

Rethinking Congenital **Synaesthesia**

David Howes, **Anton Dorso**

Thank you, Anton, for your interest in my work, and for providing me with the opportunity to rethink the phenomenon of synaesthesia from an anthropological, or cross-cultural, perspective in response to your highly perspicacious barrage of questions.

1. What personal motivation or, perhaps, physiological inclinations encouraged you to get involved with the senses and specifically anthropology of the senses? Do you have any particular attraction to restructured and novel experience?

I was drawn to the study of novel sensory experience partly by my vocation as an anthropologist, and partly by a memorable experience in my father's house when I was a teenager. Let me begin with the latter.

One day, the doorknob on the front door of my father's house in Baie d'Urfé, a suburb of Montreal, began to vibrate as a heavy freight train rolled by on the nearby railway tracks. I was fascinated by this example of attunement, and became even more fascinated when my sister, who is a flautist, related to me how the old-fashioned radiator in her apartment on avenue Durocher in Outremont vibrated each time she played a certain note on her flute, as though it were tuned to that particular sonic frequency. This sparked my initial interest in synaesthesia not as a rare neurological condition, as neurophysiologists would have it, but as rooted in the way the world is wired – or, the elective affinities of the cosmos – and crossmodal *identification*.¹

Professionally speaking, it was some years later, in 1979, while I was studying anthropology at the University of Toronto, that my interest in the senses became more focussed as a result of my attending a talk by Marshall McLuhan in the Senior Common Room at my college. McLuhan expounded on his theory of the “laws of media” (posthumously published as McLuhan and McLuhan 1988; Cavell 2003). This theory holds that changes in the prevailing media of communication – from speech to writing to the printing press to electronic communication – precipitate changes in the “ratio” or balance of the senses with far reaching cognitive and social consequences. A decade later I went to Papua New Guinea to test his hypothesis that people in oral societies are more “ear-minded” than people in literate societies because in the latter words are reduced to quiescent marks on paper, which in turn precipitates a predominantly visual mindset. What I found, however, in the course of my field research in Papua New Guinea was that there are as many differences to the orchestration of the senses – *all the senses*, not just the aural and the visual – in societies without writing as between such so-called oral societies and literate societies.² Hence, each society must be approached on its own sensory terms, and technology is not the sole driver of sensory difference, as McLuhan maintained, for there are also infratechnological *techniques of perception* or *ways of sensing*, and

these must be studied too, if an anthropologist is to arrive at a composite understanding of the sensorium of the society under study.

It is through the practice of sensory ethnography, which is grounded in the methodology of *participant sensation*, that we anthropologists seek to find out about these alternative structurations of sense experience. As François Laplantine explains in *The Life of the Senses: Introduction to a Modal Anthropology*: “The experience of [ethnographic] fieldwork is an experience of sharing in the sensible [*partage du sensible*]. We observe, we listen, we speak with others, we partake of their cuisine, we try to feel along with them what they experience” (Laplantine 2015: 2). Sensing and making sense together with others – that is the essence of sensory ethnography.

Interestingly, McLuhan also held that the onset of electronic communication precipitated a return to the synaesthetic or multisensory conditions of communication in oral societies. Take the case of film.³ It involves the extrapolation and integration of the senses of sight and hearing. The great Russian cinematographer Sergei Eisenstein anticipated the insights of McLuhan when he proposed that film should be regarded as a sixth sense – specifically, the “film sense” (Eisenstein 1975) on account of the novel conjunction of vision and audition that this medium affords. This is another example of extracorporeal synaesthesia which cannot be reduced to the way in which the brain is allegedly wired (e.g., Ramachandran et al. 2004; Hubbard and Ramachandran 2005). The senses are made, or “massaged” as McLuhan would say (McLuhan and Fiore 1967), not given. Put another way, “culture tunes our neurons” (Sacks quoted in Howes 2004: 22).

2. Human abilities to compensate for a lost sense, or embed language as various sensory codes (reading, Morse code, speech), or translate sensory affordances from one sense to another (alarm signals, sonar devices) – these seem to demonstrate that human primary meaning-making is amodal or, better, sensorily flexible. How does multimodal anthropology explain it?

“Multimodal” or “multisensory anthropology” (Howes 2019) rejects the suggestion that human primary meaning-making is amodal. Sensorily flexible or crossmodal – yes; amodal – no. Take the case of sign language. Sign language, because it is whole-bodied, has expressive possibilities that natural language lacks. One of my Ph.D. students is the founder of a deaf theatre company: she rails against closed captioning in the theatre as on TV because of its diminution of the corporeal. Or, take the case of Braille, a language of the fingertips. Braille belies the assumption that tactility is a lesser sense than vision when it comes to expressing and communicating thought (Classen 1998: ch. 6). Now, there are devices such as Bach-y-Rita’s Tacto-Visual Substitution System (TVSS) which point to the possibility of using sensory information from one sense to induce sensory content related to another sense (Zika 2018: 311-12), but I would always want to ask what is lost – and what is gained – in translation across the modalities.

“Sensorily flexible” is a far more promising notion than amodality because it suggests that we focus on the interplay of the senses. Different cultures weight or value and combine the senses differently, which in turn gives rise to the extraordinary multiplicity of sensory experience and sense-making across cultures. Among the Suyà of Brazil, for example, the word for “to hear” (*m-ba*) also means “to know” and the Suyà, when they master something – even something visual such as weaving pattern – will say: “It is in my ear” (Seeger 1975). What sort of synaesthesia does that suggest?

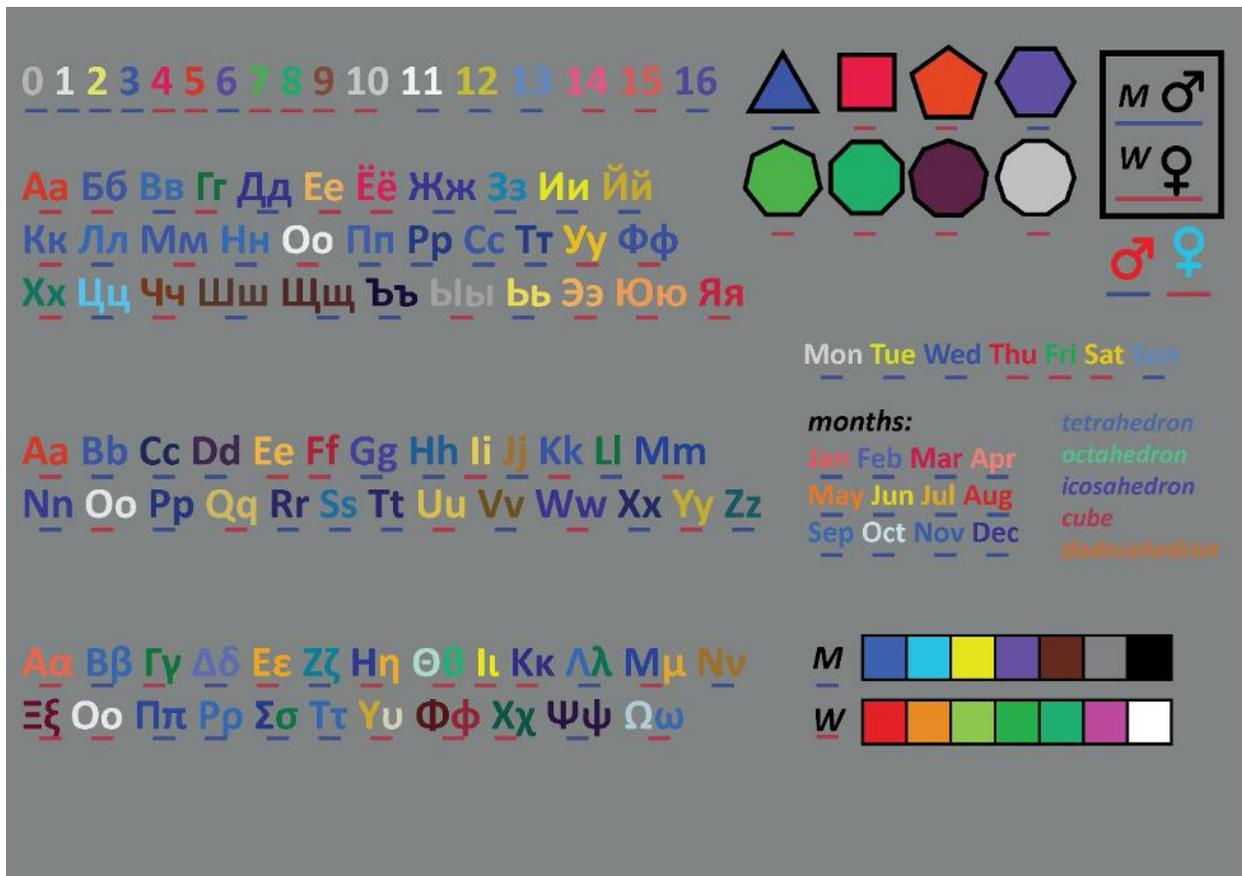


Fig. 1. Multiple synaesthete Ivan Belov's experience of colour and gender in response to perceiving numbers, Cyrillic, Latin and Greek letters, names of the months, basic geometric shapes and colours. The underscore indicates the gender: Blue stands for masculine, red for feminine. Some letters can change colours in different context. For example, the letter S is blue but if it denotes a subdominant in music, it is perceived as red. When being part of the symbol for a chemical element, it is green. Created by Ivan Belov. Courtesy of the author.

3. When we warn against throwing the baby out with the bathwater, we do not seem to envision some endearing tot or soapy sewage. Similarly, synaesthetic metaphors such as sweetheart, bitter remarks or ground-breaking might only rudimentarily presuppose some mouthfeel or vertigo, and even native speakers can take at least some time to unravel them and try experiencing their original meaning. What field methods and analytical frameworks do ethnographers apply in their studies to separate the wheat of the actual, physiological sensory attunements from the chaff of cognitive artefacts and language fossils in subjective accounts and written reports?

Ah, babies and bathwater, wheat and chaff, physiological constraints and mental (or cultural) constructs! Your way of framing this issue is deeply illuminating, but I am not sure I agree with it. It suggests a "stratified" or "layer-cake" model. Clifford Geertz long ago critiqued and laid to rest this model which, in the final analysis, opposes nature and culture, in an essay called "The Impact of the Concept of Culture on the Concept of Man." As he wrote in that essay: "we need to replace the 'stratigraphic' conception of the relations between the various aspects of human existence [biological, psychological, social, and cultural] with a synthetic one; that is, one in which biological, psychological,

sociological and cultural factors can be treated as variables within unitary systems of analysis” (1973: 44). This essay should be essential reading for every student of psychology or human biology, as well as anthropology.

Let me pick up on another of your points. When you speak of “language fossils,” you seem to suggest that there are “dead metaphors” – that is, figures of speech that have lost their original meaning or rootedness in sense-experience. The word “orange” might seem to bear out your thesis: we do not think of the fruit or of a citrus flavour when we refer to the colour of some object as orange. But not so fast. If we dig deeper, we find that there are some words or “signifiers” the properties of which do bear traces of the “signified” – *in their being spoken*. I think here of Constance Classen’s chapter on “Words of Sense” in *Worlds of Sense: Exploring the Senses in History and Across Cultures*. There she makes note of the archaic (and also quite widespread) notion of words as “embodying the essence of what they stood for” in contrast to the modern notion that there is no intrinsic connection between words and their referents. Onomatopoeic words, such as *thud* or *bang*, give the lie to this; there are also words that traffic in tactile and kinaesthetic sensations. “‘Mushy’ and ‘slip’, for example, convey, through the sound and kinaesthesia of speech, the tactile sensation of mushiness and the kinaesthetic sensation of slipping” (1993: 51).

Onomatopoeic words are just the tip of the iceberg, though. Classen goes on to offer a kind of sensory archaeology of many other English words which are latent or pregnant with sensory content, and shows how these words inflect how we conceptualize and describe the world, including our very thoughts (as when we *ponder* some idea – to “pinder” an idea would lack gravity: *ponder* is doubly weighty, sonically and muscularly). Following Classen’s lead, I would like to propose that a new field of linguistics be discriminated, which could be called “sensitive linguistics” to differentiate it from cognitive linguistics. This new field would revivify the practice of tracing the etymology of words by highlighting their sensory underpinnings. (The latent sensory content of English words is typically more “visible” in the Latin roots of the terms in question.) Practicing sensitive linguistics would attune us to how many so-called dead metaphors actually rule us from their graves.

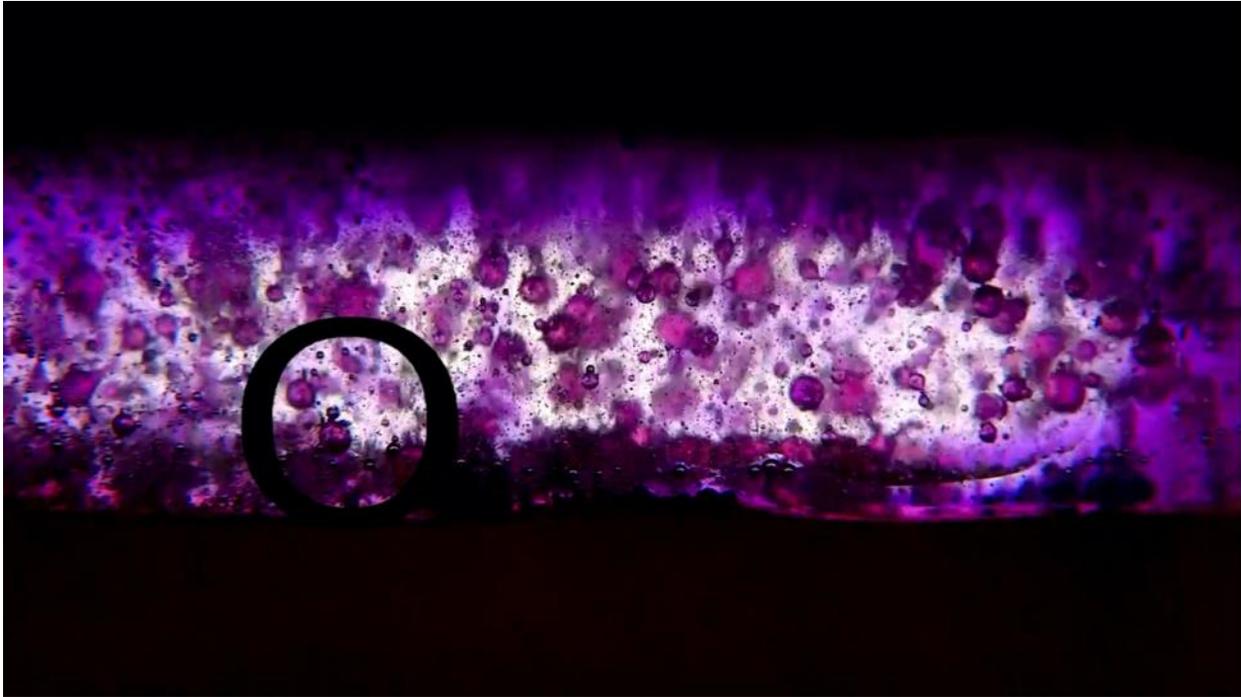


Fig.2 Shots from an episode on synaesthesia from Yulia Kiselyova's science documentary *Brain. Another Universe* (2017). The excerpt describes synaesthetes' experience through animation, interviews and expert opinion. Courtesy of Yu. Kiselyova.

4. In the plethora of research outcomes in anthropology of the senses and its overarching theory, are there any revealed universal correlations in different cultures' attitudes to sensory impairment and individual differences/high abilities in sensory perception? Are there any common ways of how they are identified, evaluated and utilised across the researched cultures?

Cultural attitudes toward disability vary greatly. Blindness is commonly regarded as the most serious form of sensory impairment in Western culture (Barasch 2001) but among the Anlo-Ewe of Ghana, according to Kathryn Geurts in *Culture and the Senses* (2002), deafness occupies this spot. Deafness is regarded as disabling not only because it prevents a person from participating meaningfully in the oral-aural lifeworld, but also because it is supposed to interfere with a person's sense of balance or vestibular system (which is localized in the inner ear). Balance and the related senses of proprioception and kinesthesia is of cardinal importance to the Anlo-Ewe sensorium. Their language contains over 50 words for different ways of walking or kinaesthetic styles, each of which carries a different moral value: inferences are made as to a person's moral character from observing the way in which they hold themselves and walk. Moreover, bodily flexibility is seen as a precondition for – and hallmark of – intellectual agility and adaptability. As one Anlo-Ewe proverb goes: “When you find yourself in the village of the toads, you should squat as they do.”

Interestingly, studies have shown that the members of West African cultures, like that of the Anlo-Ewe, perform better on tests involving proprioceptive discrimination and poorer on tests involving visual discrimination than Western (actually, Scottish) subjects (Wober [1967] 1991). This is an interesting example of sensory specialization, or the differential elaboration of the senses across cultures. In the West African context, this has to do with infants being massaged from birth to inculcate

flexibility of body and mind, and their being schooled in the dance before all else (e.g. rather than being taught to sit still at a school desk). The implication is that we should be cautious about positing any universal correlations.

5. *The stimuli of congenital synaesthesia (coloured letters and numbers or coloured notes) seems to hinge heavily on semiotic systems i.e., special sets of symbols whose situational combinatorial potentialities enable mediation of immediate and essential meaning-making – language, math, music, time conceptualization, etc. What closest equivalents, unknown in western culture, would you think of?*

Congenital synaesthesia is a fascinating phenomenon, but it is just one form of synaesthesia among countless others. There is also linguistic synaesthesia, and literary synaesthesia, for example. Open-minded psychologists like Lawrence Marks at Yale, author of *The Unity of the Senses* (Marks 1978), do not discriminate against these other forms of synaesthesia and set them aside the way other psychologists, such as Simon Baron-Cohen at Cambridge does when he devises tests for distinguishing “true” synaesthetes from the rest of us (Asher et al. 2006).⁴

There is also drug-induced synaesthesia, which neurophysiologists like Ramachandran are prone to dismiss as mere “sensory confusion,” being “far less organized than congenital synaesthesia,” and therefore uninteresting (Ramachandran et al. 2004: 868). Not among the Desana of Colombia it isn’t. Desana ritual life centres on the collective ingestion of the hallucinogenic plant *Banisteriopsis caapi* (known as *yagé*) under the guidance of a shaman. The synaesthetic cosmology of the Desana is a wondrously complex tapestry of sensations: “colours emanate from the light of the Sun or Moon and then combine with heat to produce corresponding sets of odours and flavours,” etc. (Howes and Classen 2014: 158). It is not “confused” nor idiosyncratic at all. Only when the consumption of *yagé* is extricated from its cultural context and used in a western context – for example, the Australian neoshamanic circles analyzed by Alex K. Gearin and Oscar Calavia Sáez in “Altered Vision” (Gearin and Sáez 2021) – do the sorts of visions it entrains become scrambled, personalized and indeed “confused,” unstructured.

Constance Classen and I addressed the question you pose regarding cross-cultural equivalents in the chapter called “Synaesthesia Unravelled” in our book *Ways of Sensing* (Howes and Classen 2014). There we sought to articulate a theory of cultural synaesthesia as an antidote to the notion of congenital synaesthesia being the only authentic form of synaesthesia. Cross-cultural examples include the remarkably synaesthetic mnemotechnic of the knotted, coloured, textured and scented strings of the Inca known as *quipu*, and contemporary Andean numeracy, with its spatial conceptualization of numbers (the number 1 is always at the top or head of the person counting with other numbers following behind and below; it is also linked with purple – that is, the colour at the top of the rainbow), numbers’ perceived integration through family relationships (1 is associated with motherhood), and the depiction of the number 7 as a “nasty fellow” (Howes and Classen 2014: 159-62). The number 7 is a real character, not a mere cypher.

In “Synaesthesia Unravelled,” Constance and I also adduced numerous examples from Western history of the ways in which numbers and letters have been pictorialized, sounded, smelled, and tasted in order to be memorized. For example, in one common sensory technique for teaching the alphabet, “letters would be made from gingerbread, which a child could eat after naming them correctly, thus imbuing visual signs with taste and texture” (Howes and Classen 2014: 165). How

delicious! Sadly, most contemporary theorizations of synaesthesia take colour-grapheme synaesthesia as a paradigm case, and explain it away in terms of the hyperconnectivity thesis (e.g. Ramachandran et al. 2004). Besides being quite tasteless, colour-grapheme synaesthesia isn't even multisensory, which is surely a minimum condition for any meaningful discussion of intermodal processes.

One very interesting question I would love for you psychologists to research is whether colour-grapheme synaesthesia is as prevalent in oral societies (where words are sounded, not seen) as it reportedly is in literate societies (where words take the form of quiescent marks on paper or a screen). I wager that colour-grapheme synaesthesia would be far less prevalent in an oral society (given the conditions of enunciation) than in a literate society (given the predominance of inscription).



Fig. 3 Shots from an episode on synaesthesia from Yulia Kiselyova's science documentary Brain. Another Universe (2017). The excerpt describes synaesthetes' experience through animation, interviews and expert opinion. Courtesy of Yu. Kiselyova.

6. As per Ophelia Deroy and Charles Spence (2017) as well as the earlier Noam Sagiv (2011), congenital synaesthesia is phenomenologically different from other crossmodal processes. Its way of sensing spans both quantitative and qualitative distinctions with the major one being the non-associative but, rather, endogenous sensorial qualities of its concurrents that have no referentials in the physical world (e.g. "Martian colours"). These unmotivated sensory qualities are additional and do not rule out a synaesthete's having regular crossmodal correspondences and the latter do not seem to attune the former, as congenital synaesthesia's experience does not change throughout their lifetime. Another propensity is that these sensory-like appendages seem to hijack semiotic systems like music or letters, or days of the week as an entire category not as individual units. (In an "re-categorization" experiment that I carried out with synaesthetes, an imaginary eighth day of the week acquires an unexpected colour within 15-20 minutes (Sidoroff-Dorso 2010a, 2010b; Day 2016: 63). It all looks very specific but extremely

relevant to ethnographic research. How can congenital synaesthesia be identified and interpreted in other than western cultures, do you think?

Let me refer you to the discussion in “Synaesthesia Unravelling” of the case of the congenital synaesthete in the Chinese Emperor’s court. This goes to the question of whether congenital synaesthesia is “phenomenologically different.” In China during the Warring States period, the universe was held to be composed of five elements or phases: water, wood, fire, earth and metal. This classification in turn formed the basis for an elaborate system of intersensory relations: a burnt smell was associated with a bitter taste, the colour red, the musical tone *chih*, the season summer, the direction south, and the element of fire; a rotten smell was associated with a salty taste, the colour black, the musical tone *yu*, the season winter, the direction north, and the element of water. This cosmic vision (or better, sensuous cosmology) provided the script for the ritual life of the Emperor and his court. The maintenance of the social and cosmic order depended on people complying with this script (e.g. what foods they ate, what colour clothes they wore, what incense they burned, the direction in which they processed, changed with each change of season). Thus, the cross-sense linkages were performed or enacted. I believe this corresponds to what you mean by non-associative and invariant, but please correct me if I am wrong. In any event, to resist this script would have amounted to an act of treason. Hence, a congenital synaesthete in the Chinese Emperor’s court, whose synaesthesias did not agree with those of their fellow courtiers, would have had to remain closeted. Is it not the same with congenital synaesthetes in western cultures? Do not many synaesthetes keep their inner sensory life to themselves? Or used to, since in recent years interest in being a synaesthete has exploded. Constance and I discuss the sociological reasons for this, too, in “Synaesthesia Unravelling.”

7. Cultural olfactory synaesthetic correspondences seem to be dominated by the sense of taste because of the physiologically pre-determined retronasal mechanisms of multimodal flavor experience (hence lots of names for smells are food referentials). Does this biologically structured propensity translate to a cultural sensory (synaesthetic) universal?

Lots of names for smells are food referentials, as when we speak of a “sweet smell,” for example. This phenomenon is called “odor-taste synesthesia” and it is the focus of a chapter in the *Handbook of Multisensory Processes* (Calvert et al 2004) by Richard Stevenson and Robert Boakes (2004). They argue that this phenomenon is a universal, or at least that

the majority of people appear to experience odor-taste synaesthesia. First, sweet is one of the most common descriptors applied to odors ... [Furthermore,] when smelling an odor, most people can more easily recognize a taste-like quality such as sweetness than more specific qualities such as strawberry- or banana-likeness (2004: 69).

They go on to affirm that this phenomenon is physiologically pre-determined and not merely some figure of speech or metaphor, due to the fact that

as a result of eating and drinking, patterns of retronasal odor stimulation co-occur with oral stimulation, notably of the taste receptors, so that a unitary percept is produced by a process of either within-event associative learning or by a simple encoding as one event. Eating sweet vanilla-flavor ice cream will ensure that the retronasal odor of vanilla becomes associated with sweetness; on some later occasion the smell of vanilla will seem sweet, even if no conscious recollection of eating ice cream comes to mind (Stevenson and Boakes 2004: 81)

It could well be that this is an example of a biologically-structured propensity, although the jury is still out as to whether this correspondence is evidenced in many other languages besides English. That research has yet to be done.

More fundamentally, however, when Stevenson and Boakes (2004: 73) go on to assert that: “Odors display taste properties but do not elicit auditory or visual sensations,” they err. That is, they overreach the bounds of their discipline. The authors rest their case on human physiology and make no allowance for cultural practice, whereas I would hold that practice consistently prevails over physiology, and shapes it. The senses are made, not given.

Counterexamples which suggest that the possibility of audio-olfactory or visuo-olfactory synaesthesia should not be dismissed out of hand include the “golden smell” of ancient Egyptian lore (Goldsmith, personal communication) and the “green smell” known to certain Indigenous peoples of Australia (Young 2005). Furthermore, it is common in various African languages to speak of “hearing a smell.” Among the Dogon of Mali, for example, speech is understood to have “material properties that are more than just sound...[It] has an ‘odour’; sound and odour having vibration as their common origin, are so near to one another that the Dogon speak of ‘hearing a smell,’” and classify words as smelling either “sweet” or “rotten” accordingly (Calame-Griaule quoted in Howes and Classen 1991: 269). This association between smell and sound is reflected in the way the Dogon will operate on the nose of a young person (e.g. through piercing) in order to discipline and correct both their hearing and their speech. Hence, the Dogon practice audio-olfactory synaesthesia despite the fact that there is no basis for this in human physiology, at least not according to Stevenson and Boakes.



Fig 4. Artist, architect and designer Anna Inozemtceva's synaesthetic colour, luminance and spatial experience of the category of months. The multiple frames in the lower part of the picture are how Anna perceives a line of several "joint" years. Created by Anna Inozemtceva. Courtesy of A. Inozemtceva.

8. Human cognition and our sensory systems in particular are limited in multiple aspects, such as their number, span, grasp and acuity, affordable materiality and so on. Neurophysiological constraints, for example, seem to determine our fundamental necessity for sleep and circadian rhythms (varied by socially modified ways of sleeping such as among the Amazon Basin's Pirahã people as per the linguist Dan Everett in *Don't Sleep, There are Snakes!* (Everett 2009); inevitable susceptibility to alcohol and psychoactive substances whose effect is utilized in culturally modulated behavior; etc. Although culture and technology can augment and enhance our sensory abilities, this also takes time and resources, which is not instant and implies limitations of its own. What physiological constraints do you consider significant for anthropology of the senses for this research perspective to have predictive power and heuristic value? When and how should we take these constraints into account in further ethnography projects?

I love it that you bring up Dan Everett's work among the Pirahã. He is a prime example of a sensitive linguist, and, not surprisingly, his linguistic theory has been denounced by cognitive linguists. As far as I'm concerned, he was just doing what Classen bids us do – namely, sensing language – and he does this very, very well.

Let me take up the point you make about “socially modified ways of sleeping” and the question of constraints, which takes us back to the issue of “stratification,” and from there to Geertz's argument concerning the need for a “synthetic approach.” Let me get back to Geertz via the detour of the work of Marcel Mauss. I apologize if this all sounds very circular.

In 1934, Mauss presented a lecture before the Société de Psychologie in Paris entitled “Les techniques du corps” (or, “Techniques of the Body”). By “techniques,” he explained, “I mean the ways in which from society to society men know how to use their bodies” (Mauss [1934] 1979). “The body,” he suggests, is “the first and most natural instrument of man”; but, like other instruments, it must be learned, and it may be learned well or badly, and it will certainly be learned differently in different cultures. By way of illustration, Mauss offered a series of anecdotes as regards walking, running, dancing, jumping, throwing – and even sleeping: “I have often slept on a horse, even sometimes a moving horse: the horse was more intelligent than I was” (Mauss 1979: 81). Building on these anecdotes Mauss went on to propose a general theory of the anthropology of the body, keyed to the suggestion that “there is perhaps no ‘natural way’ for the adult.” Mauss' ultimate point was that to grasp these techniques we need “the triple viewpoint” of physiology, psychology, and sociology so as to understand the “total man” (Mauss 1979: 73). It bears underlining that physiology, psychology and sociology as theorized by Mauss refer not to strata, but to lenses, or approaches. I should note that Mauss does not treat looking, listening, smelling or tasting, etc. in his essay, so I did this for him in “Les techniques des sens” (Howes 1990), which was one of the essays that launched the anthropology of the senses.

9. You collaborated with Chris Salter in developing and directing a series of projects collectively called ‘mediations of sensation’. It is when you were presenting the ideas and some facts from sensory anthropology. What would be your ideal mission and benefits of such art-meets-research projects for both sides? What was the cross-fertilization effect of Mediations of Sensation?

The “Mediations of Sensation” project, directed by my colleague Chris Salter, who is a professor of design and holds the Concordia University Research Chair in New Media, Technology and the Senses, has indeed spawned many art-meets-research or, as we call them, “research creation” projects.⁵

These projects take the form of art installations or “performative sensory environments,” in which we seek to model the sensoria of diverse non-western cultures.

A performative sensory environment is like an exhibit in an ethnographic museum, only instead of displaying artifacts with captions it dispenses with objects and consists instead of an arrangement of sensations. The sensations are produced by computer-generated light shows, soundtracks, flavours in the form of drinks or jellies, walls impregnated with smells, textured surfaces, thermal paint, rotating platforms, and fog machines in the case of some installations, or, in the case of Haptic Field, frosted goggles and actuators worn on the body (little devices which emit visual flashes that are also felt cutaneously. Salter explains:

The *Haptic Field* experience helps people see with their eyes taken away. ... With a reduced depth of field, *Haptic Field* is like moving through an alien landscape; it's like existing in a world that is actually invisible. Past participants have said it's like 'living on the moon.' ... When you're perceptually disoriented, you have to rely on other senses to tell you about the world (quoted in Dunk 2017).

The performative sensory environment is experiential rather than didactic. It seeks to open a crack in the Western sensorium through novel arrangements of sensation which disrupt ingrained habits of perception. In the case of *Displace*, for example, we sought to model the synaesthetic cosmology of the Desana of Colombia. The installation offered a veritable symphony of sensations, or fugue of the senses, with light energies transforming into olfactory and gustatory sequences, accompanied by a soundtrack that synthesized the sounds of indigenous musical instruments and the Colombian rainforest. These sensory patterns and transmutations were keyed to the crossmodal correspondences that the Desana experience under the influence of yage (see above).

One visitor to the exhibition reported that it was like entering “a heavenly dance hall” or disco, another that it was like “taking communion” in a Roman Catholic church. This was not our aim. We try not to be didactic or prescriptive. We do not tell our visitors what to experience; rather, we invite them to make sense of the experience themselves and tell us about it. Subsequent iterations of the installation build on this feedback. In this way, we seek to expand the bounds of sense through interleaving other sensoria.

Unlike the psychology laboratory, where the emphasis is on controlling variables, the performative sensory environment is an intercultural, multi- and intersensory *collaboratory* for experimenting with different crossmodal correspondences in a thoroughly open-ended fashion. Cross-fertilization – of the senses, of cultures, and of academic disciplines – is a good way of characterizing the goal of our research.



Ilinx, September 2014, Chris Salter + TeZ + Valerie Lamontagne, Today'sArt, The Hague, September 2014. Photo © Chris Salter. Used with permission. The format and programming of *Ilinx* was similar to that of *Haptic Field*. For a glimpse of the latter installation see <https://vimeo.com/240738010>

10. In western culture, unlike vision and hearing, other senses, including touch, smell or taste develop in a quite spontaneous and unrefined way. Do you think something needs to be done to early school curricula, to include, for educational purposes, the ideas of anthropology of the senses both about our own and other cultures?

The first thing I would do is to burn all those children's books on "The Five Senses." These books assign particular sensations to discrete senses and prohibit any crossovers. For example, a spread of images devoted to smell will feature pictures of garlic, perfume and cheese while another, on hearing, will consist of pictures of a duck, a fire engine, and a clock. One such book is called *You Can't Taste a Pickle with Your Ear: A Book about Your 5 Senses* (Ziefert 2002) The title of this book makes it clear that the idea that anyone could "hear" a flavour or "taste" a sound is manifestly ridiculous. But I say: Why not? Why not put beans in your ears, as children are notoriously wont to do?⁶ Or, to take a famous example from the philosopher John Locke's *An Essay Concerning Human Understanding*, why not take seriously the blindman's suggestion that the colour scarlet is like the sound of a trumpet? In rejecting this suggestion, Locke's reasoning was clear:

to hope to produce an *Idea* of Light, or Colour, by a Sound, however formed, is to expect that Sounds should be visible, or Colours audible; and to make the Ears do the Office of all the

other Senses. Which is all one as to say, that we might Taste, Smell, and See by the Ears ...
(Locke 1975: 425)

From this provincial perspective, any attempt to circumvent the exclusivity of each sense and to understand sounds by reference to colours or to tastes can only produce “nonsense.”

I am not alone in my critique of the stultifying effect of Lockean psychology and of all those childrens’ books on “The Five Senses” on our sensory life. In one of finest books on the topic of synaesthesia I know, *The Hidden Sense: Synaesthesia in Art and Science*, Cretien van Campen devotes a chapter to exposing how “for most children, the discovery of their senses is ... suppressed by the school system,” that their “senses contain more ways of knowing than the school system may suggest, or allow,” and – citing the rich world of intersensory possibilities opened up by the work of the developmental psychologist Daphne Maurer at McMaster University in Hamilton, Ontario – concludes by affirming that “a child needs to be open and sensitive to synesthetic experiences” (van Campen 2007: 29-44). Kathy A. Mills, an ARC Future Fellow at Australian Catholic University, Brisbane is developing just such a pedagogy in her project “Sensory Orchestration for Multimodal Literacy Learning in Primary Education” (<https://www.sensetogether.com/>); but the process of (re)educating our senses should not stop there. It can and should continue throughout secondary and on into postsecondary education (see for example the Sensory Curricula, Syllabi, Etc. page on the Sensory Studies website (<http://www.sensorystudies.org/syllabi/>) and Anna Harris’s marvellous book, *A Sensory Education* (2021). Frankly, there is no telling how many senses there are or could be, or how many different ways you might combine them. The only certain thing is that if you don’t use them (and experiment with alternate ways of crossing them) you will lose them.

Thank you for your collaboration! It is an honour and privilege for me!
With respect and appreciation,

Anton Dorso

Notes

1. Other examples of such attunements include the screech of chalk on a blackboard which sends shivers down your spine, or (my favourite) the experience of New Yorkers who swear that they can hear the opening notes of “Somewhere” from West Side Story just as a subway train is about to leave a station. For a fascinating discussion of the mechanical dimensions of this collective apperception listen to the episode of Radio Lab (broadcast by National Public Radio) on this topic beginning at minute 53:48 (<https://www.wnycstudios.org/story/asking-another-friend>).
2. I would add, following Classen (1997), that anthropologists should be equally attentive to “intracultural diversity” – that is, the division of the sensorium along gender, class and racial or ethnic lines, as well as by dis/ability (on the last mentioned cline see Hammer 2019). There is also individual diversity, the province of psychology. But let me add a caution: the alleged subjectivity of the senses (or individual diversity) can only be made sense of against the backdrop of the normalization of perception in the culture at large.

3. McLuhan preferred the medium of television to that of film, and even referred to it as a haptic technology of communication, though his reasons for doing so remain unclear.
4. Simon and I were at Oxford together and I hold his research in the highest regard, while at the same time taking issue with his psychologism. Silvia Casini makes a convincing case for the proposition that “we are all synesthetes” in “Synaesthesia, Transformation and Synthesis” (Casini 2017).
5. On research-creation (also known as practice-based art) with particular reference to the design and evaluation of the performative sensory environments (Displace, Haptic Field) discussed here see Salter (2015: ch. 3) and Howes and Salter (2019)
6. I am thinking of the children’s song which goes: “My mother told me not to put beans in my ears, beans in my ears, beans in my ears ...” This is sound advice, of course, but also stultifying. I should note that I except those children’s books which use a patch of vinyl to signify water or patch of furry material to suggest a rabbit’s pelt, and especially the scratch-and sniff books of the Smelly Old History series, because they have a modicum of multimodality.



Response to the Dorso Howes Interview

Sean A. Day

One of the key things that differentiates cross-modal associations from synesthesia is that cross-modal perceptions may be shared by a group of people, whether that group be a whole culture, or subculture, while synesthesia is remarkably idiosyncratic.

Now, the thing is, synesthetes are people, too. Which means that each and every one of these synesthetes is brought up in at least one culture. And thus is brought up in that culture’s cosmology of cross-modal correspondences. Which means that synesthetes have to negotiate simultaneous and most likely conflicting cross-modal association alongside their synesthetic perceptions.

The following examples, partially drawn from my own experience, are perhaps somewhat trite; but their very simplicity makes them highly illuminating.

Let’s use jellybeans, though it could equally be Life Savers candies. I was brought up in the U.S. mid-west. Suppose that, when I was a child, someone handed me a large bag of mixed jellybeans. From the bag, I pull out a yellow one. Being brought up as I was, by the age of 4 or 5 I already know that, for candies, yellow = lemon. “Everyone knows that!” So, I expect the yellow jellybean to taste of lemon. Which it does.



Figure ____: An assortment of jelly beans (Photo: Public Domain.)

But, having ‘flavor-to-color’ synesthesia, as I do, the flavor of lemon makes me see a light sky blue (somewhere around RGB 100, 255, 255). The flavor of lemon is sky blue. So, we have yellow = lemon = sky blue.

Or, we could take a brown jelly bean. Brown = root beer. Again, this is a cross-modal association shared by the community. Every kid in the U.S. Midwest knows that a brown jellybean (or a brown Life Saver) tastes like root beer. But the flavor of root beer makes me see purple (about RGB 125, 0, 125). So, brown = root beer = purple.

We could do this for others. E.g., for Life Savers, red = cherry = black; or white = peppermint = lavender.

For cross-modal associations, it would be little surprise to, for example, have a shared association of the smell of coffee with the color brown. And I do hold that association. But, also, I hold the association with the color of a dark blackish-green oily fluid (like some brands of radiator antifreeze fluid). Likewise, it would be common to associate the smell of fresh-baked chocolate chip cookies with shades of brown. I do that. But less likely is my simultaneous association with shades of puce.

We can move from ‘flavor-to-color’ synesthesia to other types of synaesthesia, such as the very common grapheme-based synesthesia. For example, McDonald’s “golden arches” are golden, or yellow. A lot of people know that one. But, it’s an ‘m’, and, for (our random, hypothetical grapheme-to-color synesthete) Bob, the grapheme m is red. So, McDonald’s golden arches are (simultaneously) red. Or, for calendrical synesthesia: October has Hallowe’en, which is black and orange. But, for (another hypothetical synaesthete) Cathy, October is neon lavender. So, ...

So, no, synesthesia is not just having more extreme cross-modal associations than others around you. I don’t, for example, think that too many people connect the flavor of a beef steak with a 25-cm-cubed cube of blue (RGB 0, 0, 255) candle wax.

I want to emphasize here that, just as individuals within a given culture vary psychologically and sociologically, they also vary physiologically, and that congenital synesthetes are physiologically different than non-synesthetes. We now have technologies, such as fMRI and MEG scans, which show us that congenital sound-to-color and grapheme-to-color synesthetes have anatomical differences in neuronal connections between brain regions that non-synesthetes do not (see e.g. Gould van Praag et al. 2016; Terhune et al. 2015; Whitaker et al. 2014; see also Ward 2019). Congenital synesthetes also display genetic differences than non-synesthetes (see e.g. Tilot et al. 2019; 2018; Tomson 2011). However, studies such as that by Bosley and Eagleman (2015; see also Zimmer 2018) do indeed warn us against reducing everything solely to genetics or more broadscale physiology.

While “synesthesia” means a “merging of the senses”, this implies that there first has to be an alternate, “normal”, un-merged state of the senses. However, that is not how the brain and the senses work. Virtually every area of the brain has neurons which are multifunctional. To take a couple common examples, we can look at areas V1 and V4 in the occipital lobe. In high school biology and freshman college psychology textbooks, students are taught that V1 and V4 areas process vision. Yes, they do. They also process auditory and tactile sensations, if given such input, although not as well as other parts of the brain. Yet, beyond this, V1 and V4 don’t just only feed to other parts of the brain which process vision; they also feed to parts that primarily (but, again, as mentioned, not only) process hearing, or touch, or flavor perception, or such. And, likewise, those parts also feed to the “visual cortex” (see, for example, Eagleman 2020; Gazzaniga et al. 2018). Put simply, almost every part of your brain will take in information of whatever form is provided, from whatever sensory mode input or other source provides it, and try to do something with the signals; usually, the brain region succeeds in producing at least a little something.

Which then brings us to the topic of the Disinhibition Theory of synesthesia (see Simner and Hubbard, eds., 2013). While the V1 and V4 areas of the brain, for example, are also processing audial and tactile information, feed-forward and feedback of this processing to other parts of the brain is usually inhibited in neuro-typical people. However, with congenital synesthesia, such interactions are not inhibited, or are inhibited at a significantly lower rate. This disinhibition allows feed-forward and feedback to other regions, creating the buildup of a perception through analysis of the back-and-forth of feed-forward and feedback. With this, we can thus, for example, have visual perception due to auditory stimuli. Note that such disinhibition could also occur, albeit only temporarily, between specific regions of the brain of an individual, whether neuro-typical or a synesthete, due to hallucinogenic drugs such as LSD, mescaline, or harmine; the emergence of such disinhibition could also be a result of brain injury, such as from a stroke, tumor, or concussion.

Also, note that such disinhibition plays a role in how some congenitally blind people (those where the obstruction to vision is at the eye or initial portions of the optic nerves, rather than in further regions such as in the occipital lobe) develop use of the occipital lobe for reading Braille. Since there is reduced or no input from the eyes for visual processing, visual processing does not override and inhibit tactile processing. In a “use it or lose it” fashion, as more of what would “typically” be used for visual processing is instead used for tactile processing, these regions of the brain alter to become more adjusted and less inhibited to those signals (see Eagleman 2020; Gazzaniga et al. 2018).

Howes writes, “Open-minded psychologists like Lawrence Marks at Yale (author of *The Unity of the Senses*), do not discriminate against these other forms of synaesthesia and set them aside the way other psychologists, such as Simon Baron-Cohen at Cambridge does [...]”

Marks’ book *The Unity of the Senses* was written in 1978. A lot has happened since then. While Howes seems to hold that thinking about synesthesia has gone downhill since then, I tend to disagree. In 2009, during the 3rd International Arte Citta Foundation conference, in Granada, Spain, I sat next to Larry Marks at the banquet dinner (Ed Hubbard was on his other side, and Anton Sidoroff-Dorso and Natalia Zakharova sat across the table from him), and we talked about this matter. Perhaps starting with that conversation (Hubbard was very persuasive), Marks gradually started to concede that there were distinct differences between cross-modal associations, multi-modal perceptions, and synaesthesia, and that these were discrete things. Fast forward to 2013, and Marks is still talking about “weak synesthesia in perception and language” in the *Oxford Handbook of Synesthesia* (Simner & Hubbard 2013: pp. 761 – 789). But, by this time, Marks was also very carefully exploring and examining the aforementioned differences, as may be seen, for example, in his article “Synesthesia, at and near its borders” (Marks and Mulvenna 2013).

Howes mentions Ramachandran’s take on drug-induced synaesthesia in comparison to congenital synesthesia. It should be pointed out, though, that there are easily over 80 different types of congenital synesthesia. On the other hand, of those 80 types, only around 6 or 7 types are experienced with drug-induced synesthesia. You don’t, for example, get drug-induced grapheme- or phoneme-based synesthesia, nor synesthesia for time units such as months and days of the week.

One of the defining criteria of synesthesia is that the inducer-concurrent relationship is consistent: if the sound of a piano makes one synesthetically see a sky-blue mist, it always has and always will; if the letter H is red, it always has been and always will be. Drug-induced synesthesia has no such consistency from one experience to the next.

Drug-induced synesthesia also has quite different experiential qualities than congenital synesthesia. This should be expected. Taking a simple, perhaps cliché example, a 30-year-old man at a rock concert, tripping yet once again on LSD and experiencing sound-to-color synesthesia for the second time in his life (contrary to popular media, drug-induced synesthesia is actually quite rare), does not have the past 25 years straight through of experience of a congenital sound-to-color male synesthete, for whom, since the inducer-concurrent relationships are consistent (see above), by the age of 30 will likely find many his sound-to-color experiences quite mundane and quotidian.

Regarding yagé and the Desana: The Desana’s cosmological associations of colors, heat, odors, and flavors are culturally learned and shared. They are not idiosyncratic and are consistent. However, I highly doubt if the drug-induced synesthetic perceptions are the same from one Desana (or someone from any other culture, for that matter) to the next, or even for the same Desana individual from one round of yagé to the next; the interacting effects of harmine and tetrahydroharmine (and note that most ayahuasca mixtures contain more than just yagé, such as *Psychotria viridis* and/or *Diplopterys cabrerana*) are rather idiosyncratic, and inconsistent. I’ll grant, though, that they might have similarities, perhaps, due to the heavy influence of the cosmology, and from sometimes being guided (prompted) by others such as a shaman.

Howes writes, “The implication is that there is no ‘natural way’ to use the senses, only diverse culturally-mediated ways to deploy our sensory faculties”. Yet, we still must nevertheless acknowledge that humans are biological organisms, and thus that the “diverse culturally-mediated ways” do have biological constraints (both inhibiting and enabling). If you have good vision and stare directly at the sun for an hour, you will no longer have good vision, regardless of your culture and its sensory cosmology. Likewise if you drink a liter of methanol. If you have good hearing and sit right next to a wall of speakers at a stadium concert by The Who, you will not have as good of hearing the next day, regardless of your culture. If you inhale arsenic pentafluoride to smell the odor, you won’t do so for very long, regardless of your culture. If you submerge yourself in a lake and insist that you can breathe the water, you won’t persist in this belief for very long. Likewise, you aren’t going to have a human society without oxygen, regardless of what culture it adopts. And so on. These examples incorporate the senses of vision, hearing, smell, taste, touch, and pain, amongst other senses. It is folly to deny natural aspects of the human senses. The human senses are indeed unquestionably shaped and amended by culture, but one should not dismiss that there are inescapable biological constraints.

“Synesthesia” means a “merging of the senses”. Which implies that there first has to be an alternate, “normal”, un-merged state of the senses. Synesthesia would be atypical, an *alternate*, *different* combining than normal. Synesthesia, by definition, has to be the minority, statistically less-common situation; if more than 50% of people do it a certain way, then that is the way the senses work for the majority of people. That’s not synesthesia; that is a call for us to reconsider our concepts and definitions of what the human senses are and how they work.

But, likewise, as we have seen, since a synesthete, perforce, has to have grown up in at least one framework of cross-modal associations, that framework definitely shapes and influences things. This ties in to what Howes mentions when he insists, following Mauss, that researchers adopt a “triple perspective”. Initially, I was quite set to agree with Howes about this. But then it struck me that this “triple perspective” is perhaps a bit short-sighted.

I teach anthropology classes; in one form or another, I have taught anthropology for over 30 years. One of the basic ideas of anthropology is “participant observation”, where, in order to better understand another people, you go to them and strive to learn their culture and ways of life. Which means, for example, that a British anthropologist does not go to a remote South Pacific island and say “You have nothing to offer to me,” or “You should do things like we Brits do,” or “All of the people here should be removed and replaced with Brits.” Likewise, an anthropologist does not, for example, go to the Psychology department’s lab and declare “You should all become anthropologists,” or “Everyone here should be removed and replaced with anthropologists.”

Another basic concept in anthropology, mentioned prominently throughout the textbook I use for my “Intro to Anthro” classes, is holism, the integration of knowledge from all disciplines, across all fields. The college where I teach offers classes in about 100 different disciplines, from Accounting to Welding, including Biology, Civil Engineering, Dentistry, Economics, Other universities I have previously taught at offered perhaps almost twice this number. To start exploration of sensoria, one could become an anthropologist (such as I did) and perhaps help to develop “sensory anthropology”. However, to *advance* understanding of sensoria, one should strive to *abandon* being an Anthropologist, instead immersing oneself in other fields (“participant observation”) towards becoming a Polymath.

So, the anthropologist walks into the Psychology lab and says, “I’m here to learn neuroscience. Please, teach me! ... and, if you’d like to learn some Anthropology along the way, I’ll gladly teach you. And if not, that’s cool too. And, if we get tired, perhaps we can both go over to the Horticulture department and see if they’ll teach us some stuff.”

Granted, life is short, one can only do so much, and there are advantages in finding one’s comfort zone or niche and specializing. If you try to walk from the tip of Tierra del Fuego to Cape Town, South Africa (allowing for a boat trip across the Bering Strait), you’re probably not going to make it – it’s a long walk! But the point isn’t to make it to Cape Town. The point is to travel on roads you’ve never been on before, even if only to the next bend. And to learn how to cut new paths.

Mauss’s “triple viewpoint” of physiology, psychology, and sociology falls short in number by at least a hundred. But the real goal here is not to adopt a triple viewpoint, or even a hundredfold viewpoint. The goal is holism, bringing what were once scores of separate, insular disciplines together to discover a more “consolidated, unitary viewpoint”. The field of sensory studies could benefit from a handful more Anthropology students. Or Psychology or Sociology students. The real benefit, though, will come with the insights gained by those scholars who, in pursuing an anthropology of the senses, read up on chemistry, and astrophysics, and take piano lessons, and lessons from chefs, and study mechanical engineering, and maritime law, and The forever-striving, eternally-traveling polymaths.



Rejoinder to Day

David Howes

Thanks for sharing this glimpse into the inner life of your senses with us (and for all the scientific references you brought to the discussion).

I did not know you trained in anthropology. I mistook you for a psychologist. To be a synaesthete and an anthropologist - what a marvelous combination! What a great sensory ethnography you could write of, say, the Mall of America, with its candy stores (stocked with jellybeans), McDonald’s restaurants, etc. - if only you would temper your subservience to the psychological literature and adherence to the layer-cake model and grounding your analysis in statistics all the time As you will have surmised, I am an advocate for experiential methods (as against experimental methods), the qualitative (over against the quantitative). I think there is far too much emphasis on quantifying qualia (as in psychophysics). We need more research into qualifying qualia. There are some cognitive scientists and cognitive linguists who have taken up this challenge, such as Danièle Dubois and her associates in *Exploring Sensory Experiences* (2022), but they are few.

I was intrigued by your discussion of the de facto multimodality of brain regions long thought to be unimodal (e.g. V1, V2, etc.). I was chastened by your injunction to stop telling psychologists what to do (i.e. become anthropologists – I should curb my tongue). So let me propose an alternative scenario for the investigation of synaesthesia, one in which the stress is more

on mixing it up, not unlike in those brain areas you mention. Here, then, is my Modest Proposal: every neuroscience laboratory should include at least one anthropologist. Say, for example, a lab were studying the effects of some hallucinogen, such as ayahuasca, on the brain of some random research subject. The token anthropologist among the neuroscientists would surely agree with the latter that the MRI scans are very colourful, and grant that they have “magnetic appeal” (Joyce 2008), before interjecting with:

The Desana have a theory of the brain too, you know, and their theory is no less multimodal than yours. In one image:

“the human brain is compared to a huge rock crystal subdivided into many smaller hexagonal prisms, each containing a sparkling element of color energy. ... In another image a brain consists of layers of innumerable hexagonal honeycombs; the entire brain is one huge, humming beehive ... each tiny hexagonal container holds honey of a different color, flavor, odor, or texture” (Reichel-Dolmatoff 2018: 307)

I could tell you more about Desana brain science, though I think it would be preferable to invite a Desana shaman to join us here in the lab, and tell us what he knows, if he would care to share. Maybe we could even take ayahuasca ourselves, under his guidance!

In this (hypothetical) scenario, the anthropologist is not suggesting that the neuroscientists should become like them, only that through conversation and through employing the methodology of participant sensation (Laplantine 2015; Howes 2019) they might achieve additional insights into “the mysteries of the brain.”

I want to emphasize that I thoroughly respect your model of multidisciplinary inquiry, and what you say about “holism.” But I would not stop there. I would point you to the literature on “indigenous psychologies” (Heelas 1981), “local biologies” (Niewöhner and Lock 2018), and “ethnoaesthetics” (Biddle 2016), etc., and suggest that psychologists proper, biologists proper, art historians and critics proper, etc. could derive much instruction from exploring the wisdom that has been generated within these indigenized versions of their respective disciplines. I would also hold up the model of the lab we run at the Centre: an intercultural, multi- and intermodal collaborative (as discussed above).

I was trying to disabuse you and the other readers of my interview with Anton of the layer-cake model, but I see from the way you insist on bringing physiological constraints back in that I failed. My point was that humans are more-than-biological organisms, that practice can override physiology, but there are boundary conditions to be sure, as you stress. My question is: Where do we draw those boundaries? Take your example of staring at the sun. Back in 1840, Gustav Fechner did just that for hours upon hours each day, and he suffered in just the ways you describe. But then, after he recovered, he went on to found the discipline of psychophysics, so his experiment staring at the sun had a silver lining. In the electro-digital economy of the present conjuncture, we too spend a lot of time staring – staring at the screens of our so-called smartphones. That practice can’t be good for our eyes. It is even worse for our other senses but that’s life in the hyperconnected digital world of late modernity.

Your point about oxygen is equally well taken. One thinks of the tragic fate of David Carradine (of Kung Fu fame) who accidentally suffocated himself while engaging in the lone sex practice of “erotic asphyxiation.” On the other hand, have you ever been to an oxygen bar? There

they serve you hits of oxygen. I would take a hit of oxygen over a shot of whiskey anyday, for the way it heightens my senses instead of dulling them. Unfortunately, the old oxygen bar on Saint Lawrence Boulevard is closed now, replaced by a service called Oxygen Bar Rentals Montreal Quebec (<https://www.oxygenbarrentals.com/montreal-quebec/>) which caters to corporate events and private parties. The commodification of oxygen. Who would have thought! Apparently its big business. That's life in the hyperaesthetic "experience economy" of late modernity.

In closing, I do think Lawrence Mark's *The Unity of the Senses* was a highpoint, because it treats congenital synaesthesia (in all its multiplicity) as just one variant among others, and the book is very cultured (what with all its literary references) in addition to being well-heelled in experimental psychology. I rank Marks' book up there with Constance Classen's *The Color of Angels: Cosmology, Gender and the Aesthetic Imagination* (1998 – the last two chapters, on "Crossing Sensory Borders in the Arts," are particularly germane). I am glad to hear that Marks was still holding out (as far as your concerned) in 2013. I didn't meet him until 2017, when he invited me to give a talk at the John B. Pierce Laboratory at Yale. After the lecture, we had a very simulating and far-ranging conversation about synaesthesia in the expanded field while strolling about the Yale campus. My talk at the Pierce Laboratory, incidentally, as you might expect, was called "What Anthropology Teaches Us About the Brain and Human Perception." Anthropology is my *fröhliche Wissenschaft*. As a fellow practitioner I know you can appreciate why.

Bios

Sean A. Day holds a B.A. and an M.A. in Anthropology, and a Ph.D. in Linguistics. A multiple synesthete himself, he is the founder and moderator of the Synesthesia List, an international forum for synesthetes and researchers, begun in 1992. He was instrumental in developing the American Synesthesia Association and served as the ASA President from 2000 to 2016. In 2016, he helped form the International Association of Synaesthetes, Artists, and Scientists, and currently serves as its President.

Anton Dorso is a Moscow-based researcher of congenital synaesthesia. He received a specialist degree in linguistics and a postgrad degree in psychology at Moscow Pedagogical State University with a dissertation on individual differences in people with synaesthesia. His research focuses on synaesthesia as viewed in cultural-historical psychology. Anton is a founding board member of the International Association of Synaesthetes, Artists, and Scientists (IASAS), supervisor of the Russian Synaesthesia Community synaesthesia.ru, and developer of Synaesthesia Quotient.

David Howes is a Professor of Anthropology and Co-Director of the Centre for Sensory Studies at Concordia University as well as an Adjunct Professor in the Faculty of Law at McGill University, Montreal. His publications range from *The Varieties of Sensory Experience* (1991) to *Cross-Cultural Consumption* (1996), and from *Sensual Relations* (2003) to *Senses and Sensation: Critical and Primary Sources* (2018). He is also the Managing Editor of *The Senses and Society* (one of the Routledge portfolio of journals)

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