



UK Synaesthesia Association

Newsletter

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WELCOME to the latest UKSA Newsletter! The Association has undergone some organisational changes over the past 12 months and we now have a **new newsletter editor** (see below). General interest in synaesthesia shows no sign of waning and it's been another busy year with various on-going research projects and related media interest. There are at least 3 synaesthesia segments "in the can" and awaiting TV scheduling. The Association is also forging strong links with our sister Associations and other synaesthesia communities located in Russia, Germany and Austria, and we are busy organising the date and location for the next conference.

This issue has been a while in coming. We thank you for your kind patience and continued support. *James.*

NEW EDITOR



Welcome to Fiona Torrance, our new editor. Fiona has multiple synaesthesia, in particular Mirror Touch. She is presently completing a MA Internet and Communications focusing on the Digital Disability Divide. Fiona also works as Branch Coordinator for Remploy, a company that develops those with disabilities into sustainable employment.



IN THIS ISSUE

VIRTUALLY ignored for one and a half centuries, the study of Synaesthesia has enjoyed a Renaissance over the past 25 years. Just what has been discovered so far? Where is all this research leading? Why study synaesthesia at all? Have we learnt anything of useful significance so far? Is synaesthesia research still a draw for the next generation of young researchers??

These are some of the questions we have put to leading synaesthesia research facilities from around the Globe.

Also:

Words from the Wise:

**Sean Day
Larry Marks
Barbara Beard Stephan
Anton V Sidoroff-Dorso
Anina Rich
Tanya Lyons
Carol Steen**

What's it like to be poked, prodded & examined by synaesthesia researchers? We ask some synnies that very question.....

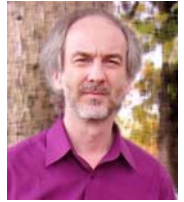
Book reviews:

**Jamie Ward
David Eagleman /
Richard Cytowic.**

BREAKING NEWS

**2010 UKSA Conference:
BRIGHTON, Mar 27 - 28
(to be confirmed)**

INTERVIEW with Dr Sean Day, Professor of English & Anthropology, Trident Technical College South Carolina. Founder & administrator of the Synesthesia List.



You've been a synaesthete for as long as you can remember, but how long have you actually been studying synaesthesia? "I began studying synaesthesia academically, towards my doctoral dissertation between Nov 1991 & March 1992".

What inspired you to try and understand what you were experiencing? "Many different things. I come from a very musical family. However, none of them have any type of music-to-colour synaesthesia. So, while I could sometimes mention my synaesthetic colours to music to my immediate family, they couldn't relate to it. However, we also interacted with a large number of other musicians. And, every once in a rare while, I would read or hear about, or, starting by the time I was around 10 years old, even encounter another music-to-colour synaesthete. By this time I was aware that I had a rare, genetically-based neurological condition - which meant there was a chance that other's would have it too, so I was on the lookout for them.

It wasn't to gain some type of "verification" or a feeling of "this is real; I'm not crazy" regarding my

"..I finally got the nerve to write to ...The God".

synaesthesia. I didn't have that problem. I compare it more to being able to speak a foreign language, such as, say, Maori or Inuit, that no one around you can speak, so why bother talking to them in Maori.

I didn't encounter the term "synaesthesia" until I was 20 years old. In one of my classes, Professor Myrdene Anderson was talking about cultural variances of sensory classifications and perception, and happened to mention synaesthesia, spending not more than three minutes on the subject. After the class, I

went to Anderson and asked for more information about synaesthesia?" She replied, "No. Go to the library and get me some." So, I ran off to the library. That put me to a different level of doing synaesthesia research. Beforehand, I had known about my own three types of synaesthesia, and assumed those were the only types extant. After just one or two days of heavy research in the library, I was already hit with the explosion of learning about handfuls of other types of synaesthesia - particularly about coloured graphemes, which I had never heard of before. I entered college at 18 and focused on music for a couple of years. Various things, made me decide to leave music as a major at the end of my second year. So, when considering what major to move to next, I decided upon Anthropology and Linguistics. I found my concepts about my own synaesthesia were there, in the background, shaping my focus towards looking at variables of cognition, perception, and the sensorial".

When did you first think of starting the Synaesthesia List and why?

"I started the List sometime between late Oct & mid-Dec of 1992. Having been a Ph.D. student in Linguistics I already had a year's worth of experience with Linguist list-serve groups and saw the value of such groups for linguistic researchers. I'd already started acquiring what few books I could, and was just beginning to build my collection of articles. I had Cytowic's first edition of Synaesthesia: a union of the senses, which I read over and over again. But, from the first reading, I noticed something wrong. In particular, there was some issue that just kept nagging me. I don't remember now what it was; I'm guessing it was something to do with how some synaesthetes are "projectors". Anyway, I finally got the nerve to



write to "the god", and then I waited. Over the next few months Cytowic mentioned a handful - no more than seven or eight - other researchers who were also interested in synaesthesia, and the names of two or three synaesthetes. By this time, I was frantically trying to find more literature on synaesthesia. I looked at how quickly things moved on the Linguist List, then looked at my own research, and said, "This is moving too slow. These synaesthesia researchers have each other's e-mail addresses, and write to each other now and then. But what we need is something that integrates and networks all of this, spreading the information around to everyone so they all get it a lot faster." So I thought about creating a listserv group for synaesthesia researchers. So, when I started, I sent invitations out to everyone I could think of - researcher, synaesthete, friend, whatever - that might, for any reason, be interested".

What has been your most unusual experience / discovery while administering the List? "There have been so many! Not all messages sent get posted. And Syn List members don't see the kinds of messages I'm not posting. There have been the proselytizers, firmly convinced that synaesthesia is a trick of Satan or other demons or devils and that synaesthetes are in desperate need of salvation. A couple of these people have been extremely persistent. They are usually some various denomination of Christian, but I've also had my share of Jewish (including a very frightening, rabid one), Buddhist, neo-Druidic, Wicca, and "New Age" ones, too. At least twice, I have had ones claiming to be a tribal shaman. These ones are usually firmly convinced that synaesthetes are, in some way, enlightened and able to tap into "hidden truths" and



see things not revealed to others. I guess, though, the weirdest one of all - one that still rattles me - would be the time I was contacted by a representative of a US government military research operation. This group wanted to contract me to do my civic duty for the US by finding and recruiting synaesthetes to locate and interact with angels. The military had not yet concluded that synaesthetes had such capabilities, but concluded nonetheless that such most certainly must be the case, and that it was dire that this be put to test. I turned down the request. And then did so a couple more times. Finally,

the representative said that he respected my

"...he indicated that his department would be keeping a very careful eye on future synaesthesia research and synaesthete activities".

decision not to assist and indicated that his department would be keeping a careful eye on future synaesthesia research & synaesthete activities.

How and why do you think attitudes have changed over the past 20 years both from the scientific and the general population's view regarding synaesthesia and synaesthesia research? "All kinds of reasons. One thing would be to look at the level of technology now being applied in synaesthesia research. Here we get back to that whole matter which Richard Cytowic and others have talked about before: the difference between subjective reports of synaesthesia and objective experimental results regarding synaesthesia, and what is deemed "verification" that synaesthesia is a real phenomenon. The advancements in the last 20 years with tools like fMRI and diffusion tensor imaging, or with DNA mapping and genetic research, have totally revolutionized how we can address



aspects of synaesthesia. Another area to look at is media. The internet, and all it offers, such as e-mail, chat groups, & web pages, has created an entirely different universe, as to how information can be accessed. Now you can go on-line, do a Google search and, in under a minute, pull up basic web sites on synaesthesia. A few more minutes, and you have a list of experts on the topic, along with e-mail addresses and phone numbers. Not to mention things like YouTube, with dozens of videos, featuring eminent researchers. And downloadable podcasts, such as my "Synesthetic Moment" segments. And synaesthesia now being mentioned on television, on PBS, Discovery, and other networks' science programs. We didn't have all of that 20 years ago".

What, in your opinion is the next "Big Step" in synaesthesia research? "The one place to look for major breakthroughs will be in what we glean from those doing genetic research. Once we can start getting our hands on definite, specific genes that play into synaesthesia, we will be able to drastically expand our understanding of synaesthesia by putting it into the broader

picture and context of brain evolution and how genetic factors can impact cognitive functions. This genetic information could also lead us to new understandings of other conditions, including perhaps those in need of treatment".

And finally, are you involved in any research / writing / media projects at the moment? "I'm involved with Trident Technical College Internet Radio in producing weekly segments of the program "A Synesthetic Moment". The recordings are now being turned into podcasts, which are available via either of the following addresses: (bottom of this page).

As for writing, I am currently collaborating with Dr. Jamie Ward, Dr. Jools Simner, and Jörg Jewaski compiling and assessing old case studies of synaesthesia. I'm also collaborating with the Russian synaesthesia researcher, Anton V. Sidoroff-Dorso, on a series of translations of old articles on synaesthesia, translating from Russian into English, and trying to put them into modern perspective.

I've been wanting to return to doing research on graphemes and phonemes, preferably in collaboration with others, focusing on non-Indo-European language data. I also, as always, remain fascinated with how different cultures offer and teach members synaesthetic systems - most often (but definitely not always) as part of the colour symbolisms integrated into their religion and cosmology.

As might be expected, I tend to look a lot at 'flavour/colour' systems that various cultures have; currently, I'm looking at Japanese and East Asian systems. But, perhaps more expected, I also look a lot at various 'music/colour' systems which are taught as part of a culture. So, for example, I'm very interested in looking more at the Desana Tukano's traditional cosmology - if I can ever find the time".

The full Transcript of this interview is available on our website

www.uksynaesthesia.com

[..and it's well worth a view!]

You can join the Synesthesia List by emailing Sean at: sean.day@tridenttech.edu

The "Synesthetic Moment" podcasts can be heard at: <http://ttradio.mypodcast.com/> or <http://ome.comcast.net/~sean.day/synestheticmoment.htm>





Syn Research in Russia:

Anton V Sidoroff-Dorso, Associate Prof Foreign Language Department. Moscow Pedagogical State University.



In Russia, throughout more than a century since N. O. Kovalevskiy's major article (1884) and M. V. Bekhterev's published work (1896), synaesthesia has always been addressed either directly, as

"Synaesthesia is a springboard for theorising the human mind, art and culture"

an object of study, or as a springboard for theorising the human mind, art and culture. Since the late 1960s, alongside the world-famous Russian neurophysiologist A.R. Luria's in-depth account of synaesthete Shereshevsky's personality, synaesthesia has also been centre stage to a great extent through the prolific research and art of Prof. Bulat M. Galejev. Despite sporadic official resistance and financial contingencies, synaesthesia has grown out of the medical trenches all the way into the theory of linguistics, art and culture. As a result, over the past two decades and until his death earlier this year, synaesthesia has become an acclaimed topic for international conferences, degree theses, scientific and philosophical investigations.

B.M. Galejev, originally a physicist from Kazan, became head of the Scientific Research Center *Prometheus* in the early 1960s. This inspired further projects and study of synaesthesia in intersensory arts and multimedia in the framework of theoretical aesthetics. His interpretation of the study of synaesthesia as a universal mechanism of the human mind that provides associative idiosyncratic structuring across the senses (comparable but irreducible to that of E. M. Hornbostel's or L. E. Marks and G. Martino's) guided him in analysing cross modal synthesis and figurative thinking in a phenomenally encyclopaedic corpus of literature, music, painting and cinema. The Center's thorough analysis of archival artefacts helped, for example, to demonstrate that Scriabin's and Kandinsky's synaesthe-

siae were intellectually construed rather than perceptually experienced. Notably, Prof. Galejev did acknowledge possible correlations between what he called natural synaesthesia (his main priority) and developmental one, and admitted that both are liable to objective verification. His concentration was on synaesthetic correspondences submersed in creative outcome of established artists, claiming that their universal accessibility proves the common nature of synaesthesia, on the one hand, and its voluntary free-flowing application in art-making, on the other. Such an approach yielded an exemplary return, ranging from attempts to circumscribe synaesthesia among other perceptive coordination mechanisms through schematising formal relations among arts to multisensory synchronisation in light-enhanced architecture and computer-generated environments. Although Prof. Galejev's accomplishments are indisputably unparalleled in scale and ambition by anyone working under



Moscow Pedagogical State University

the same ideological and financial constraints, my personal view is that the stance to delegate synaesthesia solely to philosophy, aesthetics and psychology seems unjustifiably limiting and stringently monopolistic. To beneficially reconcile both subjective account and objective methods, I adopted the *neurophenomenological approach* as part of my own research programme. Being not a synaesthete, neurophenomenology, as outlined by F. J. Varela and E. Thompson, helps me gain a methodological insight into first-person experience and, in a reciprocally constraining dialogue, confront the environmental and biobehavioural invariants of synaesthesia without preconceptions on both sides. Within a broader framework, neurophenomenology provides a *dynamic dimension* to the neurophysiology of consciousness

whose neuronal basis is hypothesized to be rooted in widely distributed brain activity mediated by *phase-lock synchrony* over multiple frequency bands. As were independently demonstrated by Engel, Senkowski, Foxe and others, the very same mechanisms might play a role in multisensory integration. These building blocks triangulate on synaesthesia resulting in what I called the *Oscillatory Supervenience*

"Synaesthesia research is being held back by its "cortex-biased" dispositions"

Model (OSM). Keeping track with its latest trends, it cannot be overlooked that despite intrinsically analytical progress, synaesthesia research is being held back by its "cortex-biased" dispositions inherited from the representational and modular approach to human cognition, the parsimony of which is long since exhausted. To overcome the purely descriptive slant, neuroscientists would – as the next big step that I am hopeful to contribute to – have to establish the common outline between synaesthesia and the neuronal correlations of consciousness and awareness, and to spell out the role of semantics (hence, cultural influence and precognitive categorisation) not in terms of self-reliant flow-charts but through capitalising more tangibly on the recent advancements in neurophysiology (Angel, Poeppel, Llinas, for instance). Specifically, we have yet to approximate the distribution, possibly lateralised, of neurodynamics including the deep brain nuclei *both* in top-down (cognition) and bottom-up (salience) activation, identifying the band frequency specifications relevant for synaesthetic coherence. Alongside elaborating further on the OSM, I am currently putting together in cooperation with Dr. Sean A. Day, ASA, an article on the history of synaesthesia research in Russia. I have completed the Russian translation of the Synaesthesia Battery for David Eagleman's lab. I am also gathering Russian synaesthetes into a unified information network with view to occasional personal meetings. My aspiration is that, for many, dispelling some myths and building self-knowledge will turn synaesthesia from a curious discovery into the centrepiece for pursuing individual creativity and, eventually, generate new scientific interest. For this, I have accumulated some materials to put up on a recently registered website. I hope the Russian Synaesthesia Community will soon be able to welcome you on:

www.synaesthesia.ru



Lawrence E. Marks - Yale

What do you see as the most significant discovery in Synaesthesia research? *"I'm convinced that the most important research on synaesthesia that will take place over the next several years (say, over the next decade) will deal with the development of synaesthesia, within the context of developmental processes in perception, cognition, and perhaps also in emotion/personality"*

What are your thoughts on changing views/attitudes about Synaesthesia over the years? *"When I first became interested in synaesthesia, nearly 40 years ago! - the consensus within the scientific community was that either (a) synaesthesia was some sort of curiosity or perhaps abnormality, else (b) synaesthesia wasn't real (in the words of a former colleague at Yale, a major figure in cognitive psychology 'reports of synaesthesia merely represent overactive imaginations. There is no longer any significant doubt in the scientific community over the 'reality' of synaesthesia - although there is still much controversy over its nature. The changing attitude resulted in large measure from evidence (mostly from neuroimaging) of specific neural mechanisms in the brains of synaesthetes. Many in the scientific community, as well as in the public at large, find neuroimages especially convincing. This phenomenon - the change in attitude - is not only striking (from my own perspective, rather astonishing), but also rather intriguing from the perspective of the history and sociology of science.*

Neuroimaging has produced similar changes in attitudes with regard to other topics in science, especially in behavioural science, and I hope I live long enough to see how future historians and sociologists of science will 'read' these developments. In scientific history, as in political history, it takes at least a quarter century to gain perspective. In this context, let me take the opportunity to mention that I had become wholly convinced of the 'reality' of synaesthesia well before anyone even conceived of imaging a synaesthete's brain. This conviction came from simply chatting with several synaesthetes, all of whom told stories about themselves and their experiences so similar to one another that they could not have occurred by coincidence. Some might dub this 'clinical intuition.'

In any case, being a rather crass materialist about mind and behaviour, I had already been operating, well before the first measures of brain activity in synaesthetes, under the assumption that if synaesthetes and non-synaesthetes perceive differently, then some

processes in the brains of synaesthetes and non-synaesthetes must differ"

Which researcher on Synaesthesia do your primarily follow or refer to and why? *"Because I started writing about synaesthesia in the early 1970s, I began by citing researchers who worked on synaesthesia a generation or two ago -- and longer. And I still refer to several of them.*

This may simply mean that I'm perseverating (or, my wife might say, being curmudgeony), but I prefer to think that it reflects my great admiration for the insights evident in the work of these early synaesthesia researchers. The work of two of them in particular continues to impress me. I have probably referred as often to the papers of Theodore Karwoski and his colleagues as to those of anyone else in the field. Their research, in the 1930s and 1940s, provided many critical observations on auditory-visual synaesthesia and its role in perception and cognition. Although many contemporary synaesthesia researchers would likely resist the way that Karwoski classified many of his subjects as 'true' synaesthetes, nevertheless, Karwoski's views on central issues, such as the consistency of synaesthesia, are thoughtful and, in their own way, quite sophisticated.

Another researcher whose work on synaesthesia I have long admired, increasingly so in recent years, is Raymond Wheeler. Wheeler's studies of synaesthesia, done largely in collaboration with his student-and primary-synaesthetic-subject, the adventitiously blinded Thomas Cutsworth, are as insightful as any, and rather astonishing when viewed from a contemporary perspective. Like Karwoski, Wheeler recognized that synaesthesia is much more than an unusual kind of perceptual experience in a small number of people, but epitomizes principles of cognitive organization. In just a little more than a decade, we shall be able to celebrate the centennial of Wheeler and Cutsworth's first article. I can only dream that researchers a century from now will read any of my own papers with as much intellectual delight as I read Wheeler's.

Tanya Lyons - University of Sussex

What inspired you to attempt to understand the condition? *"It is the most fascinating condition, and as I don't have it (bar the possible particular motion to sound/sensation thing mentioned) and I want to know how I got left out!*

Research is definitely a learning curve for all involved, and gives everyone a sense of

achievement for having made a contribution to getting that bit further to a general understanding of synaesthesia".

Which Synaesthesia researcher most inspires you and why? *"Richard Cytowic is worth a special mention, He has the ability to write clearly and explain things well, and yet inject wonderful humour, which makes reading the more complicated things that bit more fun!"*

What in your opinion is the next "Big Step" in synaesthesia research? *"Causation would be key as then we can get to the root of synaesthesia, help those who suffer with parts of it and help them to work with it or switch it off; perhaps help others to get certain types of synaesthesia, say, who need something extra to help them learn, such as with colour coded reading or perfect pitch perhaps. A simpler big step in syn research is just to make more people aware of the condition.*

What is the importance of continued research into Synaesthesia? *"Learning about synaesthesia tells us more about how the brain works and all it's connections and intricacies. Not only do we learn about how synaesthesia works, we learn more about brains in general, and with many neurological conditions to deal with in this world that have no definitive cause or cure, every little helps to understand more".*

And finally, are you involved in any research / writing / media projects at the moment? *"I recently researched a type of synaesthesia that hadn't been looked at before, that of sign language to colour, where people see colours when they or others fingerspell in sign. We have yet to find a Deaf synaesthete, who has sign to colour type, and/or someone who learnt sign as their first language as opposed to spoken. We are in the process of setting up new experiments to try and find Deaf synaesthetes, to test if grapheme to colour type is the influence of sign to colour type, and once we can establish a little more about this type of synaesthesia, we hope to publish all the findings and offer more insight to the fascinating condition that is synaesthesia".*

We are looking for any synaesthetes or non-synaesthetes who can sign either BSL or ASL to take part in future research. Please contact Jamie Ward: jamieward@sussex.ac.uk

www.syn.sussex.ac.uk



Synaesthesia Research

University of Sussex



Synopsis of “Synesthesia Across the Spectrum”

by Lawrence E. Marks

Fiona Torrance—Editor

Lawrence Marks explores the conceptualisations of synaesthesia via three questions and theories in his paper “*Synesthesia Across the Spectrum*” for the purpose of providing clarification on the nature of Synaesthesia in mental life. “...Differences in how we talk about synaesthesia often reflect different answers to three sets of fundamental questions” (Marks):

- Is Synaesthesia a unitary phenomenon (Dualism or Monism) or a genus containing several species (Pluralism)?
- Is Synaesthesia a sensory phenomenon (Dualism) or a cognitive-conceptual phenomenon (Monism), or both (Dualism and/or Monism and/or Pluralism)?
- Are there boundaries separating Synaesthesia from non-Synaesthesia (Dualism)? Or are there boundaries separating different species of Synaesthesia (Pluralism)? And if there are, how characterises these boundaries as sharp or fuzzy?

As interpreted by Marks, Dualism limits the nature of Synaesthesia to inconsistent sensory qualities (from internal or external stimuli) that arouse involuntary yet consistent responses distinguishable from “imagery”, responses that can arise from thinking or imagining a trigger stimulus, i.e. the conceptual.

The Dualistic view also suggests that the nervous system of Synaesthetes differs from the nervous system of non-Synaesthetes, functionally and possibly structurally. This neurophysiological difference affects perception, cognition, and behaviour.

Monists and Pluralists would argue, however, that the existence of such a unique neurophysiological mechanism need not provide conclusive evidence for Dualism. In contrast to Synaesthetic Dualism, Synaesthetic Monism (different Synaesthetic experiences) and Synaesthetic Pluralism (different Synaesthetic species) reject a simple division between Synaesthesia and non-Synaesthesia in terms of sensory qualities, cognitive response & imagery that underlie behaviour.

Further, Marks explains that Monistic and Pluralistic views agree that the “experiences” or “species” may be more or less consistent, more or less automatic, and/or more or less voluntary. Both the “experience” (or the “specie”) is aroused

invariably and linked between specific triggers and sensory responses.

Therefore both Monism and Pluralism propose a correlation between Synaesthesia “experience” or Synaesthesia “specie” and “imagery”. Assessing these three questions and theories through a review of research case studies, Marks addresses these roots of Synaesthesia as a way of gaining knowledge through thought or perception (cognition).

Marks reports that Synaesthetic experiences can result from direct sensory stimulation and sometimes from more than one kind of stimulus in the same synaesthete, and also explains how such experiences can result from child-

“Despite the remarkable increase over the past couple of decades in research on synaesthesia, fundamental questions remain unanswered”

hood experiences and genetics.

In discussing consistency as a universal characteristic in Vivid Synaesthesia, Marks refers to the works of Riggs and Karwoski (1934) who “reported the synaesthesia of a 7 ½ year old girl who described experiencing colours in response to music [inconsistent] and to personalities (people) [consistent]” (Marks).

These case studies raise additional ethical questions not addressed by Marks, such as the impact on research participants who experience colour and/or emotion and pain to people as personalities, including researchers, or to environments, including research surroundings. How are research participants, such as the university students and such as 7 ½ year old girl impacted by the researchers and the research environment, particularly if the “Synaesthetic experience or specie” is consistent and intact over a long period of time and used as a frame of spatial reference or imagery for conceptualisation by the Synaesthete?

“Despite the remarkable increase over the past couple of decades in research on synaesthesia, fundamental questions remain unanswered, and care should be taken not to unduly limit or restrict vision on what synaesthesia is or may be” (Marks).

In conclusion, Marks suggests the delivery of a logical framework with categories graded in value to analyze cognitive organization. These categories graded in value are sets with elements having fractional or graded membership (probability from 0 – 1) in a given set (category or species) to allow for appearance of continuity across the spectrum of Synaesthesia experiences while simultaneously allowing acute distinction of categories/species themselves.

“Synaesthesia Across the Spectrum” encompasses Monist, Dualist and Pluralist views to

examine the divergence of resulting conceptualisations of Synaesthesia that includes perception, cognition, personality, language and neurophysiology. Marks points to the works of Perky (1910), Segal and Fusella (1970) and Reeves (1992) to show an overlap between perception and imagery, and to the works of Rich (2006) to show an overlap of brain activation in Synaesthesia and visual imagery.

“To be sure, synaesthesia is not identical to imagery – phenomenologically, functionally, or neurophysiologically. Nevertheless, as Karwoski and Odber (1938) suggested, synaesthesia and imagery may overlap in important ways, important because the connection between them may help both to clarify the nature of Synaesthesia and illuminate its role in mental life” (Marks).

Synopsis of “Synesthesia and dyslexia: “Implications for increased understanding”.

by Barbara Beard Stephan

Fiona Torrance - Editor



In her recent paper, “SYNESTHESIA AND DYSLEXIA: “*Implications for increased understanding*”, Barbara Beard Stephan explores Synaesthesia as a learning style, as a channel to creativity and as an opening to transpersonal experience. During this engagement of students between the ages of 7 to 14, Barbara tests the hypothesis that there is a significantly greater number of synaesthetes in the dyslexic student population than in the general student population.

Barbara was inspired to undertake the research due to her own synaesthesia experience where she connected sky blue with Monday. FT

Silverman (2002) noted, “Dyslexia forces the brain to solve problems in different ways, increasing the likelihood of creative solutions” (p.189). Research shows a relationship between synaesthesia and creativity. Because of this relationship, is there a correlation between dyslexia and synaesthesia? Barbara’s research demonstrates that this hypothesis did not prove true. Although Barbara questions the result in terms of the number of synaesthetes and sample studied,





because a dyslexic synaesthete clearly has the advantage of using his or her synaesthesia to aid him or her.

Barbara was inspired to undertake the research due to her own synaesthesia experience. *"In some ways the inception of this study took place in 1960 when I was eight years old. I recall staring at the sky one particular day and noting that its light blue colour was very close to Monday's colour, sky blue, but then being quite puzzled as to why Monday's colour was so close to Sunday's colour, a tad lighter sky blue. Every other day of the week was clearly its own unique colour. I also realized that people's names are colours"* (Barbara Beard Stephan).

Barbara decided to contribute to expanding awareness about synaesthesia with the intention of helping children acknowledge and understand the beauty and usefulness of their gift. Barbara focuses on three case studies to illustrate the experiences of children who acknowledged their synaesthete experience & to highlight the synaesthete experiences of a professional artist who uses her synaesthesia as creative inspiration.

Through interviews with synaesthetes, her findings showed recurring themes around what it is like to "be" a synaesthete, and not centred around the synaesthesia experiences themselves. Her sample revealed synaesthe-

"...a dyslexic synaesthete clearly has the advantage of using his or her synaesthesia to aid him or her"

sia to be a positive experience, but kept private more than shared with others.

Barbara discovered a higher number of synaesthetes in one control school than in the other and identified that the nurturing and reinforcing environment of the school as a factor in developing synaesthesia expression, allowing these students the opportunity to focus their attention on inner experiences. "It will also help those who have it but have not been conscious of it to expand their consciousness and open to undeveloped sensations and abilities."

Barbara identifies synaesthesia as an ability, not a diagnosis. This research experience also leads her to believe that synaesthesia can be developed or nurtured through certain activities and focusing, and by awakening and honouring the senses through connecting with creativity:

"Houston (1997) proposes listening to music with the whole body: This is not a metaphor for what we are doing but the actual experience. Music, like all sound, comes through the air in waves that flow over the entire

body, subtly interacting with the frequencies around our bodies and the hair follicles, which are particularly sensitive.

After the music is flowing all over, you will begin to experience synaesthesia, or a crossing of the senses, to 'see' sound, to

"synaesthesia is an ability, not a diagnosis"

'taste' texture. Many children do this spontaneously and naturally, and it is the basic experience that informs much poetry and multi-media art. (p. 47)" (qtd in Barbara Beard Stephan).

"Such an exercise could validate or bring about a synaesthetic experience in both synaesthetes and non synaesthetes alike', for learning, for creativity, and for transpersonal experience".



Dr Anina Rich,
ARC Research Fellow
& Senior Lecturer,
Macquarie Centre for
Cognitive Science,
Macquarie University,
Sydney, Australia

Are you a synaesthete? *"No. I often wish I was though - I've been told my world sounds boring!"*

How long have you been studying Synaesthesia? *"Since 1999"*

What inspired you to attempt to understand the condition?

"My interest in synaesthesia is two-fold. First, it is a fascinating phenomenon in and of itself, one that reminds us all of the subjectivity of perception. Understanding how and why these experiences occur may therefore tell us more about the nature of perceptual experience. Second, I am interested in how the brain integrates information across the senses to give us a cohesive view of the world. Synaesthesia seemed to provide a possible window into this integration process.

When I began my research, however, little was known about the phenomenon, and so I started with grapheme-colour synaesthesia because it was more common and more easily manipulated (in an experimental sense) than the cross-modal forms of synaesthesia. Grapheme-colour synaesthesia seems to be an anomalous form of the type of feature binding we all do, where we effortlessly 'bind' together the different features of an object into a conscious percept (e.g., we see a red bouncing ball, not the colour, motion, and shape as separate

experiences). I saw this form of synaesthesia as providing a window into 'within a modality' integration. I am now moving into cross-modal forms of synaesthesia to look at 'across modality' integration".

How and why do you think attitudes have changed over the years both from the scientific and the general populations view regarding synaesthesia and synaesthesia research? *"From their teachers and lecturers! Scientific opinion is probably still somewhat divided about the genuineness of synaesthesia and usefulness of studying it. Although many scientists recognise synaesthesia as a genuine phenomenon, there are still those outside the field who are sceptical.*

In some ways this is due to the inherent subjectivity of the phenomenon (we cannot objectively verify that someone describing synaesthesia actually experiences it) but actually, this is true for many areas of per-

"Scientific opinion is probably still somewhat divided about the genuineness of synaesthesia and usefulness of studying it."

ceptual research. It's just that with phenomena such as illusions, most people can see and describe the illusion in the same way. It is therefore accepted as a 'real' experience. With synaesthesia, most of us cannot 'see' the same thing, and so we may be difficult to convince. The major problem is that we still lack a completely objective, robust, specific measure for synaesthesia. The 'synaesthetic Stroop' or 'synaesthetic interference' effect is a good measure of synaesthesia if one accepts that the individual has the phenomenon, but it is not a test of 'genuineness'.

The same results can be gained by training a non-synaesthete on a set of (for example) letter-colour pairs. Similarly, the test of consistency is nothing more than that – again, high performance could be achieved by training.

Other tests (e.g., the embedded figure task, visual search improvements) do not show reliable effects for many synaesthetes. Neuroimaging evidence can demonstrate a difference between controls and synaesthetes, but not what that difference is due to – for example, in many studies we cannot rule out the notion that the synaesthetes are imagining the colours rather than experiencing them involuntarily. Although this may seem implausible to those of us convinced about the phenomenon, to a sceptic, this is clearly a problem".





The Test I Passed When I Failed It Carol Steen & Mike Dixon

Having felt different from my peers since I was aged 7, it was only at age 20 that I realized the uniqueness of my and my father's perceptual abilities. In contrast to his lack of comfort in discussing it, I searched quietly for fellow synaesthetes who would talk about this mysterious ability. Many years later I found some and we exchanged lots of stories and laughed at each other's wrong colours for all sorts of shared synaesthetic perceptions. We were also aware of synaesthesia imposters.

At this time, formal research was just getting started and I heard about several tests that one could take to get the label of 'genuine' synaesthete. I wanted the label of 'genuine synaesthete' by taking such a test and passing it, to convince that synaesthesia is real, normal and possibly a wonderful ability to have.

In 2002, I met Dr. Jeffrey Gray in San Diego at an American Synaesthesia Association conference. He said he was working with fMRIs and asked me, because I had coloured touch/pain, if I would participate in his research and have a scan done. I had a concern: I have two metal screws in my left leg and I knew that fMRIs used magnets. When I asked a radiologist if this procedure would be safe because the screws were titanium, he mused: "Titanium isn't magnetic so maybe they'll stay where they are." Reluctantly, I declined to take the scan after obtaining a second opinion, and I was probably as disappointed as Dr. Gray because I wanted this sanction from the scientific community. Then I heard about another test of genuineness for synaesthetes with coloured letters and numbers called the Synaesthetic Stroop Test. Dr. Mike Dixon came to New York to give it to me. I was sure it was all about consistency. We chose one number and three letters to use for the test that, for me, all have very different colours: for example, my 3 is orange, while my C is blue. After we determined the 'exact' onscreen colours for these numbers and letters he set up his computer. In this test, numbers and letters are presented on the computer in different colours. Sometimes the colour on the screen matched my colours (a blue C would appear on screen) and other times they mismatched (an orange C would appear). In one version of the test, he asked me to ignore my synaesthetic

colour and just focus on naming the colour I saw on the screen and to give my answer as quickly as possible. The test began and I was very careful how I answered his questions. For at least 2 hours I looked at the screen then answered accordingly: 3, "Orange." C, "Blue." C, however, when it showed up written in orange on the computer screen posed a bit of a problem. Even though I wanted to say blue, I had to say orange. Mike was very patient. He seemed calm and happy with my participation which encouraged me to continue and I began to relax. Then, as it had many times before, a C appeared on the screen written in orange. Instead of naming the screen colour, I blurted out my synaesthetic colour. Mike smiled the biggest grin. I was startled at my answer and knew then that I had just failed. But to my surprise, my error was just what he had been waiting for. I thought I had failed, but instead I had just passed the test. A couple of years later a New York Times science writer asked to interview me but before she began she inquired, "By the way, have you ever taken a test of genuineness? Proudly, I replied "Yes"!"

There is a footnote to this story. Just today, I found out that Mike had been looking for something else when he gave me the Synaesthesia Stroop Test: Even when I did not make an error, whenever the number or letter appeared on the screen, in what was for me was the "wrong" colour, it took me a lot longer to name the screen colour than when the screen colour was the same as my synaesthetic colour. Mike said, "When the screen and synaesthetic colours were the same, you named the colour in 869 msec; when they were different it took you 929 msec. This may not sound like a big difference, but in the Stroop world it is." And I'm just delighted".

The full transcript of this article is available on the UKSA website.

WE asked some synaesthetes to give us their own personal take on being a synaesthetic research subject: A view from the other side!



"I once had the oddest visual with sound during an EEG. It was of a mass of black wavy hair moving outwards from the center of it in a circular flow, and there was laughing. Suddenly the laughing pitch became shrill and the center of black hair burst open with an orange baby moving in

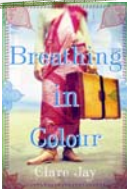
orange jelly like substance. What triggered this I think was that I had been placed in a dark room and the door was very slightly ajar with a row of shiny light travelling into the room Why it was in the form of a baby, I don't know". **F.J.**

"One problem is that any colour charts given to us simply can't match the colours of the things we hear! I think non synaesthetes must live in a very dull world! During scanning I felt as though I was in a Kandinsky picture. The loud sounds were the wonderful purples and reds of some of his art works and as though one of his pictures was able to change form like clouds, but still be recognisable as a picture. I felt relaxed and happy, although loud noise is anathema to me. But the quality of this one was soft and almost tangible, enveloping me in this wonderful world that it really didn't seem loud at all. During EER scanning, the blackness of the room was also tangible sounds were like white holes in the blackness. I enjoyed it, although I wasn't prepared for the utterly comical way I looked!" **J.R.**

"It felt as if I was sitting in Snoopy's spacecraft in a basement in George where I used to play as a child surrounded by the smell of moss and ferns. The researcher reminded me of a cross between Dr. Snuggles and Charlie Brown. One of the tests involved flashing emotions on faces. This made me feel like I was stuck in a shopping mall with lots of people with songs colliding, such as "Shout, shout let it all out!", "Nothing 'bout me (Sting's Epilogue)", and "How long's a tear take to dry?" by Beautiful South. Throughout the session I also felt physically touched by the researcher even though he respectfully sat a distance away not aware of the spacecraft, mall and colliding songs". **F.T.**

"The problem I have with MRI scanners is that the loud noise one of these things makes actually leaves me feeling synaesthetically relaxed. Can you believe that! This makes me feel drowsy - then I fall asleep. And no, I'm not going through again." **J.W.**

"I really loved doing it. The people were really nice" **T.D.**



Interview with Clare Jay, PhD, Author of *Breathing in Colour*:

Firstly, do you have synaesthesia? “No, but all my life I’ve had intensely vivid dreams in which colours seem to flow right into and through me with all the sensory power of touch”.

How did you first hear about synaesthesia?

“I was doing internet research into a memorable experience I’d had in a dream, in which I picked up a fistful of sand without looking at it, and perceived it through texture and taste as being a deep orange. I found Dr Richard Cytowic’s online articles on synaesthesia and read voraciously on the subject, ordering books for further research”.

How did you research the subject?

“I downloaded scientific reports and articles from the internet, watched online synaesthesia videos, and read books such as *The Man Who Tasted Shapes*, by Dr Richard Cytowic, and *Blue Cats & Chartreuse Kittens*, by Patricia Lynne Duffy”.

Did you get to meet or speak to any synaesthetes in the course of your research?

“Yes, I communicated with synaesthetes through online forums, visited their websites, read about individual experiences, and lifted certain synaesthetic perceptions that struck a chord with me, such as ‘cool glass columns’, which in the novel becomes the way that the seven-year old Mia perceives the emotionally distant name ‘Alida’ as opposed to the warm apricot of ‘Mummy’, which she no longer feels able to use”.

During the writing of the book, were you at any point concerned whether the majority of your readers, being non-synaesthetes, would be bemused by Mia’s synaesthetic experiences?

“There were moments when I imagined readers stopping in their tracks every few lines with questions such as: ‘Why does she experience her father as baked potatoes, while her mother is vanilla custard? As I was writing Mia’s scenes, I didn’t let myself ‘think about it’; I just let the impressions, tastes, and sensations flood into my mind, and then I wrote them down. I hoped that readers would naturally reach a point where they, too, stop ‘thinking about it’ and simply absorb Mia’s world as they fol-

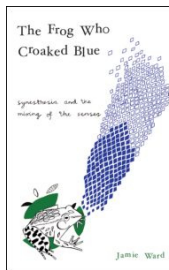
low the chain of intensely emotional events which lead to her disappearance in India”.
And finally, Would you like the thought of experiencing synaesthesia yourself? “I feel I have experienced moments of synaesthesia already, in my lucid dreams and during the actual writing, which for me tends to take place in a kind of trance where everything is mingled – my thoughts and senses mingle with vivid mental pictures. A measure of synaesthesia seems a natural experience that I think non-synaesthetes can encourage to flourish. That said, I’m still a little envious”.

The full transcript of this interview is available on the UKSA website.

Breathing In Colour is available from amazon.co.uk

The Frog Who Croaked Blue

gives a truly fascinating and incredibly informed insight into the unique way that we synaesthetes view the world and the message is delivered with a clarity never before achieved in a book of this nature. Dr. Jamie Ward has managed to describe the complex and sometimes impenetrable world of neuroscience and psychology in a way that is both informative and entertaining. This is a book that everyone, academics and the general public alike, can understand and enjoy. The book contains both theoretical and empirical ideas that stimulate, influence and advance the thinking and theory on how our brains function. It is well written and stands as a model of how psychology can be presented to a general audience. As such, I’m sure it will have lasting value as a “must read” for everyone with an interest in Psychology and the human condition.



The Frog Who Croaked Blue is available from amazon.co.uk and all good bookshops

MEDIA REQUESTS

We regularly receive media requests asking for film, audio & print interviewees with specific types of synaesthesia. If you wish to be considered for any future projects please contact us either at one of the addresses below stating type of synaesthesia, gender, age, the area you live in and a contact address or telephone number.

In “*Wednesday Is Indigo Blue*”, pioneering researcher Richard Cytowic and distinguished neuroscientist David Eagleman explain the neuroscience and genetics behind synaesthesia’s multisensory experiences. Because synaesthesia contradicted existing theory, Cytowic spent twenty years persuading colleagues that it was a real - and important - brain phenomenon rather than a mere curiosity. Today scientists in fifteen countries are exploring synaesthesia and how it is changing the traditional view of how the brain works. No mere curiosity, synaesthesia is a window on the mind and brain, highlighting the amazing differences in the way people see the world.



Wednesday Is Indigo Blue is available from amazon.com & amazon.co.uk



THE NEXT ISSUE: SYNAESTHESIA, CHILDREN & EDUCATION

Recent estimates put the prevalence of synaesthesia at around 1:23 of the population. The average primary school class size in the UK is estimated at 24.5 (2008). In the next issue we will be looking at the general awareness of synaesthesia (or not!) within the education system. If you have any personal experiences, opinions or comments you’d be prepared to share regarding your experience of synaesthesia in schools, we’d love to hear from you. Please submit contributions to any of the addresses at the foot of this page.

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