

**THE FOURTH ANNUAL  
NATIONAL CONFERENCE OF  
THE AMERICAN SYNESTHESIA  
ASSOCIATION, INC.**

Hosted by the Institute for Cognitive and Brain Sciences, University of California, Berkeley, Berkeley, CA, U.S.A., 5–7 November 2004.

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Although historical descriptions of cross-sensory experience abound, particularly in the arts, it is only recently that the public at large has found the idea to be a topic of interest. Perhaps the current enthusiasm is partially due to the way various technologies today titillate so many of our senses simultaneously. The current fascination also may be related to research reports on cross-sensory experiences, more properly termed synesthesia. Synesthesia occurs when an individual receives a stimulus in one sense modality and experiences a sensation in another. Recent empirical studies, it seems, have buoyed the topic, often revising earlier conclusions about how the brain works. More precisely, we now know that historical commentators, who cast the phenomenon in terms of abnormality, philosophy and metaphor, were too quick to draw these conclusions. Their

views today, in effect, remind us how hard it is to characterize subjective experience. The updates, on the other hand, show that despite the limitations of rigorous, quantitative analysis, data can nonetheless further understanding.

Indeed, advances in brain research have allowed us to enlarge our knowledge of this phenomenon. One compelling outcome is the evidence that laboratory studies comparing genetic characteristics with brain plasticity and development have furthered the nature/nurture debates. Equally exciting is the manner in which synesthetes and scientific research teams have extended their hands to one another. The communication among diverse populations was quite evident throughout the Fourth Annual National Conference of the American Synesthesia Association (ASA), at the University of California, Berkeley.

Held in early November, and hosted by the U.C. Berkeley Institute for Cognitive and Brain Sciences, the conference demonstrated how seamlessly some topics reach across disciplinary domains. Presenters, attendees, synesthetes and non-synesthetes exchanged information easily despite the varied backgrounds of those in attendance. As scientists, artists, humanists and laypeople articulated various themes, the resulting blend underscored that quantification and communication are both necessary in our efforts to elevate our understanding of higher brain functions. Even scientific studies designed to focus on a limited area (e.g. color-grapheme studies) seemed to reach beyond the laboratory space. It was clear that articulate descriptions provided by synesthetes helped researchers to raise questions used in the design and interpretation of research goals. In the symposium environment, moreover, it seemed that further refinements would come about because of how the synesthetes in attendance reacted to the data presented. The working lunch, led by Sean Day, helped the group to sort through some of this complex information and share their responses to nagging questions within the field.

A short review can hardly touch the tools and topics the symposium brought to mind. One highlight was learning of the history of the American Synesthesia Association (ASA), a story that offers a microscopic view of how the field as a whole has gained momentum. Carol Steen and Pat Duffy, two synesthetes, founded the ASA in 1995.

Steen, who uses synesthesia in her art, heard the neurologist Richard E. Cytowic on National Public Radio in 1993, the year his book *The Man Who Tasted Shapes* was published. This book was instrumental in bringing synesthesia to the fore for many. In Steen's case, Cytowic's comments marked the first time in her life that she had learned anything about synesthesia, although she is a synesthete. This led her to explore the literature, limited though it was. Through her exchanges with Simon Baron-Cohen, a synesthesia researcher, she met Pat Duffy, a synesthete writer also living in New York City. Steen and Duffy formed what became the ASA so that synesthetes could talk to one another. Since that time the ASA has organized seven conferences, the Berkeley event being the latest.

As many of us know, interdisciplinary events often challenge us with a spectrum that mixes the "too-technical" and "overly naive" with a number of strong, balanced presentations. This was not the case at the ASA meeting. All of the speakers were of the highest caliber. Given this, it is hard to separate out one or two. Overall Daphne Maurer's paper made the greatest impression on me. From McMaster University in Canada, Maurer is an expert in cross-modal perceptual development in infants. Her earlier work proposed that infants experience a sensual bouillabaisse. What this means is that, for them, sights have sounds, feelings have tastes, and smells can make a baby feel dizzy. She offered some perspective on the way the brain changes during development, how infants react when objects are presented to more than one sense, and on apparent remnants of the early synesthesia in adulthood. I believe this study is of great importance in reminding us that the genetic parameters that drive many studies should not lead us to forget developmental options.

Also impressive was the contrast among papers, which was both real and thought provoking in an expansive way. For example, on the art side, the talks ranged from the photographer Marcia Smilack detailing how she, as a synesthete, translates her responses to shapes and geometry contained within architecture, to Christine Söffin's discussion of her creative use of synesthesia-based ideas in the art classroom. Similarly, scientific studies included Alicia Callejas's web-based descriptive study of grapheme-color synesthesia; Noam Sagiv's presentation of the prevalence of synesthesia and number forms

obtained from over 1,000 naive volunteers recruited among visitors in the London Science Museum; and Richard Cytowic's discussion of examples based on fragrance and aroma (drawn from some of his recent lectures in Japan). Those who missed the event can, fortunately, access many of the scientific ideas in the recently published *Synesthesia: Perspectives from Cognitive Neuroscience*, edited by Lynn C. Robertson and Noam Sagiv [1].

While space does not allow a detailed discussion of the multicolored threads that weave the field's tapestry, one area that came up in passing has lingered in my mind. Within the field, as several attendees pointed out, there is a debate over synesthesia as a projective experience as opposed to an associative one. The associative, as I understand it, would have the evoked perceptual experience within the mind's eye while a projective synesthete would place the synesthete experience within the world itself. To my surprise, several researchers rejected the projective even as a possibility. I have been thinking about this since the symposium primarily because I have always assumed that synesthesia is a projective experience. This definitional conflict brought to mind the imagery debates that surface periodically in the cognitive science/consciousness literature.

Briefly, the history of human thought in the West has long included debate about the mental image, which is generally seen as a type of perceptual experience that can occur in the absence of the relevant perceptual object. To oversimplify, this idea has fostered the view of cognition residing in the mind/brain, frequently translating into a tendency to put the role of the body and the environment aside. Sometimes "imagery" is framed in terms of the "imagination" and at other times characterized in terms of mental representation. In either case, the debates have revolved around the use of a pictorial analogy as compared to a descriptive one.

As a visual thinker I have always come to understand my ideas by manipulating them in relation to the environment rather than thinking through abstract operations in my mind. For this reason I have questioned the validity of the basic assumptions that drive the debate. While doing so, moreover, I have met much resistance. Correlating my reservations with the synesthesia references to projective and associative possibilities now makes me wonder if

studies of synesthesia might allow us to step outside of the brain (and into a shared mind/body/environmental space) when we characterize cognition.

This sense that synesthesia might enlarge our basic questions stems from a number of factors. One is that my environmental framework is perhaps opposite to that of a projective synesthete, yet both take place outside of the "mind's eye." Whereas I project inwardly from my hands-on manipulation, the synesthete's is an outward projection. A second is the nature of the synesthete experience itself as self-described by synesthetes. Christopher Tyler's description in the Robertson and Sagiv book suggests that the dichotomy presented at the conference accentuates the projective/associative frameworks and ignores the limitations of seeing the phenomenon in this way. As I understand it, Tyler describes a form of synesthesia that is a combination of the projective and associative descriptions, one that was not entertained in the discussion.

At this point, the options are clearly more open-ended than well defined, as the final paper, by Peter Grossenbacher of Naropa University, reminded all in attendance. He opened his talk with the comment that he usually begins to speak on this subject by providing an introduction to synesthesia. Initially, due to the composition of the audience, he thought that he would be able to skip this section. With each presentation, however, it became obvious that he had assumed too much. If nothing else, the range of viewpoints demonstrated that competing theories exist, as do definitions of what precisely we mean by the term synesthesia.

The range of topics covered in the two-day symposium leaves me in agreement with Grossenbacher. Of course, it is important to note when saying this that it was, in part, the lack of a clear definition that stimulated robust exchange. Indeed, it may just be that the expansive and elusive nature of synesthesia is precisely what captures the imagination.

#### Reference

1. Lynn C. Robertson and Noam Sagiv, *Synesthesia: Perspectives from Cognitive Science* (Oxford, U.K.: Oxford Univ. Press, 2005).