

ON THE SENSES

An overview by VestAndPage (Verena Stenke & Andrea Pagnes), 2017

The traditionally recognized definition of the human senses goes back to Aristotle, who in his major treatise *On the Soul* (350 B.C.E.) defined the human senses as five. This definition was taken as binding throughout the middle age, and even today children in the West learn about the ‘five human senses.’ But from the perspectives of science and cultural traditions, we can define many more senses: ‘The idea that human beings are equipped with five senses might seem obvious and beyond dispute, but it is in fact no less symbolic than other numerations. According to the latest scientific estimates there are seventeen senses (see Rivlin and Gravelle 1984).’

A broadly acceptable definition of a sense would be:

‘A sense is a system that consists of a group of sensory cell types that responds to a specific physical phenomenon, and that corresponds to a particular group of regions within the brain where the signals are received and interpreted.’¹

But still, because of a myriad of definitions of what exactly a distinct sense is, and where the borders between responses to related stimuli lie, there is no final agreement about the number of senses of human beings. The term ‘sense’ includes both physiological methods of perception, involving reception of stimuli by sensory cells, and incorporeal methods of perception, as well as so-called spiritual senses.

According to Cultural historian Constance Classen, ‘sensory perception is a cultural, as well as physical act.’ In her book *Worlds of sense*² she states from the perspective of the anthropology of the senses that ‘perception cannot be treated as a purely physical act but that the list, hierarchy and ordering of the senses are deeply related to time and culture.’

The Journal *Sensory Studies – The Senses and Society*, places the following consideration: ‘Sensation is fundamental to our experience of the world. Shaped by culture, gender and class, the senses mediate between mind and body, idea and object, self and environment. The senses are increasingly extended beyond the body through technology, and catered to by designers and marketers, yet persistently elude all efforts to capture and control them. Artists now experiment with the senses in bold new ways, disrupting conventional canons of aesthetics.’³

How we experience and define the senses is how we construct the world. It is impossible to look at human sensorial perception without looking into the culture and society that defines them and their mechanisms of processing. Looking at the senses from various global perspectives is inspiring and illuminating, allowing us to step outside of our used ways of perception and to train ourselves in shifting our sensorial and analytical behavior. To free ourselves from the prison of our pre-conditioned activities of body and mind, and to acquire a new way of perceiving, feeling, and thinking, we have to activate attention. As artists, this might help and sustain us to not fall into mere excessive exhibitionism, but to construct instead with our practice an intermediate reality, a vehicle between the individual and the indivisible force of a superior and concealed world. We can consider our artistic work also an emancipation of the totality of the human senses and the recognition of their meaning.

In the following we have collected concepts about the senses within three different mayor contexts. Though having taken great care in obtaining the most accurate information, this is merely a brief summary of a very in-depth subject. We encourage an independent pursuit of knowledge if this is a subject of interest.

SENSES IN THE CONTEXT OF SCIENCE / PHYSIOLOGY (p.2)	SENSES IN THE CONTEXT OF RELIGIONS / PHILOSOPHIES (p.6)	SENSES IN THE CONTEXT OF CULTURES / SOCIETIES (p.12)
<ul style="list-style-type: none"> • Special senses • Somatic senses • Other physiological senses • Senses not based on a specific sensory organ • Other physiological senses in animals or plants 	<ul style="list-style-type: none"> • Christianity • Islam • Sufism • Hinduism and Yoga • Buddhism • Confucianism • Judae-Arab • Kabbalah • Western philosophy 	<p style="text-align: center;">With examples from i.e. the Hausa, Javanese, Peruvian, Quechua, Shipibo-Conibo, Tsimshian, Inuit, Japanese, Tamil, Hopi, Massim, Batek Negrito, Mehinaku, Zinacanteco, Uduk, Aguaruna, and Western culture.</p> <ul style="list-style-type: none"> • Anthropology of the Senses / Sensory Anthropology (Constance Classen) • Sociology of the Senses (David Howes) <ul style="list-style-type: none"> • Linguistics of Perception

I. SENSES IN THE CONTEXT OF SCIENCE / PHYSIOLOGY

From a scientific point of view, it can be said that where there's a sensor, receptor or neuron in the body, there's also a physiological sense. Those physiological senses can be roughly divided into

- 1) Exteroceptive senses, which perceive the body in relation to the environment.
- 2) Interoceptive senses, which are stimulated by and perceive sensations in internal organs.

SPECIAL SENSES (with specialized organs devoted to them)

1. OPHTHALMOCEPTION - Sense of Sight / Vision

The capability of the eye/s to focus and detect images of visible light on photoreceptors in the retina of each eye that generates electrical nerve impulses for varying colors, hues, and brightness.

Triggered by photoreceptors in the eye's retina:

- a) Rods (perceiving brightness)
- b) Cones (perceiving color)

2. AUDIOCEPTION - Sense of Sound

The detection of vibrations propagating through a medium such as air, is a mechanical sense as these vibrations are mechanically conducted from the eardrum through a series of tiny bones to hair-like fibers in the inner ear.

Triggered by mechanoreceptors in the inner ear.

3. GUSTAOCEPTION - Sense of Taste

The capability to detect the taste (sweet, bitter, sour, salty and umami) of substances such as food, certain minerals, and poisons, etc.

Triggered by taste buds/gustatory calyculi on the upper surface of the tongue.

4. ALFACOCEPTION - Sense of Smell

The capability to detect odor molecules that possess a variety of features, and more or less strongly excite specific receptors. The combination of excitatory signals from different receptors makes up what we perceive as the molecule's smell.

Triggered by hundreds of olfactory receptors, each binding to a particular molecular feature. In the brain, olfaction is processed by the olfactory system. Olfactory receptor neurons in the nose differ from most other neurons in that they die and regenerate on a regular basis.

SOMATIC SENSES

5. TACTIOCEPTION - Sense of Touch

The ability to feel anything touched and tactile.

Triggered by

- a) Neural receptors, generally in the skin including hair follicles, but also in the tongue, throat, and mucosa.
- b) Pressure receptors
- c) Itch-specific neurons

6. THERMOCEPTION - Sense of Temperature

The ability to perceive temperature inside and outside of the body.

Triggered by transient receptor potential channels (TRP channels). Mammals have at least two types of thermoceptive sensors:

- a) those that detect heat (i.e., temperatures above body temperature)
- b) those that detect cold (i.e. temperatures below body temperature).

7. NOCICEPTION - Sense of Pain

The ability to sense certain harmful or potentially harmful stimuli, triggering a variety of physiological and behavioral responses and usually resulting in a subjective experience of pain.

Triggered by chemical, mechanical, or thermal stimulation of sensory nociceptors nerve cells.

OTHER PHYSIOLOGICAL SENSES

8. PROPRIOCEPTION - Sense of Body Awareness

The (kinesthetic) ability to perceive the relative position and movement of neighboring parts of the body, and the strength of effort/muscle tension being employed in movement.

Triggered by proprioceptors (muscle spindles) in skeletal striated muscles and tendons (Golgi tendon organ) and the fibrous capsules in joints, composed with information from sensory neurons located in the inner ear (motion and orientation) and in the stretch receptors located in the muscles and the joint-supporting ligaments (stance).

9. EQUILIBRIOCEPTION - Sense of Balance, Movement and Acceleration

The ability of the body to sense where it is located and how it moves in space, involving the perception of gravity. Equilibrioception is so important that some believe it was among the first senses to appear in the history of life.

In the vestibular system, equilibrioception is determined by the level of a fluid (endolymph) in the labyrinth, a complex set of tubing in the inner ear. As our movements consist of rotations and translations, the vestibular system comprises two components: the semicircular canal system, which indicates rotational movements; and the otoliths, which indicate linear translations.

10. CHEMOCEPTION - Sense of Blood-born Hormones and Drugs

The ability of the body to detect toxic or hazardous chemicals in the internal or external environment of the human body and transmitting that information to the central nervous system, in order to expel the biologically active toxins from the blood, and prevent further consumption of acutely toxic recreational intoxicants. Chemoception is important for the detection of food, habitat, conspecifics including mates, and predators.

Triggered by chemoreceptors, specialized sensory receptor cells which respond to a chemical substance (endogenous or induced) and generate a biological signal. This signal may be in form of an action potential if the chemoreceptor is a neuron, or in the form of a neurotransmitter that can activate a nearby nerve fiber if the chemoreceptor is a specialized sensory receptor cell, such as the taste receptor in a taste bud, or in an internal peripheral chemoreceptor such as the carotid body.

SENSES NOT BASED ON A SPECIFIC SENSORY ORGAN

(Subject to research, definition and discussion)

11. THIRST - Sense of Thirst

The ability to crave for fluids, resulting in the basic instinct to drink, is an essential mechanism involved in fluid balance. It arises from a lack of fluids or an increase in the concentration of certain osmolites, such as salt.

Receptors and other systems in the body detect a decreased volume or an increased osmolite concentration. They signal to the central nervous system, where central processing succeeds. Some sources distinguish 'extracellular thirst' from 'intracellular thirst,' where extracellular thirst is thirst generated by decreased volume and intracellular thirst is thirst generated by increased osmolite concentration. The craving itself is something generated from central processing in the brain, no matter how it is detected. The areas of the brain that contribute to the sense of thirst are mainly located in the midbrain and the hindbrain. Specifically, the hypothalamus appears to play a key role in the regulation of thirst. Finally, the signals are received in cortex areas of the forebrain where ultimately the conscious craving arises.

12. MOTIVATIONAL STATE - Sense of Hunger and Satiety

The state of perceiving the sensations of hunger (the physiological need to eat food) and satiety (the absence of hunger; the sensation of feeling full).

Short-term regulation of hunger and food intake involves neural signals from the GI tract, blood levels of nutrients, GI tract hormones, and psychological factors. The fluctuation of leptin and ghrelin hormone levels results in the reinitiates of the feeling of hunger and the motivation of an organism to consume food. The state achieved when the need for food has been satisfied is called satiety. The satiety center in animals is located in the ventromedial nucleus of the hypothalamus.

13. CHRONOCEPTION - Sense of Time

The ability to perceive and experience the passage of time.

Although the sense of time is not associated with a specific sensory system, the work of psychologists and neuroscientists indicates that human brains do have a system governing the perception of time, composed of a highly distributed system involving the cerebral cortex, cerebellum and basal ganglia. One particular component, the suprachiasmatic nucleus, is responsible for the circadian (or daily) rhythm, while other cell clusters appear to be capable of shorter-range (ultradian) timekeeping. One or more dopaminergic pathways in the central nervous system appear to have a strong modulatory influence on mental chronometry, particularly interval timing.

14. AGENCY/CONTROL - Sense of the subjective awareness of having chosen an action

The ability of the subjective awareness of initiating, executing, and controlling one's own volitional actions in the world. It is the pre-reflective awareness or implicit sense that it is I who is executing bodily movement/s or thinking thoughts. In non-pathological experience, it is tightly integrated with one's 'sense of ownership,' which is the pre-reflective awareness or implicit sense that one is the owner of an action, movement or thought. The process of self-recognition operates covertly and effortlessly, depending upon a set of mechanisms involving the processing of specific neural signals, from sensory as well as from central origin. The ability to recognize oneself as the agent of a behavior is the way the self builds as an entity independent from the external world.

Studies show that the posterior parietal cortex is a critical link within the simulation network for self-recognition. Primary sources have reported that activation of the right inferior parietal lobe/temporoparietal junction correlates with the subjective sense of ownership in action execution, and that posterior parietal lesions, especially on the right side, impair the ability of recognizing one's own body parts and self-attributing one's own movements.

15. MEMORY - Sense of Memory

The faculty of the mind by which information is encoded, stored, and retrieved. Memory is vital to experiences and related to limbic systems, it is the retention of information over time for the purpose of influencing future action.

a) Explicit / declarative memory

The conscious, intentional recollection of factual information, previous experiences and concepts.

- 1) Episodic memory, stores specific personal experiences
- 2) Semantic memory, stores factual information

b) Implicit / procedural memory

The acquired and unconsciously used memory, which affects thoughts and behaviors. It helps people performing certain tasks without conscious awareness of these previous experiences.

Often memory is understood as an informational processing system with explicit and implicit functioning that is made up of a sensory processor, short-term (or working) memory, and long-term memory (Baddely, 2007). The sensory processor allows information from the outside world to be sensed in the form of chemical and physical stimuli and attended to with various levels of focus and intent. Working memory serves as an encoding and retrieval processor. Information in the form of stimuli is encoded in accordance with explicit or implicit functions by the working memory processor.

More perspectives on memory are outlined in the chapter on Sufism.

OTHER PHYSIOLOGICAL SENSES IN ANIMALS OR PLANTS

- Magnetoception (Sense of one's direction in relation to earth's electromagnetic field)
- Echolocation (Sense of orientation to other objects through interpretation of reflected sound / sonar)
- Electroreception (Sense of detecting electric fields)
- Current Sensing (Sense of detecting electric or water currents)
- Hygroreception (Sense of detecting changes in the moisture content of the environment)
- Infrared Sensing (Sense of localizing warm-blooded animals by detecting regions of maximal blood flow on targeted prey)
- Polarized light detection (Sense of perceiving polarization patterns in the sky as a navigation aid)
- Slit sensillae (Sense of detecting physical deformation or strain due to experienced forces)

II. SENSES IN THE CONTEXT OF DIFFERENT RELIGIONS / PHILOSOPHIES

CHRISTIANITY

The Scripture uses the five common physiological senses mainly in a figurative way to help perceive God's presence and power.

For example, the 'spiritual exercises' first proposed by St Ignacio of Loyola⁴ are a set of Christian meditations, contemplations, and prayers. Divided into four thematic 'weeks' of variable length, they are to be carried out over a period of 28 to 30 days. Loyola saw them as an instrument for bringing about a change of heart, with the major aim to develop discernment (*discretio*), the ability to discern between good and evil spirits. He recommends a form of contemplation, which he calls 'Application of the Senses.' For this you place yourself in a scene from the Gospels. Ask yourself, 'What do I see? What do I hear? What do I feel, taste and smell?'

In the following are some extracts of the chapters outlining the 'Application of the Senses':⁵

FIRST WEEK Firth Exercise	SECOND WEEK The Fifth Contemplation	THIRD WEEK First Day	FOURTH WEEK IV. On the Bodily Senses
<p>'First Point. The first Point will be to see with the sight of the imagination the great fires, and the souls as in bodies of fire.</p> <p>Second Point. The second, to hear with the ears wailings, howlings, cries, blasphemies against Christ our Lord and against all His Saints.</p> <p>Third Point. The third, to smell with the smell smoke, sulphur, dregs and putrid things.</p> <p>Fourth Point. The fourth, to taste with the taste bitter things, like tears, sadness and the worm of conscience.</p> <p>Fifth Point. The fifth, to touch with the touch; that is to say, how the fires touch and burn the souls.'</p>	<p>'First Point. The first Point is to see the persons with the sight of the imagination, meditating and contemplating in particular the details about them and drawing some profit from the sight.</p> <p>Second Point. The second, to hear with the hearing what they are, or might be, talking about and, reflecting on oneself, to draw some profit from it.</p> <p>Third Point. The third, to smell and to taste with the smell and the taste the infinite fragrance and sweetness of the Divinity, of the soul, and of its virtues, and of all, according to the person who is being contemplated; reflecting on oneself and drawing profit from it.</p> <p>Fourth Point. The fourth, to touch with the touch, as for instance, to embrace and kiss the places where such persons put their feet and sit, always seeing to my drawing profit from it.'</p>	<p>'First Point. The first Point is to see the persons of the Supper, and, reflecting on myself, to see to drawing some profit from them.</p> <p>Second Point. The second, to hear what they are talking about, and likewise to draw some profit from it.</p> <p>Third Point. The third, to look at what they are doing, and draw some profit.'</p>	<p>'Way. About the five bodily senses the same order always will be kept, but changing their matter.</p> <p>Note. Whoever wants to imitate Christ our Lord in the use of his senses, let him in the Preparatory Prayer recommend himself to His Divine Majesty, and after considering on each sense, say a HAIL MARY or an OUR FATHER. And whoever wants to imitate Our Lady in the use of the senses, let him in the Preparatory Prayer recommend himself to her, that she may get him grace from Her Son and Lord for it; and after considering on each sense, say a HAIL MARY.'</p>

ISLAM⁶

God's given spiritual senses are seen to constitute the five pillars of Islam.

By practicing these five pillars with the exterior physical senses, the interior spiritual senses are said to evolve into everlasting senses.

Once practicing the inner spiritual five senses, the outer physical five senses will follow and become a reflection to more subtle and limitless senses.

Five Pillars of Islam	Corresponding inner spiritual sense
1) <i>Shahâdah</i> (Witnessing)	Seeing
2) <i>Salâh</i> (Prayer)	Hearing
3) <i>Sâwm</i> (Fasting)	Tasting
4) <i>Zakâh</i> (Giving Alms and Charity)	Touching
5) <i>Hajj</i> (Pilgrimage)	Smelling *

* Since *Hajj* (the pilgrimage) is the 'death before death / to die before dying,' (loosing one's ego), 'smelling' here indicates that the inner nose should perceive the subtle odors of emotions, thoughts and actions.

SUFISM ^{7,8}

The five pillars of Islam constitute also the base of Sufi practice.

Here, hearing and seeing are considered the two senses of the 'superior perceptive reality,' while the senses of 'inferior perceptive reality' are taste, smell and touch. These five channels of our senses enable us to receive worldly stimuli, and to transmit interior impulses. The senses constitute the exterior aspects of a wider reality correlated with an interior world. Based on the concept of the coexistence of **interior, hidden, invisible (batin) and exterior, exposed, visible (zahir) realities**, Sufi believe that each of the five outer physical senses has an inner correspondence, being mirrored in the heart. These inner 'spiritual organs' (*lataif-e-sitta*), which will be explained in depth later, comprise the subtle body.

While the human body is considered to be the doorway that connects the exterior and interior aspects of life, the Sufi look at **the heart** as the center of consciousness and knowledge of both the visible and the invisible world. For the Sufi, the heart is not merely a physical organ, nor only an instrument of sentimental and psychological perceptions. Arab language holds two words for the term 'heart,' reflecting this Islam philosophy: *qalb* means the heart's surface, the origin of intentional activities, the cause behind all of humans' intuitive deeds; while *fu-ad* is the eye of the heart inflamed with emotion. The heart is seen as a body, with senses that parallel the senses of the physical body – with its own five senses mirroring the body's five physiological senses. And just as the physical senses make the material world available to human consciousness, the heart's senses bring sensations of the interior world into the heart's purview – by closing the outer senses, we gain access to the inner senses of the heart or 'spiritual organs' (*lataif-e-sitta*).

Collective Sufi rites practiced in different 'ways' of Sufism, show how the senses and the resulting delight of the heart – inwardly and outwardly - are applied in the practice:

Zikr (Arab: remembrance, to remember)

Zikr (or *dhekr/dhikr*) are ritual practices and devotional acts that include music, dance and singing, through which spiritual knowledge is being transmitted. The sense of memory and remembrance, accessed through a variety of practices of *zikr*, is crucial to Sufi philosophy, where it is believed that humans possess a memory beyond ordinary time and space, a memory which includes a nostalgia to return to the original source – a source which we once knew and which ordinary living made us forget. The spiritual Sufi practices are designed to remember and move towards the belonging to this original source.

One Sufi allegory for this state of remembrance is the one of the reed flute (*ney*), which is an important part of ceremonies of some Sufi orders: this flute is considered as the absolute instrument of the human soul. The flute has been cut off the reed and its sound expresses the wish of returning, just as man has been cut off his original source and longs to return:

'It is said that the *ney* talks about the dense love and longing to be with God and always complains about being separated from God. In Sufi culture, the *ney* is a symbolic representation of the human. It is believed that when a human's soul is combined with a human body and comes to the material world, the soul continuously yearns for the love of God. The sound of the *ney* represents its longing towards its reed field.¹⁹ *Zikr* is hence a ritual practice to remember that state of divine union, dilating the space of consciousness and turning that which was not into that which is, as a memory of the depth of unity.

Zikr is usually practiced in relation with the word through the exterior or interior mentioning of sacred formulas and names of Allah. One form of *zikr* is the rite of silent remembrance, called 'the memory of the heart' (*dhikr al qulub*). It involves sending the invocations through the 'spiritual organs' collocated in the interior, with the purpose of awakening these centers of perception that lie dormant in every person. These interior senses of remembrance enclose the mind as well as the spiritual centers of the body.

The 'spiritual organs' (*lataif-e-sitta*) are – according to different Sufi orders – associated each to a certain place in the body, a physiological outer sense, the spiritual control of a prophet, and a color. They are faculties of sensory and supra-sensory perception in Sufi psychology, and are explained in the following according to the usage amongst certain Sufi groups. These six subtleties are thought to be parts of the self in a similar manner to the way glands and organs are part of the body.

The six *laṭā'if* (or 'The Six Subtleties') are:

Nafs' Ego (Self)	Qalb' Heart	Ruh' Spirit (True self)	Sirr Secret	Khafa Arcane/hidden	Akhfa Most arcane/hidden
<i>Technically not a bonafide latifa, but recognized as a location</i>	Hearing	Seeing	Touch	Smell	Taste
Situated slightly below the navel or between the eyebrows	Situated two fingers below the left nipple towards the side	Situated two fingers below the right nipple towards the side	Situated two fingers above the left nipple towards the chest or in the solar plexus	Situated two fingers above the right nipple towards the chest or in the middle of the forehead	Situated in the center of the chest or on center-top of the head
	Under the feet (spiritual control) of Adam	Under the feet (spiritual control) of Noah and Abraham	Under the feet (spiritual control) of Moses	Under the feet (spiritual control) of Jesus	Under the feet (spiritual control) of Mohammed
Yellow or blue	Yellow or red	Red or green	White or green	Black or blue	Green, purple or black
Three principal stages of <i>nafs</i> are: - the 'inciting <i>nafs</i> ', primitive, as base instincts - the 'self-accusing <i>nafs</i> ', censoring, as aspiring to perfection - the ideal, 'peaceful <i>nafs</i> ' as satisfied with the will of God	Man's deeds and knowledge.	The place where man resides after death and spirituality.	The allegorical realm and consciousness.	The realm of unification and intuition.	The hidden knowledge of the universe and deep perception.

Rooh-e-haivani (Animal soul)

Rooh-e-Insani (Human soul) / *Ayan*

Rooh-e-azam (the Great soul) / *Sabita*

* Inside the *qalb* (heart) takes place the struggle between *nafs* (the ego/self) and *ruh* (the spirit).

The invisible / imperceptive senses

In his book *La struttura dei corpi sottili*,¹⁰ Iraqi theatre master Kassim Bayatly takes the above also towards a practical appliance for actors and body-based artists. He draws a relation between the physiological outer senses with what he calls the 'intermediary territory between the organic body (with the vital breath of the spirit) and the lucid awareness of the intellect.'

He pairs the senses to the subtle capacities of the actor's intellect in the following way:

Seeing	Concentration
Hearing	Interior Imagination
Touch	Attention
Taste and Smell	Readiness (visceral attraction)

Only by activating both the visible and invisible senses, 'the pretence of the actor is an act of physical and psychological reality that involves the entire living organism.'

HINDUISM AND YOGA

The tradition recognizes a total of 15 senses:

Five organs of action (Karmendriyas) Active Expressions / Exporters Exit doors from internal to external world	Five organs of perception (Jnanendriyas) Cognitive Senses / Importers / Entrance doors from external to internal world	Five subtle senses (Tanmatras)
Elimination / Anus (<i>payu</i>)	Eyes (<i>chaksu</i>)	Form (<i>rupa</i>),
Reproduction / Sexual organs (<i>upasta</i>)	Ears (<i>srotra</i>)	Sound (<i>śabda</i>)
Movement / Legs (<i>pada</i>)	Nose (<i>ghrana</i>)	Smell (<i>gandha</i>)
Grasping / Hands (<i>pani</i>)	Tongue (<i>rasana</i>)	Taste (<i>rasa</i>)
Speaking / Mouth (<i>vak</i>)	Skin (<i>tvacha</i>)	Touch (<i>sparsa</i>)

The mind is *Indra*, their ruler.

‘Some earlier Upanishads describe the senses also as breaths or aspects of breath (*prana*). The senses are equated with them, because breath is considered to be the lord of all the organs in the body. The senses are responsible for our clinging and craving and thereby keep us bound to the mortal world. Since they are subject to the *gunas*, they are not perfect and not very reliable to discern the truths of the world or the true nature of our existence. Indeed, they are chiefly responsible for our suffering, illusion and the mistaken belief that we are mere physical beings subject to death, which is the end of all. According to the *Bhagavadgita*, they are also responsible for our mental instability and lack of discernment.’¹¹

Corresponding to the Hindu tradition outlined above, in traditional Yoga philosophy and practice, ‘the human being is seen as being like a building with ten doors (*Das Bairagan* or *Indriyas*): Five are entrance doors (*Jnanendriyas*), and five are exit doors (*Karmendriyas*). Consciously, actively and intentionally witnessing these ten senses as they function is an important part of Yoga meditation, and meditation in action.’¹² The Yogi, just as the Hindu, considers the senses as not really accurate perceptual instruments, and believes that truth must be found within, or beyond the senses. For meditation, it is necessary to withdraw, or turn inward the ten senses.

BUDDHISM

Buddhism considers twelve *āyatanas*, that are composed of six internal sense bases (Pali: *ajjhakkāni āyatanāni* or ‘sense organs,’ also known as ‘gates,’ ‘doors,’ ‘powers’ or ‘roots’), and six external sense bases (*bāhirāni āyatanāni* or ‘sense objects,’ also known as *vishaya* or “domains”). Thus, there are six sense base organs and six sense base objects that comprise the twelve *āyatanas*, or modes of perception and their objects:¹³

12 Sense bases (<i>āyatanas</i>)		
	6 Internal (Organs)	6 External (Objects)
1) <i>Rupa-ayatana</i> (Visual)	Eye	Visible form
2) <i>Śabda-ayatana</i> (Auditory)	Ear	Sound
3) <i>Gandha-ayatana</i> (Olfactory)	Nose	Odor
4) <i>Rasa-ayatana</i> (Gustatory)	Tongue	Taste, flavors
5) <i>Sparsa-ayatana</i> (Tactile, haptic)	Body	Touch, tangible objects
6) <i>Mano-ayatana</i> (Cognition)	Mind	Mental objects, ideas, reasoning

These *āyatanas* constitute the base of the ‘six sextets:’

- 1) Six sense organs (See above)
- 2) Six sense objects (See above)
- 3) Six sense-specific types of consciousness (*viññāṇa*) that arise dependent on an internal and an external sense base.
- 4) Six sense-specific types of contact (*phassa*) as the meeting of an internal sense base, external sense base and consciousness.
- 5) Six sense-specific types of sensation (*vedanā*), where feeling is dependent on contact.
- 6) Six sense-specific types of craving (*taṇhā*), where craving is dependent on feeling.

It is believed that the actual suffering associated with sense organs and sense objects is not inherent to these sense bases, but is due to the 'fetters' (here identified as 'desire and lust') that arise when there is contact between a sense organ and sense object. The Buddha taught that, in order to escape the dangers of the sense bases and the resultant release from suffering, one must be able to apprehend the sense bases without defilement. In no way it rejects the world of the senses and ordinary life, but keeps them in perspective, using them as a means to transcend themselves.¹⁴

CONFUCIANISM¹⁵

The five senses are called the five organs of control, directing and performing only their respective roles in providing us with the content of the objective world. The mind is the master that governs and controls the five senses. The correct functioning of the mind yields to the desires of the senses, while human selfish desire can indulge through the senses without reflection, cause the mind to lose control, and therewith destroying heavenly principles. The principle of heaven is conforming to the principle of the Way by controlling the five senses. Mencius says man loses his human qualities and becomes an animal when he lives in the sense world alone. Chinese philosophy maintained that the senses should be a small part (*hsiao c'i*) of man.

JUDÆO-ARABIC¹⁶

Judæo-Arabic philosophy established a parallel between the five senses (the 'external senses,' which perceive objects) and the faculties of the soul ('internal senses,' which observe their difference).

The external senses are divided into:

1) Finer / intellectual senses (Sight, hearing, and smell)

They are considered to be the superior senses, as their respective functions are exercised from a distance and need not come in contact with their object. They are found only in the higher animals.

2) Coarser / material senses (Taste and touch)

They are senses that must be in touch with it, and are found even in the lowest animals.

KABBALAH

Kabbalah people say that worlds exist above ours, like the layers of an onion, with our world in the midst of all of these worlds. Who exists in this world is able to feel only this world, the innermost sphere in all of existence. But this world is just a small fragment of true reality to be felt with the senses. If additional senses could be developed, then what we would perceive would be called - the world to come.¹⁷

'In *The Power of Kabbalah*, writer Yehuda Berg explains that reality is divided into two distinct realms, referred to as the 1% reality and the 99% reality in contemporary terminology. The 1% reality corresponds to the material world, which man perceives through the five senses. It appears to be dark, chaotic and endlessly filled with inexplicable occurrences. This is because the five senses do not demonstrate the causes of things, but rather their effects. In this way, the conclusions drawn from the experiences of the five senses are often inaccurate, and the portrait of the universe it portrays is inherently incomplete. The Kabbalistic lesson to be gleaned from these examples is the essential inadequacy of the five senses to render an accurate perception of the universe and the phenomena that govern it. This understanding is only to be found in the 99% reality, which exists above the material world, beyond the experiential grasp of the five senses. In contrast to the 1% reality, the 99% reality is the realm of cause and design beyond the perceptive capabilities of the five senses. The notion of the 1% reality is not to say that the experiences of the five senses are intrinsically wrong as much as it contends that they are incomplete. Kabbalah maintains that the five senses, while essential to the human experience, are in effect limiting factors in perceiving the underlying order of the universe. They create a barrier between man and the 99% reality. Making a conscious effort to subdue one's dependence upon his five senses for an understanding of the world opens a door to the perfect order of the non-sensory universe, making the necessary space for an individual to cultivate a powerful new sense which can transcend the material world - the sixth sense, the only sense which connects man to higher realms of meaning.¹⁸

WESTERN PHILOSOPHY

'Distrust your senses' is a long tradition, not only in Western Philosophy. Knowingly, our senses are not evolved for accuracy, as the brain makes an attempt to fill in the blanks whenever the senses fail to recognize something. From an evolutionary standpoint this is advantageous. Here are some standpoints from Western philosophy on the senses in short:

Plato: There is a reality outside of humans' experience.

In the *Allegory of the Cave*, Plato compared the human experience through the senses to the experience of a caveman looking at a shadow play on the cave wall. The caveman can only see the shadows on the wall, and having never experienced anything else, believes that those shadows are all that there is of reality. It would be sufficient to turn around, in order to be able to recognize the true reality with the same senses. Plato, on the other hand, considers the real world only the intelligible - the world of ideas - which is recognized by reason, and not with the senses. But the long philosophical practice, which can lead to turn towards the light instead of focusing on the shadows, starts with the sensuous impressions and recognizes by thought that the ideas are present as shadows in them.

René Descartes: No matter how accurate and valid experiences appear to be, it doesn't guarantee that they are not being tricked.

Descartes introduces with *Clara et Distincta Perceptiones* the idea that perceptions, in order to be readable for us, must be of a clear and distinct nature. With this he paves the path in Europe – and science - for a strongly visual preference in orientation, as it constitutes the most measurable – clear and distinct – perception.

David Hume: Hume constitutes an empiric tradition that considers nervous stimulus ('sensations') and the resulting sense 'perceptions', the base of all cognition, human action and thought.

Immanuel Kant: There is no knowledge about things as they are, but only the subjective reality of things as we see them. But subjective here does not mean individual, as we are all based on the same reason and the same mind with its categories, as well as the two 'pure forms' of space and time in which all sensory knowledge takes place. Hence, our perceptions are very similar.

Maurice Merleau-Ponty: Our consciousness is an embodied, complimentary process that includes the body's exposure to the world including sensing and reasoning, assigning meaning. We cannot separate ourselves from this. On the same base, psychologist **Erwin Straus** sees perception and reality as not separated, but thinks that we as physical beings have a perception, which connects us as members of a common life-world. Sensory experience exists in order to relate to the world. But for him, kinesiology is inextricably linked to aesthetics: Only a mobile being can grasp the visible in its objectivity.

III. SENSES IN THE CONTEXT OF DIFFERENT CULTURES / SOCIETIES

In their comprehensive and insightful article 'Doing Sensory Anthropology,'¹⁹ David Howes and Constance Classen, two of the most prolific contemporary theorists around the research of the senses, outline 'A Paradigm for Sensing.' They divided it into ten sections:

'1) Language, 2) Artefacts and aesthetics, 3) Body decoration, 4) Childrearing practices, 5) Alternative sensory modes, 6) Media of communication, 7) Natural and built environment, 8) Rituals, 9) Mythology, and 10) Cosmology.

These headings refer to those cultural domains which have proved the most informative with regard to eliciting a given culture's – sensory profile.'

As they have experienced in their numerous field researches, 'every culture strikes its own balance among the senses. While some cultures tend toward an equality of the senses, most cultures manifest some bias or other, either privileging a particular sense, or some cluster of senses.'

Beyond the following, they also list these three examples of senses in other cultures:

- The **Hausa** recognize two senses: seeing (*gani*) and sensing (*ji* = hearing, tasting, smelling, feeling).
- The **Javanese** have five senses (seeing, hearing, talking, smelling and feeling), which do not coincide exactly with our five.
- 'According to the **Peruvian** curer interviewed by Douglas Sharon in *Wizard of the Four Rinds*, a sixth clairvoyant sense opens up when all five other senses have been stimulated through the use of hallucinogens and other ritual elements.'

Howes and Classen on the linguistics of senses:

'The level of onomatopoeia in a language may indicate the relative importance of aurality. In some cases the onomatopoeia is obvious, for example, *achini* in **Quechua** [of the Andes], 'to sneeze,' while in other cases it is more difficult to determine: Is the word *otoronco*, Quechua for jaguar, meant to imitate the jaguar's roar? ... In Western languages words for objects are usually not based on any of their sensory qualities, or if they originally were, they no longer evoke these qualities for us. Perhaps this indicates a 'de-sensualizing' and 'abstracting' of the environment in order to render it more accessible to detached manipulation.'

'The importance of a sensory organ can be revealed in part by the number of words used to describe it. In Quechua there are separate terms for outer ear, inner ear, upper ear, and lower ear; outer and inner mouth and upper and inner lip; etc. The spaces between the sensory organs – that is, the space between the nose and the mouth and the space between the eyes – also have their own terms. This may simply express a preoccupation with spatial divisions; however, it likely affects the understanding of the senses as well. The concern for in-between spaces in Quechua, for example, suggests a parallel concern for how the senses relate to each other, rather than an emphasis on sensory organs as independent entities.'

On artifacts and aesthetics:

'In the West, aesthetic ideals are primarily visual: beauty is first and foremost beauty of appearance (Synnott 1989, 1990). In other cultures the concept of beauty may involve various senses. For the **Shipibo-Conibo** of Eastern Peru, for instance, an aesthetic experience, denoted by the term *quiquin* which means both 'aesthetic' and 'appropriate,' involves pleasant auditory, olfactory, or visual sensations (Gebhart-Sayer 1985).'

'The idea of sensing a painting 'from within it, being surrounded by it' (Gill 1987: 39), as the **Navajo** do, is foreign to conventional Western aesthetic sensibilities. Contemplation is encouraged (at the expense of participation) by rules like: 'Do not touch the exhibit!' The disengagement of all the senses, save for sight, is also encouraged by the technique of linear perspective drawing, as discussed by Howes in the Introduction to *The Varieties of Sensory Experience*. This technique is foreign to most non-Western cultures. Among the **Tsimshian** of the Northwest Coast, for example, one finds a style, known as 'split-representation,' that is the complete antithesis of linear perspective vision.'

On natural and built environment:

'The built environment can also be analyzed as a projection of a given culture's sensory profile. We think of Michel Foucault's (1979) insightful analysis of how Bentham's design for a prison, the Panopticon, has been generalized to encompass other spaces (the hospital, the school), such that we moderns live in a 'society of surveillance.' By contrast, for the **Suya**, 'the sonic transparency of their community makes of their village a concert hall' (Seeger 1987: xiv). For the **Inuit**, 'visually and acoustically the igloo is "open," a labyrinth alive with the movements of crowded people' (Carpenter 1973: 25). The construction of the built environment in the image of a culture's sensory profile is apparent in the nineteenth-century English and French bourgeois fetish for balconies: 'From the balcony, one could gaze, but not be touched' (Stallybrass and White 1986: 132).'

On rituals:

'In addition to rituals which stimulate all the channels of sensory awareness at once, and those which restrict them to a few, there are rituals that accentuate and suppress different modalities according to a certain sequence. We think of the **Japanese** midday tea ceremony (*shogo chaji*), a minutely prescribed rite, which takes from three to five hours to complete. In the tea ceremony, the 'progressive induction into ritual time is reflected in an increasing emphasis on non-verbal modes of communication' (Kondo 1983: 297). ... The whole purpose of this ritual is to instill a mental attitude of introspective 'emptiness' (Kondo 1983: 301); hence the sequencing of the sensations. In Japan to be introspective (which is the Zen state) is to close one's ears but keep one's other senses open. We close our eyes.'

'At the opposite extreme from the Japanese tea ceremony, which celebrates the senses in a determinate order, are those rituals designed to 'overcome' or 'vanquish' them, and thus pave the way for a transcendental experience. Valentine Daniel describes one such rite in *Fluid Signs* (1984). The ritual involved an arduous six-mile pilgrimage in honor of Lord Ayyappan (that was supposed to help the devotee achieve union with the deity). Daniel undertook this pilgrimage with some **Tamil** friends. There is a definite sequence to the order in which the senses are 'merged' or 'collapsed' in the course of this ritual. As Daniel recounts, first hearing goes, then smell, then sight, then 'the sense organ the mouth' (taste and possibly speech), and finally, all these organs having 'merged' into the sense of touch (which itself feels nothing besides pain as of this late point), that sense too 'disappears,' along with any sense of self (Daniel 1984: 270-76). This sequence may be read as an expression of the sensory profile of the Tamil culture of South India, hearing and touch being at opposite ends of the Tamil sensorium, the other senses in between.'

On mythology:

'The **Hopi** think 'in sound,' as Kathleen Buddle has shown in a recent article called 'Sound Vibrations' (1990), which analyses the Hopi Myth of Creation. In the myth, Spider Woman brings the Twins into being by chanting the Song of Creation over them, and then commands one of them to: 'Go about all the world and send out sound so that it may be heard throughout all the land.' The Twin goes out, and: 'All the vibratory centres along the earth's axis from pole to pole resounded his call; the whole earth trembled; the universe quivered in tune. Thus he made the whole world an instrument of sound' (Waters quoted in Buddle 1990: 10). It is consistent with Buddle's analysis that there are no 'things' – no tables or chairs, to use the standard example of Western philosophers – in the Hopi universe, only vibrations; hence the fact that in the Hopi language one speaks of 'tabling,' not 'a table,' and 'chairing,' not 'a chair' (see further Whorf 1956).'

'In many myths from the **Massim** region of Papua New Guinea, the ancestors of humanity lack mouths or digestive tracts. Food is simply dropped in a hole on top of the head and comes out of the anus still whole. These ancestral beings only become human when their mouths (and genital orifices) are cut or burst open, which normally occurs at the same time they acquire 'culture' or rules. Thus, according to Melanesian notions, the sensory order and the social order emerged together, and 'orality' is equally central to both. Put simply, 'to have a mouth' is to be 'civilized the Melanesian way' (Kahn 1986: 171-3). As Melanesian ethnographer Michael Young observes: 'The mouth, from which issues the magic which controls the world and into which goes the food which the world is manipulated to produce, is the principal organ of man's social being, the supremely instrumental orifice and channel for the communication codes of language and food' (1983: 172).'

On cosmology:

'The **Batek Negrito** of peninsular Malaysia classify virtually everything in their environment by smell, including the sun and the moon. The sun is said to have a bad smell, 'like that of rare meat,' while the moon has a good smell, 'like that of flowers' (Endicott 1979: 39).'

'To grasp the indigenous epistemology it also helps to study how the culture conceptualizes and localizes the 'soul' or 'mind' within the body. Not all cultures are agreed in this regard. The ancient **Greeks** associated the soul with the breath, the **Mehinaku** of Brazil place the soul in the eye (Gregor 1985: 152), the **Zinacanteco** of Mexico, in the blood (Karasilc 1988: 5). In, the **West**, we think of the mind as residing in the head; the **Uduk** of the Sudan locate it in the stomach (James 1988: 69). According to the **Aguaruna** of the Amazon: 'The people who say that we think with our heads are wrong because we think with our hearts. The heart is connected to the veins, which carry the thoughts in the blood through the entire body. The brain is only connected to the spinal column, isn't it? So if we thought with our brains; we would only be able to move the thought as far as our anus?' (Brown 1985: 19).

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