

UK Synaesthesia Association Newsletter



Athene Witherby,
Editor:

Well, it looks like October was Synaesthesia in the Media Month! C4's Richard and Judy and the BBC Horizon programme 'Derek Tastes of Earwax' kicked it all off on 29th September (more about both on the back page) and then the ICA in London opened a synaesthesia exhibition (more on page 2).

We had over 5000 hits on the website in the hour after the BBC2 programme aired, and many, many queries ...

Typically with synaesthesia, we get a lot of enquiries about seemingly related but 'out on a limb' sensations, which prompts me to question whether the term 'synaesthesia' is not fast becoming a blanket term for anything 'off the wall' in the sensory domain?

For example:

* experiencing people's faces/characters as having animal characteristics.

* having a strong physical experience of colour when looking at flowers, paintings, etc.

* feeling one sensation in another place, e.g. tickled inner elbow to tickled tongue (I get intuitive feelings on the inside of my elbows).

* autism - are some associations in autism (like only eating foods of a certain colour, orange=good) in some way related to synaesthesia?

Any thoughts?

Athene

Dr. Julia Simner describes how synaesthetes and non-synaesthetes might view each other



Synaesthete, meet non-synaesthete: Life in the other camp

Like most people without synaesthesia, I have always taken for granted that what I see with my eyes and hear with my ears must come from objects I encounter in the outside world. When I hear a buzzing noise, for example, or see a small mass of stripy colour in my field of vision, it can only be because I have crossed the path of a bee, who is making his presence known to me via my senses of sight and sound. However, as a psychologist I know that what I hear, see, taste, smell and feel is simply a response to activity in particular areas of my brains. Usually this activity is triggered by an external source with the relevant properties (e.g., a buzzing bee), although neurologists have known for many years that this need not be the case. The Canadian brain surgeon Wilder Penfield (1891-1976) applied mild electric currents to exposed areas of patients' brains during surgery. When Penfield probed certain locations, his patients - who were awake during the procedure - reported sensations of smell, sight, touch etc., that had no source in the local vicinity.

Penfield's research, and that of others after him, tells us that it is possible to experiences sensations in our five senses without the usual external triggers, and this is precisely what happens to individuals with synaesthesia. For example, synaesthetes may see colours when reading words, letters or numbers etc. (see Figure 1 for colour triggered by the days of the week). These colours are seen either externally (e.g., superimposed on the type-face of the written word) or as a strong and overwhelming experience of colour in the mind's eye. Alternatively, a person with synaesthesia might see shapes and colours triggered by music, or have a sensation of taste when they hear words. My research in synaesthesia, and my numerous encounters with those who have been kind enough to share their experiences with me, has left me with a reasonable understanding of what life with synaesthesia might be like. However, what I will never have - most unfortunately -- is a first-hand knowledge of how these experiences feel. Nonetheless, science can help me out here. Recent studies in brain imaging tell us that many of the colours/sounds/tastes/shapes etc. reported by synaesthetes are experienced in the same areas of the brain as the sensations I encounter from the outside world. For example then, when JIW tells me that the word "profit" tastes of unripe oranges, the same parts of his brain activate as those that respond when I place unripe orange in my mouth. Other cases, however, are more evasive, such as that of my synaesthetic informant who tells me that the word "empty" is sky-blue, but who does not 'see' sky-blue in front of her eyes. Instead, she simply knows this to be the case at some abstract, but undeniable level. Our brain imaging of this informant does not show the visual parts of the brain in action, but instead, suggests that her words are stored in memory with more richly encoded meaning.

After some consideration, I now realise that the gap in my understanding about life as a synaesthete must naturally cut both ways. My own experiences, devoid of such accompaniments, must strike any synaesthete as a strange existence indeed. One informant in particular set me thinking. She sees the days of the week, and months, and numbers, letters and words as patterned concrete images in front of her eyes, and can recall any visual memory in accurate detail in order to 'read off' information at a latter date. I tell her that statistically, she is in the minority, and she jokingly tells me that those without this ability (myself included) seem barely sentient to her. Perhaps it is this difference in consciousness that will always intrigue us about the experiences of those in the opposite camp. I think the best we can do is acknowledge that the outside world comes to us not as a fixed commodity, but as something to be interpreted in our own way. Although I'd like very much to experience a moment of synaesthetic existence, in the meantime, I'll have to struggle along as I've always done.



Figure 1
The days of the week seen by synaesthete IB.

Dr. Julia Simner is based at Edinburgh University (j.simner@ed.ac.uk) and would like to hear from anyone with synaesthesia who feels they might have a particularly good analogy for explaining their experiences to a non-synaesthete.

new book:



Synesthesia: Perspectives from Cognitive Neuroscience

Robertson & Sagiv (Eds.)
OUP, Nov 2004

Owing to its bizarre nature and its implications for understanding how brains work, synesthesia has recently received a lot of attention in the popular press and motivated a great deal of research and discussion among scientists. The questions generated by these two communities are intriguing: Does the synesthetic phenomenon require awareness and attention? How does a feature that is not present become bound to one that is? Does synesthesia develop or is it hard wired? Should it change our way of thinking about perceptual experience in general? What is its value in understanding perceptual systems as a whole?

This volume brings together a distinguished group of investigators from diverse backgrounds - among them neuroscientists, novelists, and synesthetes themselves - who provide fascinating answers to these questions. Although each approaches synesthesia from a very different perspective, and each was curious about and investigated synesthesia for very different reasons, the similarities between their work cannot be ignored. The research presented in this volume demonstrates that it is no longer reasonable to ask whether or not synesthesia is real - we must now ask how we can account for it from cognitive, neurobiological, developmental, and evolutionary perspectives. This book will be important reading for any scientist interested in brain and mind, not to mention synesthetes themselves, and others who might be wondering what all the fuss is about.

This text is from the entry at www.amazon.co.uk

last chance to see:



ICA DIGITAL STUDIO

Wed 6 October until November 7, 12.00 till 7.30 pm
Free with ICA Day Membership, Digital Studio
Synaesthesia: A NeuroAesthetics Exhibition

Synaesthesia is a term used by neuroscientists to describe a specific condition that occurs when an individual who receives a stimulus in one sense modality (e.g. sight), receives a stimulus in another (e.g. audition). For example, a synesthete might be able to "hear" colors or "see" sounds. "Synaesthesia" comes from the Greek "to feel together". This exhibition aims at exploring the brain through different artistic initiatives. It borrows the concept of synaesthesia from the neuroscientific world to look at works that allow for crossing-over of the senses, but also traces the concept back to its meaning as a joint experience through works that engage the audience's perceptual system as a shared function. The goal is for artists to engage with the nervous system as a communication device in diverse creative means that all affect the audience, individually and collectively, in unique ways.

Participating artists: Stephen Vitiello, Ken Jacobs, Nina Sobell, Dr. Sonja Grün, Fred Worden, Henry Hills and Warren Neidich.

Curated by Chloe Vaitsov

info at: <http://www.ica.org.uk>

Synesthesia: A Multi-Colored History

By Amy Ione
Director of The
Diatrope Institute,
California, USA



It is generally agreed that synesthesia occurs when an individual receives a stimulus in one sense modality and experiences a sensation in another. Historical difficulties of subjecting cross-modality to rigid scientific analysis, however, led commentators to cast the phenomenon in terms of abnormality, philosophy, and metaphor. Clearly discernable patterns of correspondence were not obvious and the often contradictory historical data were comprised of lists of stimuli, synesthetic responses. For example, accounts such as those attributed to Scriabin and Rimsky-Korsakov equated colors with given musical notes and keys. Yet, reportedly, Scriabin claimed the key of C-Minor was red, while Rimsky-Korsakov perceived it as white.

This confusing and haphazard body of work is now being revisited as researchers design studies capable of examining cross-modal sensation from a neural perspective. Although exciting findings have reinvigorated synesthesia research, of greater interest is that many documented accounts that were perceived as incoherent now appear to be essentially correct in light of what laboratory experiments are revealing. Moreover, the validation of older accounts complements a long historical literature on sensory inter-relationships that is robust and cross-cultural. The range is particularly thought provoking when contrasted with current research findings regarding the phenomena.

One of the earliest efforts to make sense of these relationships was the Pythagorean quest to assign a particular color to each musical note, about the 6th century BCE. In more recent times, the list of famous figures who were involved with the synesthetic experience includes Baudelaire, Rimbaud, Rimsky-Korsakov, Scriabin, Kandinsky, Nabokov, Eisenstein, Messiaen, Hockney, and Feynman. These attributions are based on some of the intriguing comments we find in their writings or remarks they have made about their own work. In 'What Do You Care What Other People Think?' Richard Feynman claimed, "When I see equations, I see the letters in colors." To composer Alexander Scriabin the key of F# major appeared violet in color. Writer Vladimir Nabokov noted in his autobiography 'Speak, Memory' "[t]he long "aaa" of the English alphabet has for me the tint of weathered wood, but a French "a" evokes polished ebony." And composer Oliver Messiaen waxed lyrical about "the gentle cascade of blue-orange chords" in one of his pieces.

Historical documents also show that synesthesia has long been seen as neurologically abnormal, because it was at odds with the idea that we have five distinct senses, as codified by Aristotle. It is also at variance with the Law of Specific Nerve Energies formulated by Johannes Müller (1826), following the earlier insights of Charles Bell (1811). The law implies that each sense modality has its characteristic sensory quality, regardless of the physical means by which the peripheral nerve was stimulated. Thus, signals traveling up the optic nerve are always experienced as visual activation, whether stimulated by optical, tactile, sonic or electrical activation of the photoreceptors. Müller's concept is deeply embedded in the analysis of brain function, and seems to negate the possibility of cross-modal activation in the cortex. How could the nerve energy be specific if it activated more than one sense modality? On the other hand, the physical energy that activates the nerve has a synesthetic quality, in that we can feel as well as hear a strong sound vibration. There seems to be implicit agreement that this kind of cross-modal activation of the peripheral nerve does not qualify as synesthesia.

In general the emphasis in synesthesia is on cross-modal interactions within the brain rather than the peripheral nerves. Historically, the first bona fide report of synesthesia seems to have been a medical treatise in Latin published by Dr. G.T.L Sachs in 1812. The title of his treatise in English may

be rendered "The natural history of two albinos, the author himself and his sister". Although there is no known association between albinism and synesthesia, in this case both siblings had extensive synesthetic color associations with sounds, digits and other numerical data. In fact, they reported highly specific and invariant color sensations evoked by vowels, consonants, musical notes, the sounds of instruments, numbers, dates, days of the week, city names, periods of history and the stages of human life. The work attracted substantial interest in the medical community, and was soon translated into German. Indeed, it must have provoked substantial debate in relation to the Bell and Müller championing of the separation of the sense modalities, particularly as this was the era of romantic experimentation with new musical and poetic forms to evoke a greater wealth of sensory and emotional experience. It would be interesting to know whether there was discussion of such issues in the post-Napoleonic salons, since Romantic poetry of the 19th century is replete with synesthetic metaphors.

At about the same time, Johannes Purkinje, the physician who investigated numerous aspects of human biology, published a series of papers devoted to subjective visual sensations - hallucinations, afterimages and a wide variety of visual phenomena derived from the eye. In fact, this investigation represents the fullest treatment of the topic to this day, in which he developed a classification system of 28 categories of entoptic and related phenomena. Although they seem closely related, Purkinje did not include synesthesia in this classification, however. A scientific approach to color-sound associations was carried by the poignant figure of Gustav Fechner, a physicist who fell ill with a brain fever for a year and then recovered with the idea of resolving the mind-brain dichotomy with the science of psychophysics, the direct measurement of sensation. Fechner (1876) tabulated the color-tone associations of 347 as part of this effort to find regularities in the domain of the mind, but he did not emphasize the specificity of the sensory quality as true synesthesia.

The first comprehensive investigation of synesthesia seems to have been carried out by the notable professor of psychiatry Eugene Bleuler during his medical studies. He later tried to integrate Freudian psychoanalytic theory with Wilhelm Wundt's new field of experimental psychology, introduced the term "schizophrenia" to describe the fractured mental state of this condition, and gave Carl Jung his early training. The synesthesia study was prompted by his student, Karl Lehmann, who had synesthesia, and found that about 12% of a sample of nearly 600 people reported sensations of color-vowels associations, although there is some question about whether metaphorical associations were also included in the reports (Bleuler & Lehmann, 1881). Since vowels have no common associations with colors in the language in general, however, the occurrence of metaphorical associations would itself seem to imply some degree of synesthesia.

In recent decades the ability to probe intersensory relationships has been given a boost by new technologies of brain imaging. These tools also make it possible to design experiments to evaluate whether synesthesia might be an innate condition in some or show evidence of brain plasticity in others. We can now compare the neural functioning in innate synesthesia and in synesthesia of those affected by life-altering neurological events. One case of note was reported by Vike, Jabbari, & Maitland (1984). This subject saw kaleidoscopic and spiraling lights in his left eye when stimulated with clicks of 65 decibels. His synesthesia stopped with the removal of a large cystic mass extending from his left medial temporal region to the midbrain. Similarly, with Jonathan I. a colorblind artist made famous by the neurologist Oliver Sacks, we find a life-altering neurological event brought about a loss of synesthesia along with his loss of color perception in general. Mr. I. also illustrates that grappling with this phenomenon underscores there are diverse, complex variables related to the senses that scientific research has yet to resolve.

As scientific studies proceed, many continue to debate about what, if anything, we can learn from artists who spoke about experience in terms we now characterize as synesthete. Clearly, a strictly physiological evaluation of historical figures is impossible. Does this mean that historical cases should

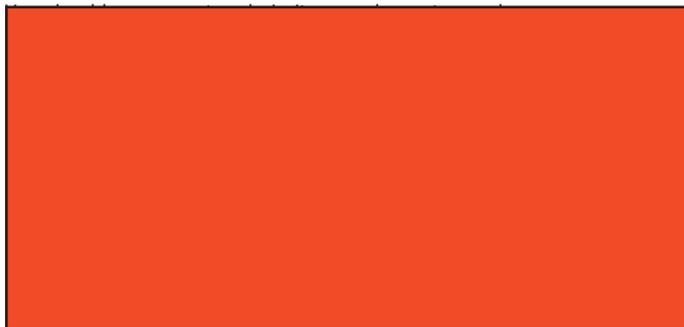
be interpreted metaphorically? Although the debates are complex, another area of concern is that current interpretations of synesthesia tend to follow trends in brain research, where studies concentrate on a search for the organic basis for the experience. Artistic projects, however, stress experimentation. Whether innately synesthete or not, artists are likely to gravitate toward projects that enhance sensory interchange. Further investigation into historical cases of artists developing techniques to investigate perceptual and emotional mechanisms might contribute to developing more foundation for contemporary neurological research into synesthesia. The difference between contriving metaphors and developing techniques to explore perceptual and emotional mechanisms is as relevant as the ability to distinguish an innate synesthesia from one developed through focused endeavors.

Finally, all of these points suggest that broadening our understanding of synesthesia will require we broaden our view of historical cases without losing sight of their inaccessibility to direct study. Indeed the work of a number of scientists (e.g., see Cytowic, 1989, 2002; Marks, 1978; Ramachandran & Hubbard, 2001; Baron-Cohen & Harrison, 1997) is involved in exploring the neural mechanisms of synesthesia. These neurologists are removing this sensation from the taint of charged terms such as 'abnormal' or 'aberrant'. Surveying the research that now challenges Aristotelian notions of five distinct senses, we find studies of letter confusions that have shown that the colors seen by synesthetes can be so vivid that they interfere with the identification of colored. Other studies show that the synesthetic colors may be used to penetrate the crowding effect of arrays of nearby shapes, letters, and numbers. The synesthetic color provides a marker identifying particular numbers or objects under conditions when they are invisible to people without this special perception, who are unable to distinguish discrete numbers within the masking array. In addition, researchers such as Mills et al are designing tests to determine that synesthete reports are accurate over time. In sum, without a doubt, contemporary methodologies and the current explosion of techniques to explore the brain, synesthesia, like other formerly misunderstood behaviors, are opening doors that allow us to re-evaluate art, neural wiring, and sensory relationships.

the full text of this paper (with references) is available on the website at www.uksynaesthesia.com/ione.html

do try this at home ...

If you look at the red rectangle below for half a minute or so and then look away at a blank wall, or white space, what do you see?

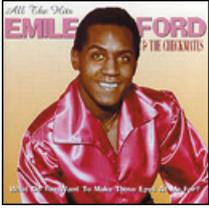


Now try the same thing with this black 'A'.

What do you see? It has been reported by some synaesthetes that they see the 'colour' of their letter 'A' on the blank space.



This test is up on the forum if you would like to try it with larger rectangles.



What Do You Want to Make Those Eyes at Me For?

Christine Jones from Sound Revelation writes about musician Emile Ford and how his synaesthesia enables his work in the studio

He was the first black man to produce his own record and have a no. 1 with it. It sold 3 million worldwide.

This has never been acknowledged and in fact Joe Meek has been credited with having a part in it. But if you can see sound in colour, why would you need somebody else to tell you how to produce your own music?

Emile's gift of synaesthesia allows him to see sound but he can also see what is wrong with the sound and is able to correct it. What he excels in is the mastering of a CD. The mixing of a CD is subjective to Artist and Producer but the mastering is objective. His mastering brings the CD to life - it is the sweetest sound. He has in fact patented his sound. This is not very popular with the record industry as he is a one off and his synaesthesia has always been regarded with disbelief.

He has spent a lifetime trying to achieve the "perfect sound" and has only recently felt that this has been reached. His technology was responsible for all but two tracks on Pink Floyd's Division Bell, including the voice of Stephen Hawking. He is the EFOS (Emile Ford Objective Sound) credit on the CD. He has progressed since then to the wonderful sound he has now.

Emile is now 66 years old and has glaucoma, but his synaesthesia enables him to continue with his work.

next issue:

If you would like to contribute to our next newsletter the deadline is Friday 7th January 2005. We welcome comments, queries, letters, short articles (1500 word limit) or artwork.

Future issues planned are: syn & art, syn & literature and syn in families, so please get your thinking caps on! I would also be grateful to receive people's colour swatches for their alphabets, days of the week etc. to post on the forum and to do a special issue on syn and colour.

Please submit by post to: Ground Floor, 10 Kings Gardens, Hove, BN3 2PF

or by email to: newsletter@uksynaesthesia.com

Please note: If you are sending artwork in by post please include a stamped addressed envelope if you would like it to be returned. All images in this newsletter are the copyright of the artists. Their reproduction is not permitted without prior written consent.



Below are some stills from BBC Horizon's 'Derek Tastes of Earwax', aired on 29th September. There is more info and links to other synaesthesia sites at the BBC website:

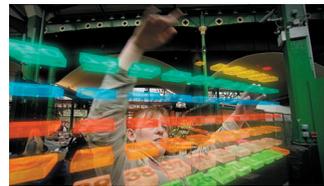
http://www.bbc.co.uk/sn/tvradio/programmes/horizon/derek_prog_summary.shtml



Dorothy Latham

Dorothy has coloured letter (grapheme) synaesthesia. She sees these colours, like so many of us, projected somewhere in her mind's eye.

Heather's synaesthesia manifests itself as an amazingly detailed 3-Dimensional experience of time and number.



Heather Birt

James has very strong taste synaesthesia (as the programme's title illustrates) and we saw how, more than any of the others, he can find his experiences overwhelming at times.



James Wannerton

UK Synaesthesia Online Forum

The old forum on the website was proving impossible to get into and choc full of advertising so we have set up a new forum on the web, which can be found at <http://uk.groups.yahoo.com/group/uksynaesthesia/>

This is a 'Yahoo'-hosted forum which is open to anyone for posting messages, but access to pictures and the archive (including past copies of the newletter in pdf format) is for UKSA members only.

If you have a Yahoo email address you can just sign in and join (we are moderating membership to keep an eye on spam and junk mail).

If you don't, it only takes a minute to get a Yahoo identity, and you don't have to use the email facility if you don't want to. If you don't want to sign up with Yahoo before having a look at the forum first you can (temporarily) sign in using the following id: username: uksamembers (@Yahoo.com) password: synredsyn

All future messages will be posted on the forum, not by email, so, I really would urge you to sign up and start joining in.



... do Synaesthesia ... Badly

Jamie Ward relives his chat show experience

"Later in the programme we'll be meeting people suffering from a bizarre brain disorder etc., etc.". The three of us watching the start of the show behind the scenes in the Green Room - James Wannerton, Heather Birt and myself - looked at each other nervously and grimaced.

To coincide with the Horizon documentary, Channel 4's Richard & Judy were keen to run a topical piece about synaesthesia. I had two reasons for wanting to do the show when I was approached. Firstly, it would be good way of telling more people about synaesthesia - particularly people with synaesthesia themselves who may not know that it is recognised by science. Perhaps the audience of Richard & Judy is somewhat different to that of Horizon, I reasoned. Secondly, it would be good fun; an opportunity not to be missed. Although I enjoyed appearing on the show, and I think that we were able to portray synaesthesia adequately in the end it did raise some serious questions about how to deal with people's preconceptions.

Of course, Richard & Judy is a light-hearted programme and not hard science. Nevertheless, it is wholly irresponsible to light-heartedly diagnose thousands of innocent viewers as 'suffering from a bizarre brain disorder'. So what is the correct way of talking about synaesthesia? It is a fact that the brains of synaesthetes are different (although we still don't fully understand why and how). But this does not make it a disorder. The difference could be beneficial or benign.

I have always talked about synaesthesia as a 'condition', but some synaesthetes have told me that they do not like this word. By using the word condition I had intended to legitimise synaesthesia as a real biological entity (i.e. not vivid imagination or wishful thinking); which is something that many people had previously been sceptical about. Whilst I still do consider synaesthesia as a condition, I accept that there is hidden danger in the word as many people associate conditions with suffering.

Perhaps we should resort to using the word 'gift' to avoid misunderstanding (at least when dealing with the media). Whilst this word still feels too New-age Californian 'touchy feely' to my own liking it could potentially avoid another gaffe like Judy's.



Jamie Ward is a senior lecturer in Psychology and head of the UCL Synaesthesia Research Group.