Journal of the History of the Neurosciences, 15:245–249, 2006

ISSN: 0964-704X print / 1744-5213 online
DOI: 10.1080/09647040500388661

A Possible Account of Synaesthesia Dating from the Seventeenth Century

A.J. LARNER

Cognitive Function Clinic, Walton Centre for Neurology and Neurosurgery, Liverpool, United Kingdom
University of Liverpool, Society of Apothecaries' Honorary Lecturer in the History of Medicine, United Kingdom

An account of a blind man able to detect colors by touch, dating from the mid-seventeenth century, is presented. The details come to us through the physician John Finch, the scientist Robert Boyle, and the author Jonathan Swift. The details in the account suggest the possibility that this may be an early report of colored-touch synaesthesia.

Keywords synaesthesia, Swift, Gulliver, Robert Boyle, John Finch

Synaesthesia may be defined as "multisensory perception from single sensory stimulation" (Loring, 1999) or "a permanent involuntary spillover of sensory impressions such that stimulation of one sensory channel leads to a perception in another one or more than one" (Pryse-Phillips, 2003). Examples include the evocation of colors on hearing sounds or geometrical shapes on tasting flavors. Neurological and neuroscientific interest in synaesthesia has escalated in recent years (Cytowic, 1993; Baron-Cohen and Harrison, 1997; Dann, 1998) not the least because of the possible insights the condition gives to the mechanisms of human consciousness (Ramachandran and Hubbard, 2001).

From investigations of the historical record, it has been suggested that the first medical reference to a case of synaesthesia is that of the English ophthalmologist, Thomas Woodhouse, who around 1710 reported a blind man who perceived sound-induced colored visions (Marks, 1975; Cytowic, 1993). The first full description has been ascribed to Sachs in 1812, who described the condition in himself and his sister (Dann, 1998). There are difficulties in identifying cases of synaesthesia from historical records, not the least because of the commitment of scientific orthodoxy to the idea of five distinct senses, following Aristotle, and of each modality having its characteristic sensory quality, following Müller (Ione and Tyler, 2004). I present a further possible case of synaesthesia dating from the mid-seventeenth century, hence predating the report of Woodhouse.

In his book *Gulliver's Travels*, first published in 1726, Dean Jonathan Swift (1667–1745) reported on the fictional travels of a ship's surgeon, Lemuel Gulliver. Amongst his various peregrinnations, Gulliver undertook a voyage to Laputa, which included (chapters 5 and 6) a visit to the Academy of Lagado. Among the many strange and wonderful things encountered therein (Larner and Barker, 2005), Gulliver included the following account:

Address correspondence to A.J. Larner, Cognitive Function Clinic, Walton Centre for Neurology and Neurosurgery, Lower Lane, Fazakerley, Liverpool, L9 7LJ, United Kingdom. Tel.: (44) 151 529 5727. Fax: (44) 151 529 5513. E-mail: a.larner@thewaltoncentre.nhs.uk

> There was a Man born blind, who has several Apprentices in his own Condition: Their Employment was to mix Colours for Painters, which their master taught them to distinguish by feeling and smelling.

A similar account, but without mention of a blind man, appears in *The Memoirs of Martin Scriblerus*, a work contributed to Swift, Alexander Pope, and John Arbuthnot, first published in Pope's *Prose Works* of 1741, but possibly dating to before 1715 (Eddy, 1932):

> He [Martin Scriblerus] it was that first found out the Palpability of Colours; and by the delicacy of his Touch, could distinguish the different Vibrations of the heterogeneous Rays of Light.

Although Gulliver's visit to the Academy of Lagado has been described as "farcical low comedy" (Probyn, 2004), Nicholson and Mohler (1937) argued in their analysis of the Voyage to Laputa that the sources for nearly all of the ideas and episodes in that part of *Gulliver's Travels* were to be found in the work of Swift's contemporary scientists, particularly members of the Royal Society, of which the Academy of Lagado was a thinly disguised parody. (Scriblerus also "address'd … Accounts to the Royal Society" (Eddy, 1932).) This also holds true for the blind man who could distinguish colors.

Swift's immediate source was the distinguished seventeenth century virtuoso and Fellow of the Royal Society, Robert Boyle (1627–1691), who was also the proximate stimulus for Swift's parody *A Meditation upon a Broom-stick* (Eddy, 1932). *The Philosophical Works of the Honourable Robert Boyle, Abridged, methodized and disposed* by Peter Shaw had appeared in 1725 (Fulton, 1961) and was probably the proximate source for much of Swift's information for Gulliver (Nicholson and Mohler, 1937). However, Boyle's report of a man able to distinguish colors by feeling had appeared in an earlier work, *Experiments and Considerations Touching Colours. First occasionally Written, among some other Essays, to a Friend; and now suffer'd to come abroad as the Beginning of an Experimental History of Colours*, which was published in 1664 (Fulton, 1961; Hunter and Davis, 1999).

Boyle had learned of the case from Sir John Finch (1626–1682), a Padua-trained physician (MD 1657) and Fellow of the Royal Society (1663), who spent most of his life in Italy and was later an ambassador to Constantinople (Abbott, 1920; Hutton, 2004). A gentleman scientist or virtuoso, Finch had a special interest in the anatomy of the brain (Hutton, 2004). Boyle reports (*Experimental History of Colours*, chapter 3):

> Meeting casually the other Day with the deservedly Famous Dr J Finch…and enquiring of this Ingenious Person, what might be the chief Rarity he had seen in his late return out of Italy into England, he told me, it was a Man at Maestricht, in the Low Countrys, who at certain times can distinguish Colours by the touch with his fingers. (Hunter and Davis, 1999)

Naturally sceptical, and proposing various scruples, Boyle requested Finch to look over his notes on the encounter. Boyle's subsequent account reads:

> …the Doctor [Finch] having been inform'd at Utrecht, that there lived one at some miles distance from Maestricht, who could distinguish Colours by the Touch, when he came to the last nam'd Town, he sent a Messenger for him, and having Examin'd him, was told upon Enquiry these Particulars:

> That the Man's name was John Vermaasen, at that time about 33 years of Age; that when he was but two years Old, he had the Small Pox, which rendred [*sic*] him absolutely Blind; That at this present he is an Organist, and serves that Office in a publick Choir.
>
> That the Doctor discoursing with him over Night, the Blind man affirm'd, that he could distinguish Colours by Touch, but that he could not do it, unless he were Fasting; Any quantity of Drink taking from him that Exquisiteness of Touch, which is requisite to so Nice a Sensation.
>
> That hereupon the Doctor provided against the next Morning seven pieces of Ribbon, of these seven Colours, Black, White, Red, Blew, Green, Yellow, and Gray, but as for mingled Colours, this Vermaasen would not undertake to discern them, though if offer'd, he would tell that they were Mixed.
>
> That to discern the Colour of the Ribbon, he places it betwixt the Thumb and the Fore-finger, but his most exquisite perception was in his Thumb, and much better in the right Thumb than in the left.
>
> That after the Blind man had four or five times told the Doctor the several Colours, (though Blinded with a Napkin for fear he might have some Sight) the Doctor found he was twice mistaken, for he called the White Black, and the Red Blew, but still, he, before his Errour, would lay them by in Pairs, saying, that though he could easily distinguish them from all others, yet those two Pairs were not easily distinguish'd amongst themselves, whereupon the Doctor desir'd to be told by him what kind of Discrimination he had of Colours by his Touch, to which he gave a reply … That all the difference was more or less Asperity, for says he, (I give you the Doctor's own words) Black feels as if you were feeling Needles points, or some harsh Sand, and Red feels very Smooth.
>
> That the Doctor having desir'd him to tell in Order the difference of Colours to his Touch, he did as follows:
>
> Black and White are the most asperous or unequal of all Colours, and so like, that 'tis very hard to distinguish them, but Black is the most Rough of the two, Green is next in Asperity, Gray next to Green in Asperity, Yellow is the fifth in degree of Asperity, Red and Blew are so like, that they are as hard to distinguish as Black and White, but Red is somewhat more Asperous than Blew, so that Red has the sixth place, and Blew the seventh in Asperity. (Hunter and Davis, 1999; slightly different wording is found in Nicholson and Mohler, 1937).

Boyle wondered whether Vermaasen might not have been distinguishing the colors by smell, based on the ingredients used in the dyes that colored the ribbons, rather than touch, hence perhaps explaining the need to do the test fasting, a point picked up by Swift in his account in *Gulliver's Travels*.

This is not, of course, a systematic account; all clinicians will empathize with Boyle's confession that "I would gladly have had the Opportunity of Examining this Man my self, and of Questioning him about divers particulars which I do not find to have been yet thought upon." Nonetheless, there are reasons for considering it a possible report of synaesthesia. Cross-modal activation, or "breakdown of modularity" (Baron-Cohen et al., 1993), is clearly implied in the account. Colored touch and/or colored odor are well-recognized, albeit relatively rare, types of synaesthesia (4% and 6.8% respectively, in the Synaesthesia List [http://home.comcast.net/~sean.day/html/types.htm], accessed 08/06/05).

A blind patient seeing Braille characters as colored dots when they were touched has been reported (Steven and Blakemore, 2004). Sensing colors by touch would not be an expected consequence of the recognized augmentation of tactile faculties in response to other sensory deprivation, such as blindness (hyperpilaphesie).

The description also includes many of the characteristics ascribed to synaesthetic experience (Cytowic, 1993; Dann 1998): it was involuntary or automatic; consistent (at least over four or five trials); and generic or categorical ("Needles points, … harsh Sand, … Smooth"). It is not, however, clear if the experience was affect-laden. Furthermore, synaesthesia is known to be more common in blind individuals (Cytowic, 1993; Steven and Blakemore, 2004). The narrow sensory receptive field, with greatest sensitivity attributed to the thumb (presumably of the dominant hand) with its large cortical representation, is of interest, suggesting the faculty may be related to a particular, somatotopic, neural pathway. Impairment of the faculty by a cerebral depressant, alcohol (the staple drink of the age), is also suggestive of a neurally mediated mechanism. Cross-modal leakage between somatosensory and primary visual areas might be postulated. The opposite pattern, of the visual perception of touch eliciting conscious tactile experience, has been reported (Blakemore et al., 2005). Finally, if one may indulge in speculation, Vermaasen's role as an organist might possibly reflect the possession of perfect pitch, which may be associated with synaesthesia.

Although all such accounts are necessarily limited by the frame of historical evidence, nonetheless these considerations lead me to suggest that, courtesy of Dean Jonathan Swift, the Honorable Robert Boyle, and Sir John Finch, this may be an early report of synaesthesia.

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