

CHAPTER 2. MESSIAEN'S SYNESTHETIC EXPERIENCE

The word “synesthesia” comes from the Greek *syn* meaning “together” and *aisthesis* meaning “to perceive.” For most people, the five sensory modalities (vision, hearing, taste, touch, and smell) are separate and distinct; for synesthetes, two or more sensory modalities are unified: a single sensory stimulus evokes a response in more than one sensory modality. For example, a visual stimulus might evoke smell in addition to vision; more commonly, an auditory stimulus evokes vision in addition to hearing. The classical model of synesthesia is bi-modal—involving two of the five senses—although synesthesia may involve any number of senses. Researchers disagree as to what percentage of the population experience some form of synesthesia; estimates range from one in two thousand people to as many as one in three hundred people.¹ According to recent studies, the most common form of synesthesia is chromatic-graphemic synesthesia, wherein individual letters or numerals evoke discrete colors.² Less common than chromatic-graphemic synesthesia is color-music synesthesia, the type of synesthesia that Messiaen experienced. One study found that 66.8% of synesthetes experience chromatic-graphemic synesthesia, while only 14.5% experience color-music synesthesia.³

Medical researchers sometimes refer to the physiological condition of synesthesia as “idiopathic synesthesia” to distinguish it from forms of acquired synesthesia, such as those induced by drugs (e.g., LSD, hashish, mescaline), certain diseases (e.g., limbic epilepsy), brain lesions, sensory deprivation, or electrical stimulation of the brain. Idiopathic

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1. Richard E. Cytowic, *Synesthesia: A Union of the Senses*, 2nd ed. (Cambridge: MIT Press, 2002), 33. Brad Lemley, “Do You See What They See?,” *Discover* 20/12 (December 1999), 81. Siri Carpenter, “Everyday Fantasia: The World of Synesthesia,” *Monitor on Psychology* 32 (March, 2001), 27.
 2. Depending on the synesthete, the stimulus of chromatic-graphemic synesthesia can be either aural or visual. Chromatic-graphemic synesthetes include Russian author Vladimir Nabokov and American physicist Richard Feynman. Vladimir Nabokov, *Speak Memory: An Autobiography Revisited* (London: Penguin Classics, 2000), 29. Richard P. Feynman, *What Do You Care What Other People Think?* (New York: W. W. Norton & Company, 1988), 59.
 3. These figures are drawn from a survey conducted by linguist and synesthete Sean Day, as presented in Cytowic, *Synesthesia*, 17.

synesthesia is also distinct from literary synesthesia; although descriptions given by synesthetes may seem to resemble literary devices such as sound symbolism, metaphor, and rhetorical tropes, idiopathic synesthesia is distinct, as it involves a sensory experience, and not an intellectual experience. Messiaen insisted that his synesthetic visions were indeed real and not merely an intellectual contrivance: “I see these colors internally. They are neither imaginary nor a material phenomenon—they are an interior reality.”⁴ Since the descriptions of his condition follow those of verified synesthetes so closely, it would be unthinkable not to classify Messiaen’s synesthesia as idiopathic.

The chapter begins by examining contrived synesthesia: specifically, the use of synesthesia as an artistic metaphor in the late-nineteenth and early-twentieth centuries. The chapter then presents modern theories of the etiology of idiopathic synesthesia as well as diagnostic criteria for verifying the condition. Although Messiaen was aware of various intellectual movements that sought to establish an artificial music-color correspondence, it is important to understand that such contrivances are distinct from the physiological phenomenon he claims to have experienced.

Synesthesia as artistic metaphor in the late-nineteenth and early-twentieth centuries

Early medical research into cross-sensory perception focused on the phenomenology of isolated case studies.⁵ The earliest research also tended to regard the condition as optical rather than neurological, which was the case with the first published study of synesthesia—a 1812 medical dissertation by German physician Georg Sachs that

4. “Je les vois intérieurement, ce n’est pas de l’imagination, ce n’est pas non plus un phénomène physique, c’est une réalité intérieure.” Olivier Messiaen, *Musique et couleur : Nouveaux entretiens avec Claude Samuel* (Paris: Pierre Belfond, 1986), 43.

5. For an excellent historical overview of the scientific study of synesthesia, see Kevin Dann, *Bright Colors Falsely Seen: Synaesthesia and the Search for Transcendental Knowledge* (New Haven: Yale University Press, 1998).

examined the colored audition experienced by the author and his sister.⁶ By the middle of the nineteenth century, researchers began to regard cross-sensory perception as neurological and pathological—that the condition was somehow acquired or learned. In 1862, Claude Perroud became the first to attempt to explain the physiology of colored audition (*audition colorée*), which by that time was the most well-documented form of cross-sensory perception.⁷ Researchers coined various terms for cross-sensory perception, including *hyperchromatopsie*, *pseudochromesthésie*, *phonopsie*, *Farbenhören*, *chromaesthesiae*, and *synopsie*.⁸ It was in 1892 that French psychologist Jules Millet coined the more general term synesthesia (*synesthésie*), which applied to any sort of intermingling of senses.⁹

Synesthesia was virtually unknown outside the medical world until 1883, when Arthur Rimbaud’s poem “Voyelles” was first published. Rimbaud had been fascinated with the idea of sensory fusion and spent much of his time searching French medical literature for descriptions of visionary experiences. In “Voyelles,” Rimbaud ascribes colors to the five vowels. Despite Rimbaud’s confession that the poem’s sound-color correspondences were arbitrary, “Voyelles” became one of the most argued-about poems among late-nineteenth century intellectuals, spearheading a movement to bridge the gap between the senses and to create more transcendental forms of expression.¹⁰ Over time,

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6. Georg Sachs, *Historiae naturalis duorum leucaetiopum: auctoris ipsius et sororis eius* (Solisbaci [Sulzbach]: Sumptibus Bibliopolii Seideliani, 1812).
 7. Claude Perroud, *Mémoires et Comptes Rendus de la Société des Sciences Médicales de Lyon* 2 (1862), 37–43.
 8. The term *synopsie*, frequently employed by Messiaen to describe the condition of his friend Charles Blanc-Gatti, is outdated and no longer in use. At the 1890 convocation of the International Congress of Physiological Psychology, several prominent psychologists met and attempted to standardize the terminology of synesthesia. Among those involved in the project was Swiss psychologist Théodore Flournoy, who later coined the term *synopsie* to cover the general category of colored audition (*audition colorée*), where any sort of sound—including musical sounds and spoken sounds—evoked colors. Théodore Flournoy, *Les phénomènes de synopsie (audition colorée)* (Paris: Alcan, 1893), 6.
 9. Jules Millet, *Audition colorée* (Paris: Octave Doin, 1892).
 10. For an excellent overview of the European public’s fascination with synesthesia at the turn of the twentieth century, see Dann, *Bright Colors Falsely Seen*, 17–45.

and owing to the works of Rimbaud and other French symbolists, the topic of cross-sensory perception spawned a full-fledged artistic movement. By the turn of the twentieth century, public interest in the idea of cross-sensory perception had reached “faddish” proportions; moreover, the scientific study of associative perception had become a fashionable branch of psychology.¹¹ Some artists, intrigued by the possibility of cross-sensory perception, took drugs in an attempt to induce the condition. French poet Charles Baudelaire—a well-known hashish user—documented the effects of hashish. He wrote that while under the influence of hashish, “Sounds have a color; colors have a music. Musical notes are numbers, and as the music unfolds in your ear you solve extraordinary arithmetic calculations with alarming speed.”¹²

Seeking a more transcendental form of artistic expression, many visual artists of the late nineteenth and early twentieth centuries gave their works musical titles.¹³ Conversely,

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11. Two of the more influential studies of synesthesia from this period are Ferdinand Suarez de Mendoza’s *L’Audition colorée* and Annelies Argelander’s *Das Farbenhören und der synästhetische Faktor der Wahrnehmung*. Ferdinand Suarez de Mendoza, *L’Audition colorée* (Paris: Octave Doin, 1890). Annelies Argelander, *Das Farbenhören und der synästhetische Faktor der Wahrnehmung* (Jena, Germany: Fischer, 1927).
12. “Les sons ont une couleur, les couleurs ont une musique. Les notes musicales sont des nombres, et vous résolvez avec rapidité effrayante de prodigieux calculs d’arithmétique à mesure que la musique se déroule dans votre oreille.” Charles Baudelaire, “Du vin et du haschisch, comparés comme moyens de multiplication de l’individualité [1851],” *Oeuvres complètes*, ed. Marcel A. Ruff (Paris: Éditions du Seuil, 1968), 310. Baudelaire also documented the effects of hashish on his perceptions in the essay “Les paradis artificiels, opium et haschisch” (1860). Baudelaire’s experiences found their way into his poetry; his poem “Correspondences” speaks of how “perfumes, colors and sounds respond to each other.” “Les parfums, les couleurs et les sons se répondent.” Charles Baudelaire, *Selected Poems*, ed. Geoffrey Wagner (New York: Grove Press, Inc., 1974), 22.
13. Artworks with musical titles include: James McNeill Whistler, *Nocturne in Black and Gold* (1875); František Kupka, *Chromatique chaude* (1912); Georgia O’Keeffe, *Blue and Green Music* (1919); *Music: Pink and Blue II* (1919); Albert Gleizes, *Symphony in Violet* (1930–31); Robert Delaunay, *Rythme sans fin* (1934); Paul Klee, *Polyphonie* (1932); Mikalojus Ciurlionis, “Sonatas” (series of paintings, 1907–1908); Paul Klee, *Nocturne for Horn* (1921); Georges Braque, *Formes musicales* (1918); Wassily Kandinsky, *Harmonie tranquille* (1924); *Contrasting Sounds* (1924); *Résonance multicolore* (1928); Henri Valensi, *Symphonie de la terre* (1948); *Symphonie en rose* (1946). Artists seem to have been particularly drawn to the idea of fugue, with J.S. Bach representing a touchstone to music-color correspondence: Kandinsky, *Fugue* (1914); František Kupka, *Fugue en deux couleurs* (1912); Paul Klee, *Fugue in Red* (1921); *In the Style of Bach* (1919); Henry Valensi, *Fugue en jaune* (1948); Josef Albers, *Fugue* (1925); Adolf Hölzel, *Fuge über Auferstehungsthema* (1916); Alexander Jawlensky, *Fuge in Blau und Rot* (1936); Marsden Hartley, *Musical Theme No. 2: Bach, Preludes and Fugues* (1912); Hienrich Neugeboren, *Plastische Darstellung der Takte 52–55 der Es-Moll-Fuge von J.S. Bach* (1928); August Macke, *Farbige Komposition—Hommage an J.S. Bach* (1912); Georges Braque, *Aria de Bach* (1913).

many composers alluded to color in the titles of their works.¹⁴ During this period, many multimodal concerts combined music and light—and sometimes odor. Several musicians devised keyboards capable of producing color. In the book *Les Flammes chantantes* (1875), Frederic Kastner described the *pyrophone*, an instrument with 37 crystal tubes with flaming gas jets. Other inventions included Alexander Laszlo's *sonchromatoscope* (1920s), Thomas Wilfred's *clavilux* (1920s), Vladimir Baranoff-Rossine's *piano optophonique* (1920s), George Halls's *musicrome* (1930s), and Charles Blanc-Gatti's *orchestre chromophonique* (1930s). All of these color-music devices illustrate the era's quest for sensory fusion.

One of the more concerted attempts at relating music and color was made by the Association des Artistes Musicalistes, founded in 1932 in Paris by Charles Blanc-Gatti (1890–1966), Henry Valensi (1883–1960), Gustave Bourgogne (1888–1968), and Vito Stracquadaini (1891–1955). The group outlined their artistic aims in *Manifeste des Artistes Musicalistes*.¹⁵ Their principal aim was to translate music into painting, often by creating visual realizations of specific musical works. Among the composers whose works they depicted visually are Frédéric Chopin, César Franck, Richard Wagner, Maurice Ravel, Arthur Honegger, Nicolai Rimsky-Korsakov, and Messiaen. At a 1936 exhibition, the Musicalistes projected “polychromatic and dynamic luminous scenes” (*décors lumineux polychromes et dynamiques*) corresponding to the nine movements of Messiaen's *La Nativité du Seigneur*; Messiaen attended the exhibition and gave it a favorable review.¹⁶

While the Musicalistes had a common aim, individual members developed their own methods and theories. Bourgogne coined the term *bleuisme* (he also used the term

14. Examples include: Sir Arthur Bliss's *A Colour Symphony* (1922), in four movements, each corresponding to a different color; and Alexander László's *Eleven Preludes*, op. 10 (1925), constituting what the composer described as *Lichtmusik*. Like Bliss's *Symphony*, each Prelude is named after a different color.

15. Published in Paris on April 3, 1932. Publisher unknown.

16. Charles Blanc-Gatti, *Sons et couleurs* (Paris: Editions d'art chromophonique, 1934), 69.

plastique des ondes) to describe a music-color correspondence in which spectral colors and chords were assigned to one another. The inspiration for *bleuisme* occurred to him in 1928, while listening to the *grand carillon* of the cathedral of Malines. Bourgoigne believed that art and music were the results of similar profound rhythms; he sought to paint the impressions he felt while listening to music. Valensi advocated *cinépeinture*, a combination of music and animation in which the artist was “a veritable musician of color and form.”¹⁷ He valued this type of artwork because it was capable of integrating science, movement, and rhythm—essential characteristics of twentieth-century society. Valensi’s most best-known example of *cinépeinture* is the twenty-minute film *Ouverture pour une Symphonie Printanière* (1936–1939). Blanc-Gatti also worked with cinematic animation. From 1938 to 1940, he ran the Swiss animation studio Montreaux-Colorfilm, which specialized in short animated advertisements. Blanc-Gatti’s most ambitious endeavor at Montreaux-Colorfilm was the short animated film *Chromophonie* (1939), comprising abstract colorations set to the music of Julius Fucík’s *Entrance of the Gladiators*.¹⁸ Although Blanc-Gatti experienced color-music synesthesia, his own theories of color-music correspondence ironically ignored his condition in favor of a theory with a wider application. In the book *Sons et couleurs* (1934), he coined the term *chromophonie* to describe a mathematical concordance between sound and light, based on their respective vibrations.¹⁹ He presented the visible spectrum and the aural spectrum of audible pitches

17. Henry Valensi, “La Cinépeinture,” *Cobra* 3 [1948], [19].

18. One of Blanc-Gatti’s greatest dreams was to make a full-length motion picture with musical animation. In 1935, he discussed the idea with American animator Walt Disney, who declined Blanc-Gatti’s offer of collaboration. In 1940, Disney released the full-length musical animation *Fantasia*. Of course, Blanc-Gatti was furious, and the Musicalistes accused Disney of plagiarism. William Moritz, “The Dream of Color Music, and Machines That Made it Possible,” *Animation World Magazine* 2/1 (April, 1997). See also, R. Cosandy, *19–39: La Suisse romande entre les deux guerres* (Lausanne: Payot, 1986), 261. Contemporary critic Denys Chevalier provided a detailed list of the plagiarisms of *Fantasia* and called Disney’s work “a monument to bad taste.” Denys Chevalier, “Les sources d’inspiration de Walt Disney,” *Arts, Beaux-Arts, Litterature, Spectacles* 93 (November 15, 1945), 1.

19. Blanc-Gatti, *Sons et couleurs*, 71.

(which he defined as ranging from the lowest pitch of the organ to the highest pitch of the piccolo) as two homologous series, and mapped them onto each other.²⁰

Russian composer Alexander Scriabin (1872–1915) is regarded by many historians as a synesthete; however, Scriabin’s synesthesia was strictly contrived.²¹ The only completed work of Scriabin that attempts to relate music and color is the orchestral work *Prometheus: The Poem of Fire* (1910), the score of which calls for a *tastiera per luce*, a keyboard-operated device designed to project colored lights.²² It is well-known that Scriabin subscribed to the theosophical tenets of Russian mystic Madame Helena Blavatsky. In her book *Secret Doctrine: The Synthesis of Science, Religion, and Philosophy* (1885–88), Blavatsky suggested a correspondence between pitch and color. Like Blanc-Gatti, she presented a pitch-color scheme based on the ordered mapping of two homologous series—in her case, she mapped the colors of the visible spectrum onto the notes of the C-major scale.²³ For *Prometheus*, Scriabin developed an ordered scheme based on perfect fifths:

color	Blavatsky	Scriabin
red	C	C
orange	D	G
yellow	E	D
green	F	A
blue	G	E
indigo	A	B
violet	B	F#

20. Blanc-Gatti, *Sons et couleurs*, 73.

21. For an excellent debunking of the myth of Scriabin’s synesthesia, see Dann, *Bright Colors Falsely Seen*, 71–77. See also Jas Morgan, “Sensory Overmode: Interview with Richard E. Cytowic, M.D.,” *Mondo 2000* 12 (Summer, 1994), 86.

22. Scriabin also had two rather unreasonable requirements for *Prometheus*: that all audience members dress in white clothing and the work culminate with a white light so strong that it would be painful to the eyes. Kay Marie Stolba credits the University of Iowa orchestra with the first “satisfactory” performance of *Prometheus* in 1975, achieved with a special laser apparatus designed by Lowell Cross. Kay Marie Stolba, *The Development of Western Music: A History* (Dubuque: Wm. C. Brown Publishers, 1990), 743.

23. Blavatsky’s theories of color-music correspondence mirror those developed by Sir Isaac Newton in *Optiks* (1704). For a discussion of Newton’s theories of music and color, see Thomas Christensen, *Rameau and Musical Thought in the Enlightenment* (Cambridge: Cambridge University Press, 1993), 142–143.

Scriabin believed the “cosmic effect” of his music would be enhanced by the addition of colors, which had mystical associations. For example, the color red related to matter, whereas the color violet was spiritual and ethereal.²⁴

Russian artist Wassily Kandinsky (1866–1944) is another figure who has mistakenly been regarded as a synesthete. Like Scriabin, Kandinsky was influenced by the theosophy of Madame Blavatsky; Kandinsky himself stated that his color-music correspondences had no scientific basis.²⁵ In the book *On the Spiritual in Art*, Kandinsky described his theories regarding correspondences among the senses and the affective power of art. Similar to Bourgoigne, who believed that art and music were the result of similar profound rhythms, Kandinsky believed the human soul responds to an artwork through inner vibrations.²⁶ Moreover, Kandinsky held that the artist is a necessary element in the production of these vibrations. Speaking analogously of the piano, “Color is the keyboard. The eye is the hammer, while the soul is a piano of many strings. The artist is the hand through which the medium of different keys causes the human soul to vibrate.”²⁷ Kandinsky continued, “Color embodies an enormous though unexplored power which can affect the entire human body as a physical organism. . . Color is a means of exercising direct influence upon the soul.”²⁸ According to Kandinsky’s theories, musical timbres, like colors, can result in a corresponding vibration of the human soul; furthermore, metaphorically speaking, vibrations caused by colors correspond to those caused by musical timbres. For example, the color orange, which Kandinsky claimed is suggestive of happiness and health, corresponds to the timbre of a medium-sized church bell, a strong

24. Charles S. Myers, “Two Cases of Synaesthesia,” *British Journal of Psychology* 7/1 (May 1914), 115.

25. For a discussion of Kandinsky’s “invention” as a synesthete, see Dann, *Bright Colors Falsely Seen*, 54–63.

26. Wassily Kandinsky, *On the Spiritual in Art* (New York: Solomon R. Guggenheim Foundation, 1946), 43.

27. Kandinsky, *On the Spiritual in Art*, 43.

28. Kandinsky, *On the Spiritual in Art*, 43.

alto voice, or a viola; the color violet, which possesses an element of frailty or sadness, corresponds to a plaintive timbre, such as that of an English horn, shepherd's flute, or bassoon.²⁹

Etiology of idiopathic synesthesia

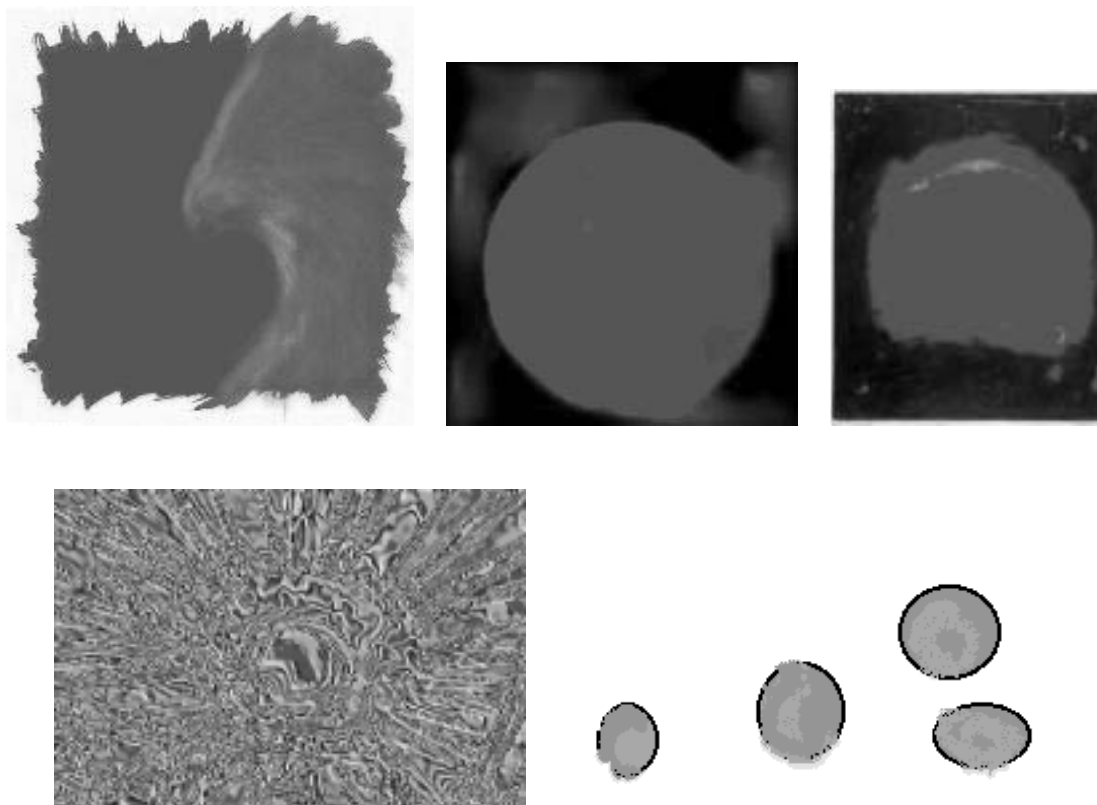
To distinguish idiopathic synesthesia from acquired synesthesia and contrived synesthesia, Richard Cytowic has established five diagnostic criteria.³⁰ First, synesthesia is involuntary, but elicited. It is an automatic, unsuppressible, passive response to a stimulus. In the absence of the proper stimulus, a response cannot be evoked at will. Synesthesia cannot be acquired through volition or mere suggestion (although some synesthetes are able to ignore the experience to varying degrees). Second, synesthesia is “spatially extended;” synesthetic percepts occur outside but very close to the body, typically within arm's reach. Color-music synesthetes often describe percepts as a series of colors projected onto a screen in front of the face. Third, synesthetic percepts are consistent and discrete. Synesthetic percepts do not change over time, and are very specific. In recent studies, researchers have asked synesthetes to demonstrate their colors using special computer software: in every case, the synesthete takes several minutes, painstakingly ensuring that the color on the computer screen is “just so.” Although synesthetic percepts are discrete, they are unelaborated. Visual percepts have precise colorations, but are in simple shapes such as a blobs, lines, or spirals—never a complex scene or recognizable image. Example 2.1 contains several graphic depictions of visual synesthetic percepts—what researchers refer to as “photisms.” The depictions, executed by various synesthetes, are quite vague in content. As synesthetic percepts are unelaborated, synesthetes accordingly find the condition ineffable, and have a difficult time describing their percepts.

29. Kandinsky, *On the Spiritual in Art*, 71.

30. Cytowic, *Synesthesia*, 67–70.

Fourth, synesthesia is memorable. Although synesthetes cannot volitionally evoke a synesthetic response, they are able to recall their synesthetic percepts. Many synesthetes use their abilities as a mnemonic aid; sometimes synesthetic percepts are easier to recall than the original stimulus.³¹ Fifth, synesthesia is emotional. Synesthetic experiences are accompanied by a feeling of certitude, a conviction that what is being perceived is indeed real.

Example 2.1. Several graphic depictions of photisms.



Researchers have identified other general characteristics of synesthesia. Synesthetic perceptions are idiosyncratic rather than uniform, a fact that consternated early researchers.

31. Aleksandr R. Luria's synesthetic subject "S" had an astounding capacity for memorization that seemed to be limitless. Aleksandr R. Luria, *The Mind of a Mnemonist: A Little Book about a Vast Memory*, trans. L. Solotaroff (Cambridge: Harvard University Press, 1968).

Messiaen seems to have understood the idiosyncrasy of his synesthetic perceptions: “I think that others cannot have exactly the same intuitions as I do, because each person—you know, there’s the saying, ‘Tastes and colors cannot be argued’—each person has his own way of seeing things.”³² Furthermore, most researchers agree that synesthesia is unidirectional. For example, if sounds evoke colors, then colors will not evoke sounds.

Contrary to some researchers (e.g., Cytowic, *Synesthesia*, 308–312), I believe that Messiaen’s synesthesia was not bidirectional. On many occasions, Messiaen explicitly stated that whenever he heard music he saw colors; however, he never explicitly stated the converse (i.e., that whenever he saw colors he heard music). Messiaen did admit that he was sometimes inspired by the coloration of a landscape or a bird. He also pointed out in analyses of his own works how a particular chord (one chord among hundreds) evoked a coloration similar to the coloration of a certain bird. But the fundamental problem with determining whether or not a synesthete’s condition is bidirectional is the difficulty in determining whether (as in the case of Messiaen) a color truly evokes a sound, or whether the color merely reminds the synesthete of the synesthetic experience, thereby summoning the memory of the sound. At present, I am aware of no clinical test for bidirectionality in synesthetic experience.

Until recently, researchers have tended to regard synesthesia as pathological.³³ Only in the last quarter of the twentieth century has the development of more sophisticated research techniques (i.e., brain imaging, electrophysiological recording, DNA analysis, and positron emission tomography) led researchers to a much different understanding of synesthesia. Most researchers now believe that synesthetes are born with the condition, and that the brain of the synesthete is somehow fundamentally different than that of non-

32. “Je pense qu’ils ne peuvent pas avoir exactement les mêmes intuitions, parce que chaque personne, vous savez, on dit bien que des goûts des couleurs on ne peut pas discuter, chaque personne a sa façon de voir les choses.” Olivier Messiaen, *Entretien avec Claude Samuel* (Erato ECD 75505, 1988).

33. Lawrence E. Marks, “On Colored-Hearing Synesthesia: Cross-Modal Translations of Sensory Dimensions,” *Psychological Bulletin* 82/3 (May 1975), 323.

synesthetes. Simon Baron-Cohen and John Harrison posit that synesthesia is a product of “unusual anatomic conductivity”—where an overabundance of neural connections causes modularity (the separation of sensory input into the five senses) to break down.³⁴ Arguing against traditional notions of a hierarchical or computational model of brain organization, Cytowic has advanced a controversial theory that challenges the traditional notion of a strictly linear flow of information within the brain.³⁵ He subscribes to a “multiplex” model of the brain—one that is holistic, decentralized, and allows for the multidirectional transfer of information among parts of the brain. Within the brain of the synesthete, “transmodal binding” occurs; sensory stimuli are interpreted as the product of more than one sensory modality. Cytowic further posits that the process takes place within the limbic system, a part of the brain that receives only highly abstract neural signals.³⁶ It is for this reason that synesthetic percepts are generic, rather than elaborated.

Conclusions

By studying Messiaen’s testimony, one can verify that Messiaen satisfied four of Cytowic’s five diagnostic criteria for idiopathic synesthesia: Messiaen’s condition was involuntary but elicited (it occurred whenever he heard or read music); consistent and discrete (colorations did not change over time, and were very specific); memorable (the percepts could be recalled and described); and accompanied by a sense of emotional certitude (he felt that what was happening was indeed real). The one diagnostic criterion that Messiaen does not satisfy is that of spatial extension—that synesthetic percepts occur outside the body, within arm’s reach. Messiaen reported that he perceived colored images internally, in his “mind’s eye.” However, many of Cytowic’s own subjects also did not

34. Simon Baron-Cohen, J. Harrison, L. Goldstein and M. Wyke, “Coloured Speech Perception: Is Synesthesia What Happens When Modularity Breaks Down?,” *Perception* 22 (1993), 419–426.

35. For a full description, see Cytowic, *Synesthesia*, 207–270.

36. Cytowic, *Synesthesia*, 250.

satisfy this criterion. In one examination of 22 synesthetes, only 12 (55%) experienced spatial extension.³⁷

Messiaen's idiopathic synesthesia represents a much different experience than Baudelaire's drug-induced perceptions, Scriabin's mystical associations, and Kandinsky's pseudo-spiritual contrivances. The latter individuals do not satisfy any of Cytowic's diagnostic criteria for idiopathic synesthesia. As most researchers agree that synesthesia is unidirectional, Baudelaire's claim to bidirectional sensory experience ("sounds have a color; colors have a music") could not have been idiopathic synesthesia. As synesthetes' colors are idiosyncratic, the fact that Scriabin's pc colors follow a "tidy" arrangement (the colors of the visible spectrum mapping onto a series of perfect fifths) disqualifies him as a synesthete. Kandinsky and Scriabin never explicitly stated that they experienced cross-sensory perceptions (e.g., that sounds elicited a visual response). The special physiological phenomenon that Messiaen described was not an intellectual contrivance but—I believe—a real experience. As such, Messiaen's testimony can be used to establish a groundwork for further research.

37. Cytowic, *Synesthesia*, 22–23.