1/1000th of the diameter of a human hair, to recognize shape, texture, and temperature, breeze, and position with these tricky little tools at the end of our arms, we couldn't help but gain an awesome respect for what they do and how they do it. And the eons that went into engineering these guys. Wow! Hey, God. Give your Chief Engineer of hands a raise, eh? (I'm hedging my bets because I don't think we've quite got all the answers yet on how these guys do all their amazing stuff.) But how our hands work, the intricacies and magic of touch, ranks high on the Wonders of Us.

With your indulgence this morning, I would like to explore another of our senses. After all our senses define our edge of consciousness. We take steps to stimulate our senses. In the case of today's feature, smell, we use exotic perfumes. True cultures differ, sometimes differ greatly. Masai women, who use excrement as a hair dressing, would find American women's wishing to scent their breath with peppermint rather bizarre. One surprising thing about smell is the vast range of response one finds along the curve we call “normal.” However, smell in particular ties us historically to ages past. The fireside smell of burning wood we experience today is likely the fireside smell experienced by humanoids of hundreds, thousands, and, likely, millions of years ago.

More poetically, “Smell is a potent wizard that transports us across thousand of miles and all the years we have lived. The odors of fruits waft me to my southern home, to my childhood frolics in the peach orchard. Other odors, instantaneous and fleeting, cause my heart to dilate joyously or contract with remembered grief. Even as I think of smells, my nose is full of scents that start awake sweet memories of summers gone and ripening fields far away.” – Helen Keller.

Hit a tripwire of smell and memories explode all at once. Eucalyptus triggers thoughts of a loving Mom rubbing Vicks Vapo-rub on our congested chest. We can detect over 10,000 different odors, so many in fact that our memories would fail us if we

tried to jot down everything they represent. Though most people will swear they couldn't possibly do such a thing, blind studies show that both children and adults are able to determine whether an article of clothing was worn by a male or female just by smelling. There's an awesome power here few recognize or understand.

Our sense of smell can be extraordinarily precise, yet it's almost impossible to describe how something smells to someone who hasn't smelled it. The smell of the glossy pages of a new book, or that of cooking onions, or dogwood, or lilac, or a dead mouse. Smell is the mute sense, the one without words. Lacking a vocabulary, we are left tongue-tied, groping for words in a sea of sensations.

The physiological links between smell in particular and language centers of the brain are terribly weak. Not so the links between smell and the memory centers. When we see something, we can describe it in a flow of expressions of detail creating remarkably accurate word images. We can crawl along a surface like an ant, mapping each feature, feeling each texture, and describing it with visual adjectives like red, blue, bright, big, rough, polished, and so on. But who can map the features of a smell? When we use words such as smoky, sulphurous, floral, fruity, sweet, we are describing smells in terms of other things (smoke, sulfur, flowers, fruit, sugar). We haven't names for smells. Instead, we tend to describe them in terms of how they make us feel – disgusting, intoxicating, pleasurable, delightful, hypnotic, revolting. Drive through a blossoming orange grove and tell someone what the smell smells like. It doesn't smell like oranges. Our property line hedge of Russian Olive bushes, hundreds of feet long, puts out millions of tiny white blossoms each fall. The reach of the scent can be over a hundred yards in each direction. I can tell by the wonderful smile on Charlie's face if she has been out saturation smelling in range of the Russian Olives. But neither of us could describe that smell to you to have you share it vicariously. "Sweet" is such a feeble, non-descriptive word that would barely get you started in the right direction. We see only when there is light enough, taste only when we put things in our mouth, hear only when a sound is loud enough, and touch only when we make contact. But we smell always and with every breath. You can cover your eyes, your ears, your mouth and refrain from touching. Cover your nose to try to stop smelling and you will die.

Breaths come in pairs, inhale and exhale, except twice in our lives – at birth when we inhale and at death when we exhale for the last time. Each day we breath about 23,000 times and move almost 500 cubic feet of air according to "A Natural History of the Senses" by Diane Ackerman, supplier of some of the words in this talk. We live in a constant wash of odors.

Odor molecules float back into the nasal cavity behind the bridge of the nose and are absorbed by mucosa containing receptor cells bearing microscopic hairs called cilia. Five million of these cells fire impulses to the brain's smell center. Such cells are unique to the nose. If you destroy a neuron in the brain, it's finished forever – won't regrow. Same with a neuron in the eye or ears. Damage is irreparable. But neurons in the nose are replaced about every 30 days, and, unlike any other neurons in the body, they stick right out and wave in the air currents like anemones on a coral reef.

The olfactory regions are yellow. Heredity determines the shade of yellow. The deeper the shade, the keener and more acute the sense of smell. Albinos have a poor sense of smell. Animals, which can smell with grandeur have dark yellow olfactory regions. Ours are light yellow. The fox's is reddish brown. The cat's an intense mustard

brown. When the smell center of the brain detects something, it signals the cerebral cortex and sends a message straight into the limbic system, a mysterious, ancient, and intensely emotional section of our brain in which we feel, lust, and invent. Unlike the other senses, smell needs no interpreter. The effect is immediate and undiluted by language, thought, or translation.

We need only eight molecules of a substance to trigger an impulse in a nerve ending, but forty nerve endings must be aroused before we consciously smell something, another indication of the gap between unconscious input to our brains and conscious recognition of that input.

A smell can be overwhelmingly nostalgic because it triggers powerful images and emotions before we have time to edit them. What you see and hear may quickly fade into the compost heap of short-term memory, but, as Edwin Morris points out in "Fragrance", "There is no short-term memory with odors." It's all long term. Kipling was right: "Smells are surer than sights and sounds to make your heart-strings crack." When we give perfume to someone, we give them liquid memory. Why? Maybe we should ask the Goddess Aphrodite to help us with these mysteries.

One theory of how these olfactory neurons do their work is keyed to the geometric shape of the molecules. Key is an operative word here as in a lock and key relationship. When a molecule of the right shape comes along, it fits into its matching neuron niche and then triggers a nerve impulse to the brain. Musky odors have disc-shaped molecules and fit into an elliptical, bowl-like site on the neuron. Pepperminty odors have wedge shaped molecules that fit into a V-shaped site. Camphorous molecules are spherical, and so on. Some odors fit multiple sites at once with a bouquet or blend effect. Some smells are fabulous when they're diluted, truly repulsive when they're not. Civet is like that. A honey-like gland secretion from a nocturnal, carnivorous Ethiopian cat is a fecal odor that would turn one's stomach but, in small doses, it converts perfume into an aphrodisiac. There's that Goddess Aphrodite again explaining why we react as we do. Because animal musk is so close to testosterone, we can smell it in portions as little as three hundred trillionths of an ounce. Musk is a red, jelly-like secretion from the gut of an East Asian deer. Not so dreary eyed now, are we? Musk has fortunately been synthesized by chemists now in all its twenty variations much to the happiness of the stressed deer herd. Modern chemistry also has engineered substitutes for ambergris from sperm whales, castoreum found in the abdominal sacs of American and Russian beavers, civet (no need to explain from where on a civet), and, as mentioned, musk, the big four of the fragrance industry that were previously available only through torment or slaughter of those creatures.

In our earlier, fishier version of humankind, we used smell to find a mate, warn us that we were prey, and as an invaluable tester, allowing us to prevent something poisonous from entering our mouths and the delicate closed system of our bodies. Smell was the first of our senses and it was so successful that, in time, the small lump of olfactory tissue atop the nerve cord grew into a brain.

Think of those 10's of thousands of various smells we humans can discern with our 5 million or so olfactory cells. Sure seems like a lot. However, a sheep dog has, instead of our 5 million, a whopping 220 million. What does it smell? What are we

missing? Just imagine the stereophonic, surround-sound world of smells we pass through like sleepwalkers without headphones. One wonders about a dog's self-awe and Fido theology.

There are many theories as to why our noses are so poorly designed. Cramped skull space, needed for good stereo vision and bigish brains. We just aren't evolved right to be grand smellers. The animals that walk on all fours with their heads hanging close to the ground where the damp, heavy fragrant molecules of odor lie seem to have the keenest sense of smell. Bloodhounds can identify an individual person's smell in a room he left hours before and then track the few molecules that seep through the soles of his shoes and land on the ground when he walks over uneven terrain, even on stormy nights. Possibly you've noticed your dog or others out for a walk a little after sunrise. She sniffs the curb, rock, and tree and soon senses what other dog has been there, its age, sex, mood, health, and when it last passed by. For Fifi, or Baxter, or Anna, it's like reading the gossip column of the morning newspaper. She will add her scent to the quilt of scents on the tuft of grass, and the next dog that comes along will read, in aromatic hieroglyphics of the neighborhood: Fifi, 7 a.m., young female, on hormone therapy because of bladder ailment, well fed, cheerful, seeks a friend.

But we humans get much of our news differently than does Fifi. With our upright posture, nose further from the ground, vision and hearing became our primary survival tools as larger brains claimed olfactory space our smellers slipped a bit. From a higher still vision perch, most birds have a poor sense of smell with the notable exception of the carrion feeding vultures.

The awe of vision is readily apparent and is at the forefront of our consciousness. Vision is one of the foundations of the arguments for creationism for those so inclined to select that belief. It is so miraculous, it just could not have evolved unguided – or something like that. Inspiring awe in the sense of touch requires a bit deeper thought, a more intense attention to what one can truly sense, know, and “see” with your hands and other parts of your body. The awe tied to smell is the most difficult to inspire because it short cuts conscious thought leaving us with capabilities we hardly recognize. After all, many of us don't even notice we smell except in the extremes. Like vision, hearing, and touch, smell is a two-way street. I suppose taste is too, although devouring each other is frowned upon, in recent years, anyway.

I doubt that Salmon are any more conscious of smell than are we as they use it to navigate back to the stream of their birth. We are learning that Mothers recognized the odor of their newborn children, and vice versa. Some doctors are experimenting with giving children bursts of their mother's odor, along with the anesthetic, during operations. Babies can smell their mothers entering the room even if they can't see her. Mothers of school age children can pick out T-shirts worn by their own child. This is not true of fathers, who do not recognize the smell of their infant.

Many of you know of the McClintock Effect where women living together shortly find their monthly cycles become concurrent. Experiments where women were living apart but were exposed to the underarm sweat of others found this sweat swap among pairs brought their timing together. Another explanation might be Gaia or mother earth goddesses at work in the fraternity of women. Interestingly, women cloistered away from men while growing up enter puberty later.

We speak of taste, but we taste only four flavors: sweet, sour, salt, and bitter. That means everything else we call “flavor” is really “odor.” And many foods we think we can smell we can only taste. Sugar isn’t volatile, so we don’t smell it, even though we taste it intensely. If we have a mouthful of something delicious, when we want to savor and contemplate, we exhale; this drives the air in our mouths across our olfactory receptors so we can smell it better. And what signals us not to eat what may be harmful? Frequently, odor. From experience, little boys and grown men have had things snatched from their fingers or spoons with the statement “Don’t Eat That! Smells Bad!” Women know these things. We trust those senses—that’s why God or evolution put them there.

One of the major problems with space food is that the astronauts label it as bland. In the weightless environment, molecules cannot be volatile so few get into noses deeply enough to register their smell. Some chemists have gone so far as to claim wine is a tasteless liquid that is deeply fragrant.

As to fathers and the t-shirt test, I don’t mean to imply men don’t smellYou know we need two words for smell – one for input and another for output. I don’t mean to imply men don’t smell. They are best at telling whether that T-shirt was worn by a male or female. And we could go on in this light but that area has been adequately covered by perfume advertising and locker room jokes. It is sufficient to say that no bacchanalia (as in the god Bacchus), the official Roman orgy, was complete without an excess of roses. According to the 13th century Islamic mystic, Yunus Emre, the rose is a spiritual symbol and one is supposed to sigh, “Allah, Allah!” each time one smells it. Mohammed, a great devotee of perfume, once said that the excellence of the extract of violets above all other flowers was like his own excellence above all other men.

Violets contain ionone, which short-circuits our sense of smell. The flower continues to exude its fragrance, but we lose the ability to smell it. Wait a minute or two and its smell will blare again. No scent is more flirtatious yet defies description. Although both Napoleon and Josephine adored violets, in a famous letter from the field he told Josephine “not to bathe” during the two weeks before they met, so that he could enjoy all her natural aromas.

Smell motivates survival in other ways. Monell Chemical Senses Center on the campus of Drexell University reports mice can discriminate genetic differences among potential mates by smell alone. By raising mice that differ by a single gene, they discovered that all chose mates whose immune system would combine with theirs to produce the hardiest litters.

On men’s smell output side, women claim they often could recognize by smell any man they’ve known intimately so that it has become a romantic cliché. Ackerman has reports from women that when her lover is away, or her husband dies, an anguished woman goes to his closet and takes out a bathrobe or shirt, presses it to her face, and is overwhelmed by tenderness for him.

Few men report similar habits, but it’s not surprising that women should be more keenly attuned to smells. Females score higher than males in sensitivity to odors, regardless of age group.

In general, humans have a strong body odor, and the famous anthropologist, Louis Leakey, stated his belief that our ancestors may have had an even stronger odor, one that predatory animals found foul enough to avoid. The hairiness of Caucasians and Blacks make them very sweaty compared to Asians, but colognes simmer in their oil and warmth

like votive candles. Body odor comes from apocrine glands on the face and elsewhere which are small when we're born and develop substantially in our teens. In many far-flung tribes, the word for "kiss" means "smell"; a kiss is really a prolonged smelling of one's beloved, relative, or friend. Author Ackerman tells of placing a large Indonesian flying fox on her head to see if this bat would become entangled in her hair like the old wives' tale. It didn't. It began to cough gently with the mix of human and soapy odors. When returned to its cage, it cleaned itself like a cat for many minutes, clearly feeling soiled by human contact. We don't inherently share the bats reaction. For the most part, children are neutral in their attitudes toward smell. They have to be taught.

Aromatic paranoia pays well. Over the centuries since aromatics and spices came into fashion, we have been frightened into thinking that we're "offensive" and require lotions and potions to mask our natural odors.

I find many levels of awe related to our sense of smell. The precision with which this little molecular identifier functions within my nose. The communication system that shoots that data to my brain usually below my conscious level of having smelled anything. The reaction and protective system that again subconsciously influences how I deal with other people and my environment. Yes, we can smell mood, fear, and desire. And the panorama, the spectacle of odiferous information out there that we are unable to tap into- at least, yet. All of that is just awesome. And I can see why earlier humans ascribed some of those reactions to the influence of the gods and goddesses – or to some systems engineer on high who has yet to share his e-mail address – smell is indeed one of the Wonders of Us.