Paper 2 of 5

Emotional transduction and the teem theory of perception

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KEYWORDS

Emotions, Emotional perception, Environment, Evolution, Innate behaviour, Instinct, Perception, Teemosis, Teems, Transduction.

ABSTRACT

Central to teem theory is the premise that teemic taxa transduce sensory stimuli into an emotional code to facilitate the teemosis evolutionary process. Here the physiology and evolution of emotional transduction are described, and a new theory of perception and sensation proposed that distinguishes perception as two separate perceptual systems - one emotional - the other cerebral. Emotional perception, it is argued, first emerged at the Precambrian-Cambrian boundary as a component of the teemosis evolutionary process to transduce environmental stimuli into linguistically meaningful patterns of emotions. As the first perceptual system, emotional perception established the physiological networks and behavioural precedents from which brain based perceptual systems would evolve. In this context, teemosis functions as a mechanism of organic evolution.

INTRODUCTION

The evolution of the CNS and its language

Elsewhere in this issue, (Paper 1) it is posited that only experiential information configured into variable patterns of emotion may be inherited by the teemosis evolutionary process. This hypothesis predicts that sensory stimuli emanating from all an organism's sensory modalities is transduced into an emotion based code called Emlan prior to genomic encryption by the teemosis process. To examine this hypothesis, we begin with the premise that the central nervous system (CNS) is the principal physiological trait of teemosis, and axiomatically, emotional transduction of sensory stimuli and Emlan are both attributes of CNS functioning. It is appropriate then to speculate how the CNS acquired this evolutionary function.

Comprised of specialised neurons, directly interconnected via high-speed synapses, and supported by neurotransmitters and hormones, the CNS first emerged as a highly sensitive proprioreceptive 'seismograph' in the Vendian, able to utilise patterned neuronal activity, (PNA) to detect, connect and coordinate disparate body parts to effect organismal mobility. While this adaptive phenotypic modification permitted organisms to actively pursue nutrients and reproductive opportunities, the addition of peripheral nerves and rudimentary exteroreceptors additionally enabled the CNS to generate PNA in response to exogenous disturbances in the organism's current environment.

The PNA precipitated by external environmental circumstances varied in salience, frequency and modulation depending on causation: and eventually the CNS evolved the cellular ability to distinguish these patterns of disturbance: enabling, for example, a soft touch to be differentiated from a tap, a squeeze, or a bite. PNA became associated with a range of hormonal and other messenger chemicals; adding a physiological causative effect to a specific environmental stimuli. Importantly, this environment-PNA matrix is not reliant on cerebral (brain based) organs or modules, but was modulated viscerally by the CNS and is therefore exclusive to it. All that remains is to give PNA its common name - emotion.

Thus by between 600 -900 mya, the CNS acquired a new adaptive function; sensation. Autonomously produced by the CNS, without recourse to brains or other cerebral modules, possessing a rudimentary linguistic capacity, and widely available in the Cambrian context in every species demonstrating a CNS, emotion-sensation became the elemental component of teemosis - just as random mutations had been the mainstay of Darwinian evolutionary process for the preceding 3 billion years. In effect, every mobile eukaryote species equipped with rudimentary exteroreceptors had the potential to acquire the teemosis process and thereby generate a repository of adaptive innate behaviours.

In such species, sensory modalities transduce the external environment into sensory stimuli that is interpreted by the seismographically sensitive neurons of the CNS as sensations of emotion. Variations in these patterns of sensation generate a rudimentary linguistic capacity, enabling a Cambrian lace crab to identify a trilobite or a mollusc solely by its unique Emlanic signature.

Emlan

Emlan is best understood in the context of the 'environment of evolutionary adaptedness'[1] that shaped its linguistic parameters. As the teleonomic objective of teemosis is to fabricate adaptive innate behaviours from transduced environmental information, the more precisely environmental stimuli, emanating from individual sensory exteroreceptors, is transduced into Emlanic code, the more precise, and therefore more adaptive, will be the teemic behaviours encoded from this transduced stimuli. This galvanised Phanerozoic selective pressures to ameliorate Emlanic functioning. This included maintaining seismographic sensitivity of the CNS despite significant phyletic complexification and diversification, encasing the CNS in a protective sheaf of vertebratic bone, and using the CNS as the trunk from which all teemic modules, including the brain, would emanate.

As each species occupies a unique ecological niche, selective pressures have individualised transduction mechanisms and capacity, ensuring that each species acquires an Emlanic lexicon sufficient to transduce the essential adaptive information requisite for the continuance of its lineage. Thus, to encode a teem that prevents a common swallow *(Hirundo rustica)* from consuming poisonous red berries will require an Emlanic lexicon capable of transducing 'avoid', 'red' and 'berries' into swallow Emlan. Monarch butterflies *(Danaus plexippus)* are able to identify the milkweed plant, on which they lay their eggs without prior experience because Monarch Emlan can transduce the milkwood plant into an emotional representation. Frog Emlan is linguistically proficient at transducing physical and behavioural data relating to snakes, birds and lizards. Human Emlan is biased towards transducing facial expressions, especially hostile expressions, fire, sexual cues, snakes, spiders, food, climatic conditions, landscapes and other 'species specific adaptive data' required to survive environmental hazards extant in the ancestral Phanerozoic environment. In short, the survival of teemic species depends on the phyletic acquisition of Emlanic lexicons and sensory receptors capable of transducing species specific adaptive data into Emlan.

Emlanic competence is predominantly evident in relation to predatory, prey, agonistic and reproductive behaviours, and in the regulation of interspecific and intraspecific interactions. Prey species evolve Emlans capable of transducing the visual, aural and olfactory identifiers and tactics of their principal predators with considerable accuracy and speed. Lemming Emlan, for example, is adept at transducing the aural and visual characteristics and tactics of arctic foxes and owls - their principal predators. Similarly, puissant selective pressures have ensured that each species specific version of Emlan acquires the linguistic competence to transduce the myriad sexual and mating cues, scents, rituals, courtship displays, vocalisations, copulatory behaviours and dances that teemic species require to effect pair formation and procreation. Chimpanzee Emlan, for instance, needs to be particularly adept at transducing colours because males determine female ovulation by transducing precise alterations in the colouration of female genital swellings.

In this manner, selective pressures have provided teemic taxa with its own version of Emlan, capable of transducing the indispensable species specific adaptive data - environmental information relating to predators, mating, territoriality, resource gathering etc. that contribute to the maintenance of the individual and the species, into Emlanic code, and subsequently into adaptive teems.

The linguistic limitations of Emlan

While the expansion of Emlan contributed to vagility, especially in relation to radiation into marginal habitats and terrestrial environments, vagilitic capacity is limited by inherent lexical and syntaxic deficits in the Emlanic language. Emlan is blind to nonemotional stimuli, and these transductive deficits correlate to gaps in the innate behaviour repertoire. For example, Emlan is unable to transduce exact quantities, dimensions, locations, times or places, so it is axiomatic that innate behaviour is characterised by the absence of spatial and temporal exactitude.

Instead of precision, Emlan quantifies quantities and qualities subjectively. For example, while Human Emlan is unable to precisely transduce a man’s height as 1.98m, it produces an emotional array that quantifies the height relative to the self. Thus a

1.98m man may be transduced into an Emlanic description suggested by subjective phrases such as “Wow! He’s so tall,” or “He’s a giant!”

In humans, lexiconic deficits also impede the transduciton of complex cerebral reasoning, philosophical abstractions, mathematics and other logic based concepts. Because no extant version of Emlan can transduce how, when, where or why, this explains why these abstractions have never formed part of human innate behaviour..

In summary, teems can only be encoded if the information is transducable into Emlan. This, it is suggested, explains why human males demonstrate a universal preference for a hip to waist ratio in females of 0.7:1[2],[3],[4] - because this ratio can be transduced as an Emlanic aesthetic ‘word’, and additionally, why abstract concepts such as *tomorrow* and *democracy*, or precise units, like *eighteen* or *11.15am*, do not contribute to human nature, because these concepts cannot be transduced into Emlan.

The evolution of emotional transduction

Because transduction is an integral part of the highly adapative teemosis process, it has been subject to concerted selective pressures throughout the Phanerozic which has singularly increased transduction functionality. Here, I speculate on several transduction adaptations that appear to be universal in teemic plyla.

1. *All sensory receptors transduce emotion*. Because all sensory receptors are connected to the CNS via perphrial nerves, each of an organism’s sensory receptors is able to transduce stimuli into emotion. In addition to eyes, ears, noses, skin and tongues, transduction also occurs via whiskers, antennae, pheromones, pressure and humidity senses, chemo-receptors, vibration detectors, temperature gauges, sonar detection, electro-magnetic receptors, bioluminescence, tympanic membranes, radar, infrared, polarised and ultraviolet senses, and so on.

2) Sensory Reciprocation. Once sensory stimuli from individual modalities is transduced into Emlan, each stream is linguistically compatible and interconnected to streams from other sensory receptors, facilitating a synchronous reciprocity between transduced stimuli. In other words, once a visual stimuli is transduced into emotional code, it is linguistically compatible with transduced stimuli from an organism's ears, skin, vermonasal organ, chemoreceptors, antennae, etc. I call this compatibility and interconnectivity - 'emotional reciprocation' because its principal adaptive function is to facilitate two-way communication between compatible stimuli.

By pooling, reinforcing and complementing transduced stimuli from disparate sensory modalities, sensory reciprocation significantly increases the inclusive data capacity of transduced stimuli, facilitating for example, tactile, visual or olfactory precepts supplementing a deficient aural precept. A rodent, for example, may glimpse an indistinct movement in the bushes, but lacks the cognitive capacity to extrapolate this deficient data to deduce causation. However, if this impoverished visual field is supplemented by the sound of a snapping twig and perhaps a discordant scent, sensory reciprocation may composite these disparate but deficient fields to transduce a holistic Emlanic representation of a fox that will trigger the rodent's anti-fox teem.

Although the primary evolutionary benefit of sensory reciprocation is to increase the accuracy and speed of Emlanic transductions, it is suggested it confers a particular adaptive advantage in relation to the early and accurate detection of predators in low perceptual fields. Additionally, sensory reciprocation has transformed perception in teemic species, into a rich, complex, and multifaceted sensory experience. For example, sensory reciprocation permits the relatively unsophisticated human sense of taste, (humans typically only differentiate four different tastes - salt, sweet, sour, and bitter)[5i] to be supplemented by our sense of smell to create a more fulsome experience of food. It explains why when we catch a cold and cannot smell, preventing sensory reciprocation, our food appears less flavoursome

3) Sensory contamination. An organic corollary of sensory reciprocation is what is called 'sensory contamination,' where transduced stimuli from one sensory modality modulates transduced stimuli from an organism's other sensory modalities. A theoretical example of sensory contamination may envisage emotional olfaction being affected by emotional vision or emotional touch. Evidential support for this sub-hypothesis is provided by the discovery in human subjects, that the colour of a food alters its taste,[6],[7] and that simply looking at different colours affects a subject's ability to identify odours.[8],[9],[10] These hitherto unexplained phenomena are consistent with the contamination, reciprocation, transduction and teemosis hypotheses.

I further posit, that the sensory reciprocation hypothesis explains why some humans can actually see and hear colours, taste shapes, and smell music,[11] a singular medical condition known as *synaesthesia*, and until now, arguably one of the most obdurate mysteries of psychology.

4) The Teemic Cluster Sensory reciprocation facilitates the amalgamation of all the disparate transduced sensory stimuli from all the organism's sensory modalities into a single holistic Emlanic representation. This single composite representation is called – 'the teemic cluster.' The teemic cluster is the sum-total of all transduced precepts from all sensory modalities. While each sensory modality

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[i] Some researchers claim that we can also distinguish an alkaline and a metallic taste as well.

contributes an Emlanic word, once aggregated into the teemic cluster, they collectively create more complex sentences comprised of conjoined visual emotions, olfactory emotions, tactile emotions and so on.

Paradoxically however, although each teemic cluster contains an aggregation of reciprocating Emlanic representations from each sensory modality, the individual transduced stimuli from each sensory modality are maintained genetically intact and distinct within the teemic cluster. In other words, the transduced emotions are clustered, but as separate as a bag of marbles.

Is it adaptively imperative for each separate sensory stream to maintain autonomy within the cluster because the cluster is the basic unit of teems. Teems are in effect, genetically archived clusters, so whatever is encapsulated within the transduced cluster forms the informational content of the teem. It is axiomatic therefore that the more information is packaged into a teemic cluster the more adaptive information will be passed on to progeny via teemosis. Additionally, maintaining the autonomy of individual transduced stimuli within the cluster allows each stimuli to independently trigger a teem, thus vastly increasing the sensitivity of the activation mechanism.

This is the Sensory Autonomy Hypothesis and it asserts that any individual transduced stimuli can encode or activate a teem. In effect, a single transduced auditory stimulus, even in the absence of corroboration from other sensory modalities, may encode or trigger a teem. Teemic receptivity, and in particular the sensitivity of the teemic trigger, is thus positively correlated to the number of sensory modalities an organism displays. Humans have five principal senses which indicates that any one of the five senses may encode or trigger an adaptive teem. In addition, because feathers, scales, fur, fins and bone are all connected via peripheral nerves to the CNS, they are all capable of transducing emotion into Emlan.

5) Transduction Pulses Teemosis functions by genetically archiving high potency traumatic emotions precipitated by a single, time-specific episode. To achieve this, teemosis needs to define the beginning, end, and duration of the teemic experience with considerable exactitude. This requirement led to the speculation that emotional transduction occurs not as a continuous stream of transductive activity, but as distinct, brief and separate bursts of transduction, which is called 'Transduction Pulses'. The hypothesis asserts that emotional transduction of sensory stimuli occurs as a rapid sequence of very brief single transduction episodes - a transduction pulse. Each pulse is electrochemically separate and distinct from the pulse preceding and following it. Thus one teemic cluster has a duration of one teemic pulse.

How long is each pulse? In attempting to determine the duration of teemic pulses, it may be noted that emotional transduction has been extensively shaped by selective pressures generated by predation, which has tended to play a high priority on the speed of transduction. For example, the human anti-spider teem is adaptive because it recalls emotions that precipitate a defensive behaviour almost half a second before the person is even consciously aware of the spider's presence.

Typically, it takes about a third of a second for electrical activity from a sensory organ to reach the parietal and prefrontal areas of the brain and become aware of the stimuli (be it visual, auditory or tactile.)[12],[13],[14],[15]; [16] This means it takes betweeen 300-700 milliseconds for the human brain to compose a simple thought – such as recognising and naming an object. By comparasion, subliminal perception experiments have demonstrated that humans are able to subliminally perceive emotionally salient stimuli flashed for as little as 1/1000 of a second.[17], [18] See also,[19].[20] Indeed, Adophs (2001)[21] has demonstrated changes in firing pattern of neurons in human subjects exposed to aversive visual stimuli occured within 0.12 seconds. This suggests that Human Emlan generates a new transduction pulse approximately every millisecond.

The transduction pulse hypothesis argues that each pulse transduces one teemic cluster, so that every second, a thousand or more teemic clusters are generated, each one a veritable snapshot of the emotional experience of the organism at that precise millisecond. Thus, transduction pulsing not only provides a continuously updated experiential record of organismal emotionality, but additionally provides the mechanism by which the duration of a teem and its emotions may be physiologically quantified.

6) The Teemic Threshold I have argued that teems are encoded when a traumatic experience is transduced into a series of abnormal transduction pulses, the salience and amplitude of which are sufficiently elevated to irrevocably rearrange, delete and transpose sequecnes of ncDNA in an organism's genome. The phase, during which the trauma emotions maintain the capacity to modulate chromosomal material is hewre called 'the Teemic Threshold.'

The teemic threshold is a theoretical measurement of emotional amplitude, that usually, but not always, corresponds to the apex of emotional potency of the experience. Once attained, the threshold is maintained (and ncDNA continues to be modified,) until the potency of the trauma emotions subsides below the threshold level and genetic modification ceases. Comprised of a number of separate teemic pulses, the teemic threshold defines the beginning and end of the teem. Teemosis occurs exclusively during the teemic threshold.

7) The Teemic Period. As well as a measurement of emotional potency, the threshold is additionally quantifies the chronological length of each teem. The threshold is measured as a series of teemic pulses, so that each teem is comprised of a precise number of pulses. Thus the ‘period’ of a teem - its duration, is quantified by the number of teemic pulses is contains.

The human teem ‘fingernails scraping down a blackboard teem’ thankfully only contains a few hundred transduction pulses. Encoded perhaps by a hominid falling down a cliff, trying to get a grip on the smooth stone, the emotions of this teem are singularly salient, but of short duration. By contrast, a human jealousy teem may consist of billions of pulses and have a period of days or weeks or months. In this way, the number of teemic pulses define the chronological parameters of a teem.

8) Gender specific and development specific transductions. Many complex instincts are demonstrably gender specific. Sexual, agonistic, nurturing, territorial, habitat construction and predation all demonstrate varying degrees of gender specificity. Similarly, many teems incorporate development cues, enabling teems to be encoded that correlate specifically to a teemic individual’s development. For example, some human ‘separation distress teems’ are ontogenetically specific to infants and highly adaptive in this context, just as most human sexuality teems are ontogenetically exclusive to sexually mature adults. Similarly, teems that precipitate risk-taking behaviour are developmentally correlated to young males. Accordingly, it may be conjectured that teemosis, being the sole fabricator of complex adaptive behaviour, acquired the capacity to encode both gender specific and development specific teems. This suggests that gender and development specific transductions are ‘tagged’ as such during transduction and this supplementary information is encoded in the teem where it regulates the expression of coding exon genes that moderate hormones, neuropeptides and other physiological systems that exert an influence over development.

Emotional perception

The combination of emotional transduction, rudimentary sensory receptors, and the linguistic capacity of the CNS aggregate to effect what may be termed ‘teemic perception’ or ‘emotional perception;’[ii] (EP) which is defined as perception modulated exclusively by emotion autonomous of cerebral functionality. EP encompasses a diverse suite of original teemic modalities, including emotional vision, taste, olfaction, echolocation, bioluminescence, electro-magnetic reception, etc. that first emerged as exclusively emotion transducing organs. That is to say, the first eyes did not see visual images, they ‘sensed’ transduced emotional representations of physical objects. The first ears heard sound only as emotions.

As EP is not reliant on cerebral networks, differentiation of afferent and efferent nerve fibres, or the morphological elaboration of the brain, these archaic proto-sensory receptors could be operationally functional in any phylum above Chordata and in neonates prior to the expansion of dendrites to form neural webs - in humans, this takes approximately two years.[22],[23] This is particularly relevant in the context of the Cambrian origins of teemosis, where the morphological simplicity of transduction organs was imperative to the establishment of perception by means of natural selection as a viable new biological system.

Thus, because the first eyes only transduced emotional representations, a cluster of light sensitive cells or a simple eye-cup sufficed. In all probability, these proto-eyes could only initially distinguish movement, including speed and direction, plus gradations of black and white. However, because their stimuli could be transduced into Emlan, Cambrian aquatic metazoans, notably flatworms and trilobites, could encode a number of simple teems that equated slow moving small shapes with prey - producing

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[ii] Clearly, my use of the term, ‘Emotional Perception’ differs from its use to describe the detection of emotional expressions and states in oneself and others.

excitement, hunger and aggressive emotions, and fast moving, large shadowy shapes with predators - fear, caution etc. Thus it is suggested, from its inception at the basal Cambrian, elementary ‘emotional vision,’ the ability to distinguish objects by interpreting the emotional signature of transduced visual stimuli, proved singularly adaptive.

The dual-perception hypothesis

Although EP was the first perception, throughout the Phanerozoic, as taxa radiated into more marginal and challenging environments, selective pressures were generated for more adaptive perceptual systems. It is usggested the widespread dissemination of EP provided the morphological precedents and physiological infrastructure for ‘second generation’ cerebral networks to emerge. Utilising more sophisticated new neural modules to process sensory stimuli vis-à-vis cognitive and brain based networks, ‘cerebral perception’ extrapolated exponentially more adaptive data from each sensory modality than EP.

However, because EP was an adaptive imperative of the teemosis process, it was not dispensed with, but instead, formed a symbiotic association with cerebral perception. ‘Perception’ today, appears mediated by two separate perceptual systems; the archaic Teemic or Emotional Perception - based primarily in the Limbic System, and the later, Cerebral Perception - based in the cortex, in which the neocortical brain transduces sensory stimuli phenomenally into lucid visual images, comprehensible sounds etc.

This ‘dual perception hypothesis’ asserts that ‘normal’ perception is the consequence of what may be termed ‘sensory fusion’ - the conjoining of two different sensory modalities, each processing similar sensory stimuli differentially utilising dissimilar methodologies. In practical terms, this means that when we look at a vase, ‘cerebral vision’ fabricates a visual representation of the object, which we consciously ‘see,’ but simultaneously, our archaic emotional vision apparatus additionally transduces an Emlanic, or emotional representation of the vase. Human perception occurs when the emotional and visual representations are ‘fused’ to create a single, synchronistically enhanced holistic precept.

Emotional perception as an adaptation

Although cerebral perception appears to be more efficient than EP, it has not replaced EP in any teemic species - including Sapiens. Several reasons are offered for this.

EP continues to provide an essential adaptive function in relation to the encoding and monitoring of teems.

EP enhances cerebral perception. For example, without EP, a mother would look at her infant (and recognise it as her own) but feel nothing, negating the motivation to nurture the infant.

Cerebral perception is dependent on brain development[24,25] whereas EP is theoretically functional from birth, and therefore highly adaptive in the context of predation avoidance.

EP is faster than cerebral perception. EP can detect and respond to an arachnid or ambush predator significantly faster than cerebral perception. Again, effective predator avoidance mechanism.

EP never sleeps. Cerebral perception is generally nonoperative during sleep, whereas because EP functions independently of the brain so is maintained during sleep, even during anaesthetized sleep.[26],[27],[28],[29] Again, infers anti-predator applications.

EP is instrumental in decision making. In one human patient, 'Elliot', (cited by Domasio, 1994)[30] damage to the ventro-medial portion of the prefrontal cortex caused by a tumour resulted in complete emotional dysfunction characterised behaviourally by a marked inability to make decisions.

For these reasons, teemic taxa utilise either EP or emotional-cerebral perception, but never cerebral perception singly.

The subliminal perception hypothesis

EP, transduction and teems evolved prior to the emergence of the reptilian brain and continues to operate independently of cerebral perception. For this reason, teemic organisms are normally oblivious to the constant stream of emotional precepts emanating from their sensory receptors. Testing the hypothesis; that EP is separate from consciousness and therefore 'subliminal,' is problematical in non human animals, however experimental evidence gained from human subjects,[31],[32],[33],[34],[35],[36],[37],[38],[39],[40],[41],[42] supports the contention of Merikle (2000) "that considerable information capable of informing decisions and guiding actions is perceived even when observers do not experience any awareness of perceiving."[43]

This evidentiary support additionally confirms that unconscious perception is correlated to the emotional salience of the precept. A typical finding, reported by Shevrin and Fritzler (1968a) demonstrated that when subjects were exposed to subliminal pictorial stimuli, flashed for 0.001 secs, their emotional arousal, as indicated by primary wave amplitude of brain waves, was significantly higher for emotional material than for meaningless material.[44] See also Silverman, Ross, Adler and Lusteg (1978),[45] and Whalen, Rauch, Etcoff, McInerny and Lee (1998).[46]

Some implications of transduction theory

Emotional transduction appears to be a ubiquitous feature of teemic species. Although its primary evolutionary function relates to the encoding, monitoring and activation of teems, transduction additionally enriches the daily lives of teemic individuals by generating a steam of sensations and emotions. In humans, transduction provides the aesthetic emotions that allow us to respond to beauty and poetry, to create art, and to remember emotionally important stimuli. It provides the basis of subliminal communication, mnemonics and rapid learning and informs our emotional attitude to colours. Transduction allows us to subliminally recognise a single hostile face in a large crowd, and it allows mothers, be they penguin, albatross or human to distinguish their infant's cries from a cacophony of similar voices. It is also the cornerstone of the global advertising industry. When advertisers feature glamorous models holding mundane products like baked beans, they are utilising the sensory reciprocation feature of teemic clusters. Because the baked beans and model are transduced into the same clusters, sensory reciprocation facilitates the contamination of the insipid product emotions with the more puissant and desirable emotions transduced from the model. Finally, it is contended that transduction explains one of the most perplexing and long-standing enigmas of neuroscience – 'blindsight,' or non-epistemic seeing.

Named by Lawrence Weiskrantz[47],[48] and defined as "visual capacity in a field defect in the absence of acknowledged awareness,"[49] blindsight describes the phenomenon where blind subjects, in whom neural pathways connecting portions of the retina to the geniculostriate projection or the striate cortex are irreparably damaged by stroke, tumour, disease or accident, are nevertheless able to respond to objects as if they had normal vision.[50],[51],[52] When tested with simple geometrical forms, objects and patterns, or the presence or absence of a light source, 'blind' subjects typically guess correctly between 80 to 90% of the time.[53] Occasionally, cohorts report phenomenal activity in the blind spot, primarily if it involves high contrast, fast moving stimuli,[54],[55],[56] but more typically, they insist they see nothing and are as amazed by the results as the researchers.

Because emotional transduction and emotional vision evolved at the basal Cambrian, (prior to the emergence of true cerebral vision,) they function independently of the visual cortex. When a second visual processing module ‘the striate cortex’ finally emerged, millions of years later (in a different part of the brain,) it required a second optic nerve fibre, running from a nucleus of the thalamus in the diencephalon, (in the dorsal lateral geniculate nucleus,) to the striate cortex.

In teemic species, sensory stimuli still does not travel directly to the visual cortex. Instead, the stimuli is first transduced into Emlan in the thalamus and only then travels on to the striate cortex to be processed into a visual image and understood - entering consciousness and eliciting our cognitive response to it.

Thus perception is a two step sequential process: a sensory stimuli (an apple for example) is first transduced into an emotional representation, (the emotional shape of an apple,) then moves along a second optic nerve to the striate cortex to be processed into a comprehendible visual image of the apple. Axiomatically, even if the striate cortex or its optic nerve is damaged or surgically removed, the apple - a strongly transducable object, has already been transduced into an emotional representation and conveyed by other neural networks directly to the amygdala, thalamus and other areas of the brain that process teemic precepts.

Significantly though, because the apple is now transduced into Emlan, (which is nonvisual, non intellectual and functions independently of cerebral networks,) the subject does not visually ‘see’ the apple, nor is the subject consciously aware of it. However, when forced to guess the object, the subject is able to identify the apple by interpreting its transduced emotional representation. Thus blindsight is in fact the product of 'emotional vision' which may be defined as the ability to visually identify objects by interpreting their transduced emotional signature.

Conclusion

In humans and other higher teemic taxa, transduction modules are irreducibly interconnected with cerebral-cognitive functions and are therefore prone to psychopathology precipitated by both extrinsic and intrinsic factors. It is suggested research may be warranted to determine the extent to which Autism, Capgras Syndrome, Anorexia nervosa, Obsessive-compulsive disorder, Agoraphobia, Organic Delusional Syndrome, Body Dysmorphic Disorder, Dyslexia, and other affective-perceptual psychopathologies are associated with transduction pathologies. These possible implications for medicine and psychiatry, as well as the role that transduction mechanisms may play in dreams, subliminal perception, learning and synaesthesia are discussed elsewhere.[57]

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[1] Leda Cosmides & John Tooby (2000) *Evolutionary Psychology and the Emotions*. In; Handbook of Emotions, 2nd Edition. M. Lewis & J. M. Haviland-Jones, Editors. NY: Guilford.

[2] D. Singh (1993) *Adaptive significance of female physical attractiveness: Role of waist-to-hit ratio.* Journal of Personality and Social Psychology, 65. 293-307

---

[3] D. Singh (1995) *Female judgment of male attractiveness and desirability for relationships: Hip-to-waist ratio and financial status*. Journal of Personality and Social Psychology, 69. 1089.

[4] D. Singh (1994) *Ideal female body shape: Role of body weight and waist-to-hip ratio*. International Journal of Eating Disorders, 16, 283-288.

[5] E. Bruce Goldstein (1999) *Sensation and Perception* (5th Edition) p457

[6] A. Hyman (1983) *The influence of color on the taste perception of carbonated water preparations*. Bulletin of the Psychonomic Society. 21, pp145-148

[7] C. N. DuBose, A. Cardello and O. Maller (1980) *Effects of colorants and flavorants on identification, perceived flavor intensity and hermonic quality of fruit-flavored beverages and cake*. Journal of Food Science. 45, pp1393-1400

[8] R. G. Davies (1981) *The role of nonolfactory context cues in odor identification*. Perception and Psychophysics. 30, pp83-89

[9] D. A. Zellner, A. Bartoli and R. Eckard (1991) *Influence of color on odor identification and liking ratings.* American Journal of Psychology. 104, pp547-561

[10] E. Bruce Goldstein (1999) *Sensation and Perception* (5th Edition) Brook/Cole Publishing. P153

[11] R. E. Cytowic (1989) *Synesthesia: A Union of the Senses*. Springer Verlag.

[12] Sverker Runeson (1974) Constant velocity -- not perceived as such. *Psychological Research* 37: pp3-23.

[13] Carl G. Aurell (1983) Perception: A model comprising two modes of consciousness. Addendum: Evidence based on event-related potentials and brain lesions. Perceptual and Motor Skills 56: pp211-220.

[14] Carl G. Aurell (1989) *Man's triune conscious mind*. Perceptual and Motor Skills 68: pp747-754.

[15] Carl G. Aurell (1984) Perception: A model comprising two modes of consciousness. Addendum II: Emotion incorporated. Perceptual and Motor Skills 59: 180-182.

[16] Richard Srebro (1985) Localization of visually evoked cortical activity in humans. *Journal of Physiology* 360: pp233-246.

[17] Arne Öhman, Anders Flykt and Francisco Esteves (2001) *Emotion Drives Attention: Detecting the Snake in the Grass*. Journal of Experimental Psychology - General, 130, No. 3.

[18] Shevrin and Fritzler (1968a)

[19] L. H. Silverman, D. L. Ross, J. M. Adler and D. A. Lusteg (1978) *Simple research paradigm for demonstrating subliminal dynamic activation: effects of Oedipal stimuli on dart-throwing accuracy in College males*. Journal of Abnormal Psychology, 87, pp341-354

[20] P.J. Whalen, S.L. Rauch, N. L. Etcoff, S. C. McInerny and M.B. Lee (1998) *Masked presentations of Emotional Facial Expressions Modulate Amygdala Activity without Explicit Knowledge*. Journal of Neuroscience, 18 (1): pp411-418.

[21] H. Kawasaki, R. Adolphs, O. Kaufman, H. Damasio, A.R. Damasio, M. Granner, H. Bakken, T. Hori and M.A. Howard (2001) *Single-unit responses to emotional visual stimuli recorded in human ventral prefrontal cortex.* Nature Neuroscience 4: pp15-16.

[22] J. L. R. Conel (1939) *The postnatal development of the human cerebral cortex*. Harvard University Press.

[23] John W. Santrock and Steven R. Yussen (1992) *Child Development; An Introduction*. Wm C. Brown Publishers. p148

[24] J. L. R. Conel (1939) *The postnatal development of the human cerebral cortex*. Harvard University Press.

[25] John W. Santrock and Steven R. Yussen (1992) *Child Development; An Introduction*. Wm C. Brown Publishers. p148

[26] M. M. Ghoneim & R. I. Block (1993) *Memory for events during anesthesia does occur: An anesthesiologist's viewpoint*. In; P. S. Sebel, E. Winograd, & B. Bonke (Eds.,) *Memory and awareness in anesthesia* (pp. 452-458). Prentice-Hall.

[27] Philip M. Merikle and Meredyth Daneman (1996) *Memory for Unconsciously Perceived Events: Evidence from Anesthetized Patients*. Consciousness and Cognition, 5, pp525-541.

[28] R. E. Pearson (1961) *Response to suggestions given under general anesthesia*. American Journal of Clinical Hypnosis, 4, pp106-114.

[29] D. D. Hutchings (1961) *The value of suggestion given under anesthesia: A report and evaluation of 200 consecutive cases*. American Journal of Clinical Hypnosis, 4, pp26-29.

[30] Antonio R. Damasio (1994) *Descartes' Error: Emotion, Reason, and the Human Brain*. Avon Books. p.38.

[31] Meredyth Daneman and Philip M. Merikle (1998) *Psychological Investigations of Unconscious Perception*. Journal of Consciousness Studies, 5, pp5-18.

[32] N. F. Dixon (1971) *Subliminal perception: The nature of a controversy*. McGraw-Hill.

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[33] J. A. Groeger (1984) *Evidence of unconscious semantic processing from a forced-error situation*. British Journal of Psychology, 75, 305-314.

[34] A. W. Greenwald (1992) *New look 3: Unconscious cognition reclaimed*. American Psychologist, 47, pp766-779.

[35] J. K. Adams, (1957) *Laboratory studies of behavior without awareness*. Psychological Bulletin, 54, pp383-405.

[36] J. V. McConnell, R. L. Cutler & E. B. McNeil (1958) *Subliminal stimulation: An overview*. American Psychologist, 13, pp229-242.

[37] Katharina Henke, Theodor Landis, Hans J. Markowitsch (1993) *Subliminal Perception of Pictures in the Right Hemisphere*. Doi:10.1006/ccog. pp225-236

[38] J. A. Debner & L. L. Jacoby (1994) *Unconscious perception: Attention, awareness, and control*. Journal of Experimental Psychology: Learning, Memory, and Cognition, 20, pp304-317.

[39] P. M. Merikle & M. Daneman (1998) *Psychological investigations of unconscious perception*. Journal of Consciousness Studies, 5, pp5-18.

[40] R. N., Haber, & M. H. Erdelyi (1967) *Emergence and recovery of initially unavailable perceptual material*. Journal of Verbal Learning and Verbal Behavior, 6, pp618-628.

[41] H., Johnson, & C. W. Eriksen (1961) *Pre-conscious perception: A reexamination of the Poetzl phenomenon*. Journal of Abnormal and Social Psychology, 62, pp497-503.

[42] A. J. Marcel (1983) Conscious and unconscious perception: Experiments on visual masking and word recognition. Cognitive Psychology, 15, pp197-237.

[43] Philip M. Merikle (2000) *Subliminal Perception*. Encyclopedia of Psychology.

[44] Shevrin and Fritzler (1968a)

[45] L. H. Silverman, D. L. Ross, J. M. Adler and D. A. Lusteg (1978) *Simple research paradigm for demonstrating subliminal dynamic activation: effects of Oedipal stimuli on dart-throwing accuracy in College males*. Journal of Abnormal Psychology, 87, pp341-354

[46] P.J. Whalen, S.L. Rauch, N. L. Etcoff, S. C. McInerny and M.B. Lee (1998) *Masked presentations of Emotional Facial Expressions Modulate Amygdala Activity without Explicit Knowledge*. Journal of Neuroscience, 18 (1): pp411-418.

[47] M. D. Sanders, E. K. Warrington, J. Marshall and L. Weiskrantz (1974) *Blindsight: vison in a field defect*. Lancet, April 20th. pp707-8.

[48] L. Weiskrantz (1986) *Blindsight: A case study and implications*. Clarendon Press.

[49] L. Weiskrantz (1986) *Blindsight: A Case Study and Implications*. Oxford University Press. p166.

[50] L. Weiskrantz, A. Cowey and J. L Barbur (1999) *Differential pupillary constriction and awareness in the absence of striate cortex*. Brain, 122: pp1533-1538.

[51] A. J. Marcel (1983b) *Conscious and unconscious perception: an approach to the relations between phenomenal experience and perpetual processes*. Cog. Psychol. 16. pp238-300.

[52] [52] D. Milner and M. Goodale (1995) *The Visual Brain in Action.* 1. Oxford University Press.

[53] A. J. Marcel (1983) *Conscious and Unconscious Perception*. In: *Cognitive Psychology*, Vol. 15, pp197 - 300

[54] J. L. Barbur, L. Weiskrantz and J. A. Harlow (1999) *The unseen color aftereffect of an unseen stimulus: insight from blindsight into mechanisms of color afterimages*. Proc. Natl. Acad. Sci. (U.S.A.,) 96: pp11637-11641.

[55] L. Weiskrantz, A. Cowey and J. L Barbur (1999) *Differential pupillary constriction and awareness in the absence of striate cortex*. Brain, 122: pp1533-1538.

[56] A. Sahraie, L. Weiskrantz and J. L. Barbur (1998) *Awareness and confidence ratings in motion perception without geniculo-striate projection*. Behav. Brain Res., 96: pp71-77.

[57] Danny Vendramini (2005a) *The Second Evolution: The unified teem theory of evolution, emotions and behaviour*. Allen and Unwin, Sydney.