

CHAPTER 5

SYNAESTHETIC FILM RECONSIDERED



This chapter will illustrate how filmmakers who created visual music have introspectively drawn from their own perceptual capacities (which have also been studied by psychologists) for the purpose of creative expression. The analysis will indicate other ways in which some experimental filmmakers can be understood as practical psychologists.

The concept of synaesthesia is at the heart of a wide variety of past and present-day filmmakers' aesthetics, motivations and creative goals. Psychologists Simon Baron-Cohen and John E. Harrison define synaesthesia as occurring when 'stimulation in one sense modality automatically triggers a perception in a second sense modality, in the absence of any direct stimulation of this second sense modality' (1997: 3). Films may document the synaesthetic experience of an artist, reflecting correspondences that she or he feels personally, or there may be a looser connection with the condition. This chapter looks at the various ways that sensory correspondences have been employed in film, to provide categories that can aid in future research and provide a better understanding of synaesthesia in relation to moving image cultures.

In order to fulfil those aims, a loose cluster of related concepts have been organized into more precise subdivisions by categorizing the various forms of correspondence-based art.¹ Building on the work of previous authors, the proposal will be made that the broad and varied spectrum of what we might term 'synaesthetic film' can be divided into the following categories:

- Synaesthetic re-creation: artists with the condition re-create their experience.
- Medium equivalence: one art form is used as an expressive basis for another.
- Amodal invariant films: the artist appeals to the widespread ability to perceptually bind sounds and images together according to common properties shared across modalities.

- Mechanical synaesthesia: analogue or digital information is ported through a machine that outputs sensory information into a different modality to the one it was intended for.
- Synaesthetic affect: different aesthetic elements of the same sequence in a film – such as colour, camera movement, music and abstract forms – all point towards the same emotion.²

All of these terms will be discussed in more detail. The suggestion will be made that the reason a variety of artworks are conflated together as ‘synaesthetic’ is because the notion of synaesthetic art was coined before the condition was scientifically understood.³ With the help of more recent information that has been made available by the field of cognitive science, we can put this loose cluster of films into the more precise series of subdivisions outlined above.

What Is Synaesthesia?

The term ‘synaesthesia’ is used to refer variously to a specifically defined medical condition, a more widespread sensory-cum-psychological human capacity and a metaphorical concept. The word is of Greek origins: ‘syn-’ translates to ‘union’, and ‘aísthesis’ means ‘sensation’; thus, the term ‘synaesthesia’ means something akin to ‘a union of the senses’. For a synaesthete, sensory input that is processed in one region of the brain spontaneously and involuntarily triggers sensory experience in one or more additional regions: in other words, an experience in one modality creates reaction in another modality as well. Synaesthesia (as clinically defined) can manifest itself in a variety of ways – there have been cases of synaesthetes hearing fragrances, feeling coloured pain, hearing tastes, tasting sounds, feeling sounds on their skin and tasting images, for example. Sometimes, colours correspond with musical notes or letters appear to be intrinsically connected to colours. Whatever the unique cross-sensory experience is, the synaesthete feels it consistently across their lives.

Writing about synaesthetic correlations dates back to Aristotle and Pythagoras, who speculated about a ‘music of the spheres’ linking the abstract concept of vibration to the physical world (Moritz 1997). The first formal documentation of synaesthesia in a scientific context was by Sir Francis Galton, in his article ‘Visualised Numerals’ (1880: 494–95), although claims of the condition’s existence were widely contested (Ramachandran and Hubbard 2001: 3–34). Interest in synaesthesia was reinvigorated more recently⁴ and the condition has been confirmed today as legitimate through formal research and brain scanning experiments (Van Campen 2007: 5). For a synaesthete, regions of the brain that do not normally communicate, such as the visual and auditory cortexes, show signs of what is known as crosstalk, or ‘hyperconnectivity’. For that reason, by

way of example, a sound may generate activity in the taste region of the brain, or a tactile sensation may generate activity in the visual cortex, leading to visual impressions.

The influence of synaesthesia on the arts has been widespread. Within the realm of film, many people associate the condition with the genre of visual music, itself a generally defined practice involving various correlations that artists have forged between visual and aural aspects of their works. Visual music practice has, for instance, been motivated by purely formal concerns, as well as by the desire to document particular individual instances of synaesthetic experience. It also has been linked to higher-level mystical pursuits. In the late nineteenth century, when Theosophy and other alternative spiritual practices were being introduced to Western culture and the developing field of psychology promised to reveal the workings of the human mind, the intellectual community became aware of synaesthesia.

Dual interests emerged among scientists and artists. As Judith Zilczer explains, artists of the period ‘considered synesthesia to be a mystical vehicle to attain a higher reality or state of consciousness. At the same time, pioneers in the budding field of experimental psychology . . . began to study cases in an effort to understand human perception. The resulting tension between spiritual idealism and scientific positivism spurred the development of visual music across Europe and the United States’ (2005: 25–26). Colours were thought to give off a kind of vibration that linked to concepts of the life force. Thus, consistent with the relatively ephemeral spiritual concepts being explored, visual imagery in much early synaesthetic art tended to value abstraction over representation and concept over narrative. These relationships were influentially explored by Wassily Kandinsky in his book *Concerning the Spiritual in Art* (2000 [1912]).

Aimee Mollaghan refers to the term synaesthesia as ‘something of a popular malapropism’ (2015: 13) in relation to visual music films, and Paul Hertz is also quick to point out that visual music and synaesthesia are two distinct entities in his article titled ‘Fischinger Misconstrued: Visual Music Does not Equal Synesthesia’ (Hertz 2013). While they are right to point out that synaesthesia is sometimes misapplied when discussing visual music, this analysis aims to illustrate how and when it can be appropriately applied.

With a brief introduction to the condition and its legacy in the arts, we may now consider the categories proposed in this chapter, which will add nuance to the general concept of synaesthetic film.

Synaesthetic Re-creation

When an artist reports that he or she is a synaesthete and that person has attempted to document his or her experience through artistic means, the resulting

creative expression can be categorized as an illustrative instance of 'synaesthetic re-creation'. In some instances it is difficult to ascertain whether an artist truly did or did not have synaesthesia, since their work was developed before the condition was formally recognized. With more recent examples, it is clear that the artist was a synaesthete.

Synaesthete Carol Steen explains how the tactile sensation of acupuncture led to her visualizing an impression of colour that was re-created in her painting *Vision* (1996). Steen recalls:

One day, many years ago, I was having an acupuncture treatment and was lying flat on my back, on a futon, stuck full of needles. My eyes were shut and I watched intently, as I always do, hoping to see something magical, which does not always occur. Sometimes what I see is just not interesting or beautiful. Lying there, I watched the soft, undulating, black background I always see when I shut my eyes become pierced by a bright red color that began to form in the middle of the rich velvet blackness. The red began as a small dot of intense color and grew quite large rather quickly, chasing much of the blackness away. I saw green shapes appear in the midst of the red color and move around the red and black fields. This is the first vision that I painted exactly as I saw it. (Steen 2001: 205)

In this example, the work of synaesthetic re-creation only represents one of the two modalities experienced by the synaesthete: we do not need to feel the sensation of acupuncture that originally provoked or corresponded with the visual imagery in order to fully experience the resulting artwork. But in other works of synaesthetic re-creation, both of the corresponding sensations can be experienced simultaneously.

To take one illustrative example, synaesthete and animator Michel Gagné produced a synaesthetic re-creation film entitled *Sensology* (2010), in which he depicted the inner visions he experienced while listening to a musical composition by pianist Paul Plimey (Figure 5.1). Gagné describes his creative process in mystical terms:

The creation of this film was a true spiritual and artistic journey. Sometimes, I felt like I was channeling the images. I did no storyboards and virtually no preliminary work. I animated in a stream of consciousness, one frame at a time at a rate of 30 frames per second. The shapes revealed themselves as I listened to the music over and over again. The process was intensely focused and required [a] large amount of concentration. I was becoming part of the music and expressing my creativity at its rawest and most primal. Like Kandinsky taught us, every shape and sound has an equal vibration in the soul. When Paul Plimey saw a portion of the film for the first time, he said to me with tears in his eyes, 'It's like you read my soul'. (Gagné 2010)

Elsewhere, Jeremy Blake re-created his own synaesthetic perceptions when he animated images for Paul Thomas Anderson's live-action feature film *Punch-*

Drunk Love (2002). That movie's main character, Barry Egan (Adam Sandler), experiences synaesthetic correspondences in brief interludes during the narrative as he listens to music and we see his inner visions. These visions resemble abstract paintings in continual flux, underscored by a dissonant sound montage. Viewers see an array of pulsating, undulating colours in front of a series of amorphous, shimmering landscapes. Computer-generated shapes move with a smooth, wave-like motion. At one point, the visual impression resembles a star field with three bright pulsating stars that grow brighter, overwhelming the screen until it becomes a wall of light.

To offer another example of synaesthetic re-creation, in *An Eyeful of Sound* (2010) filmmaker Samantha Moore collaborated with three synaesthetes who described their experiences, which the artist then re-created through animation (Figure 5.2). Most of the film gives the impression that the viewer is looking out of the window of a train and sometimes staring up at the sky while experiencing synaesthetic visions. Some of the visions look ornate, like fireworks, while at other times they look appealingly incongruous, like metal bolts placed over a natural landscape. The soundtrack features three synaesthetes describing their experiences in voice-overs, while the imagery re-creates their descriptions. The interviewees recount the sort of images they see and how these always felt natural to them. There is also musical accompaniment with sound effects interspersed and visual impressions evoked by the sounds. The latter images depict the inner visions evoked by the sound of a cello, a harp and even that of passing cars.⁵

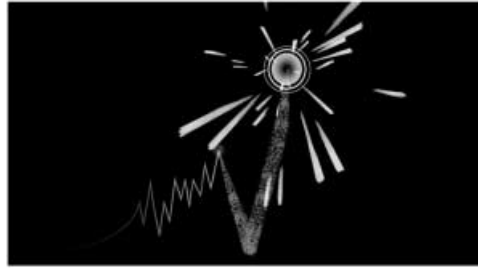


Fig. 5.1

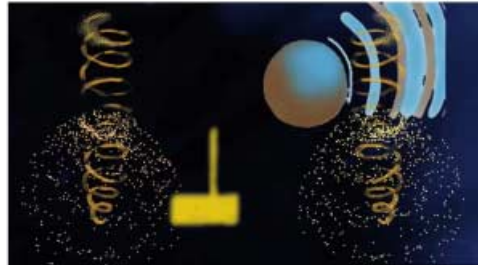


Fig. 5.2



Fig. 5.3

Figures 5.1–5.3. *Sensology* (2010; 5.1), *An Eyeful of Sound* (2010; 5.2) and *Rhythmus 21* (1921; 5.3) all contain synaesthetic representations of sound in visual form. Screen captures by the author.

Moore comments on her role as animator working with synaesthetes:

In *An Eye-ful of Sound* animation can be said to have been used purely as a visual aid . . . subjectively (using a personal and internal perspective) and performing a mimetic substitution (the synesthetic reactions which cannot be photographed). However subjective the film may be, the filmmaker is not the subject of it and neither is it from their perspective. It can be said to be illustrative, yet it was intended to do more than just record a sound track and illustrate it. The mimetic substitution must be taken on trust, since only the subject of the film can authenticate its accuracy. (2011: 95)

Medium Equivalence

'Medium equivalence', the second subcategory of synaesthetic art that this chapter proposes, applies the concept of synaesthesia in a more metaphorical way. Here, one art form (e.g. music, film, painting) serves as an expressive basis for another. We can only speculate if synaesthesia motivated the Milanese artist Giuseppe Arcimboldo in the late sixteenth century, when he came up with the idea to attach different coloured strips of painted paper to a *gravicembalo* (a form of keyboard instrument), thus allowing a musician to simultaneously play a note and see a corresponding colour (Gage 1999: 230). Similarly, in the 1740s the Jesuit Bernard Castel constructed an 'ocular harpsichord' that exposed illuminated coloured-glass panes corresponding to individual notes played (Brougher 2005: 97). Other colour organs followed, dispersed both temporally and geographically. These inventions illustrate the concept of medium equivalence art, even if they stop short of providing us with actual documentation of their respective creators' synaesthetic conditions.

In the early twentieth century, attempts to mediate between music and visual art influenced the processes and aesthetics of abstraction. Kandinsky claimed that visual art should aspire to the achievements of music; that is, he sought a 'visual equivalent' to music within contemporary painting. In *Concerning the Spiritual in Art*, he argues,

A painter . . . in his longing to express his inner life cannot but envy the ease with which music, the most non-material of the arts today, achieves this end. He naturally seeks to apply the methods of music to his own art. And from this results that modern desire for rhythm in painting, mathematical, abstract construction, for repeated notes of colour, for setting colour in motion. (2000 [1912]: 27–28)

Medium equivalence is not a documentation in which the artist re-creates his or her own (or another person's) experience of synaesthesia, but rather the use of one medium, such as painting, in an attempt to re-create the expressive power of

another. Many of Kandinsky's paintings – *Composition IV* (1911), for instance – aim to capture the expressiveness of music on a paint canvas.

With the advent of film, early twentieth-century ideas of and aspirations towards medium equivalence in art took on a temporal dimension. European abstract animators working in the 1920s, such as Walter Ruttmann, Viking Eggeling and Hans Richter, were concerned with the 'musical organization of film time' (Milicevic 1997). Mladen Milicevic proposes that these artists were devoted 'to the idea of optical music [and] liked using concepts from musical creation: orchestration, symphony, instrument, fugue, counterpoint, and especially too the term *score* – with the distinguishing feature the exact notation of time and the flow of movement' (ibid.).

Each artist found his own way to negotiate the musical organization of film time. In Richter's *Rhythmus 21* (1921), visual information behaves musically in a way that strips cinema back to its core elements – motions unfolding in time (Figure 5.3). At the film's beginning, a white wall pulls back to reveal a black screen. A white square shrinks on the screen, giving the loose impression that it is disappearing into the distance. Multiple shapes of varying dimensions move in synchronization. Like musical melodies, squares and rectangles float and drift, rise and descend, push and drag. Some move left, some right, and others up, down and diagonally. As one shape pulls into the frame, another one pulls out. Some shapes move at a moderate speed, while others move rapidly. White shapes on black appear, and vice versa. All of these visual articulations attempt to depict musical expression. Just as two musical melodies can move in counterpoint, so too can two shapes in motion move contrapuntally around one another. Each visual sequence, like a series of musical motifs, repeats and makes variations – visual articulations, like music, can be soft, spritely, fast, slow, aggressive, smooth, graceful and abrasive.

The visual forms in Eggeling's *Symphonie Diagonale* (1924) are more elaborate than those of Richter's *Rhythmus 21*. *Symphonie Diagonale* features smooth curves and hard, isometric lines, evocative of guitar bodies and musical notation lines. Complex patterns are formed from separate moving parts, which shift and transform independently in a variety of permutations. Patterns abruptly appear and then disappear, line by line, in swift intermittent movements. Small, independent shapes face together and then turn away, echoing one another in their physical gestures. Over time they combine in more and more complex articulations.

The figures in Ruttmann's medium equivalence film *Opus 1* (1921) are more suggestive of physical scenarios than Richter and Eggeling's geometric abstractions, even though they are still, in essence, non-figurative arrays of colour. Shapes appear to hop across the screen and dodge one another. Creating dramatic tension, sharp triangles jab at yellow blobs. Triangles also appear to saw across the bottom and top of the screen, and searchlights of purple and amber sweep back and forth. Red, yellow and white waves pass across the bottom of the

frame, crashing together and fusing into a single blob, and red balls swing back and forth like pendulums. Patterns of movement repeat one another, moving from right to left and then again from the opposite direction.

The common property shared by conventional music and these three medium equivalence films is that in both we encounter abstract invariants changing over time. Melodies repeat, develop and work in counterpoint to one another, and so do the non-figurative shapes in these films. However, rather than thinking of visual music as a note-for-note equivalent to traditional music, the concept can instead be understood in a looser, conceptual sense. All the variables found in music – such as time signature, key, timbre, volume and pitch – are not ported detail by detail into literally equivalent visual information.⁶ In other words, there are properties of music that remain exclusive to the realm of sound and that cannot be expressed with full adequacy in visual terms.

For Viking Eggeling, the images that he and his contemporaries created during the 1920s were ‘music in themselves’ (Leslie 2002: 281) and, thus, should not be accompanied by music. Alternatively, for Richter and Ruttmann the absence of music in their early films was tied to the fact that synchronized sound was unavailable for filmmakers at the time such works were made. They therefore welcomed live musical accompaniment during their screenings. In contrast, Fischinger’s *Radio Dynamics* (1942) was purposefully created without sound, beginning with the request, ‘No music please – an experiment in color rhythm’. This film challenges our speed of perception, applying flicker effects in which colours and shapes change from one frame to the next. Again, sequential motions are played in repetition. Rectangles expand, a square flickers on and off in the top right of the screen, diamonds and circles of orange, yellow and black expand and contract, sometimes receding into the distance. A series of abstract paintings are used as backdrops. Walls of colour move horizontally, overlapping and combining with one another. Like the earlier films by Richter, Eggeling and Ruttmann discussed above, *Radio Dynamics* can be understood as a conscious attempt to use musical form as a basis for creative visual expression.

Amodal Invariant Films

Though the condition of synaesthesia is relatively uncommon, most people experience a related phenomenon – the ability to bind sounds and images together according to common properties shared across modalities. This sort of correlation occurs within the third category of synaesthetic moving image work proposed by this section, ‘amodal invariant’ films. Fischinger’s work again comes to mind within this context. Much of his art was concerned with equivalents between modalities, similar to the bi-modal form of expression found in colour organs, as briefly discussed above. The synaesthetic dimension of many of Fisch-

inger's films was based on the correspondence of sounds and images that occurs in synchronization.⁷

The nature of this commonplace form of synaesthesia-related experience can be illustrated by a 1929 experiment conducted in Germany by psychologist Wolfgang Köhler. In this experiment, subjects were shown two shapes, one jagged and one curved, and also given the words 'kiki' and 'bouba' (Figure 5.4). They were asked which word corresponded with which shape. Almost everyone (95% of the participants) considered the jagged shape to correspond with 'kiki', while the rounder shape corresponded with 'bouba'. This was true of adults and children as young as three years of age. Vilayanur Ramachandran explains that most participants gave the same response because the jagged shape has a sharp inflection, and the sound kiki, when represented in the auditory cortex, has a sharp, sudden inflection as well. The brain performs a cross-modal synaesthetic abstraction – it recognizes the common property of jaggedness, extracts it and reaches the conclusion that both the shape and the sound are kiki (Ramachandran 2003: 85).

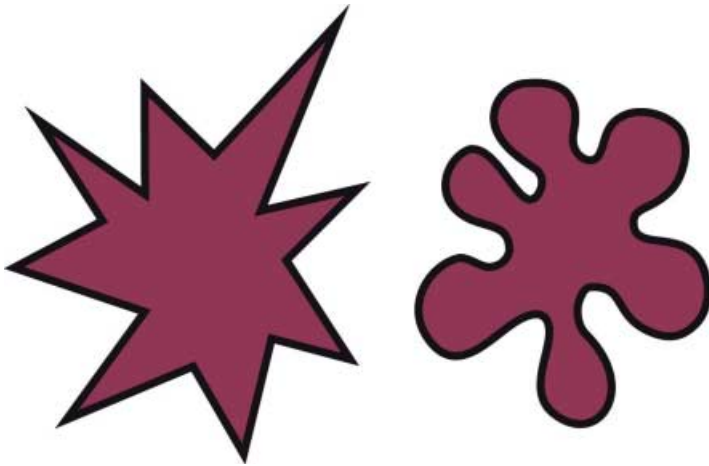


Figure 5.4. Subjects in Köhler's 1929 study demonstrated weak synaesthesia by associating 'kiki' with a jagged shape (*left*) and 'bouba' with a curved one (*right*). Drawn by Sumit Sarkar.

Thus, a characteristic like jaggedness may be considered an amodal invariant (Pinna 2011: 383–422). Jaggedness does not belong to any specific modality, and neither does intensity, abrasiveness or softness. All of these are amodal invariants. One can hear a soft sound, touch a soft object or see a soft image. Köhler's angular shape and word 'kiki' are bound together by the amodal invariant of jaggedness: his experiment demonstrated how our brains perform a cross-modal synaesthetic abstraction and identify their common property when they appear together.⁸ Language itself is full of cross-modal abstractions; they are fundamental to our way of conceptualizing experiences. One might say 'his shirt is loud',

although it does not make a sound, or ‘the painting uses warm colours’, although it does not emit heat.

In 2001, psychologists Gail Martino and Lawrence Marks made the distinction between the rare condition of synaesthesia and the commonplace facility to make cross-modal abstractions, calling them strong and weak forms of synaesthesia (using both words in a descriptive rather than an evaluative sense) (Martino and Marks 2001: 61–65). Both forms involve corresponding sensory information from two different modalities, and yet there are distinct differences between them.

Table 5.1 Strong vs. Weak Synaesthesia

Characteristic	Strong	Weak
Prevalence	Uncommon	Common
Experience of pairings	One stimulus is presented	Both stimuli presented
Organization of correspondences	Idiosyncratic	Commonly shared
Processing	Unidirectional	Bidirectional
Semantic association	Literal	Metaphorical

To explain briefly, strong synaesthesia is rare and unique to each individual, while weak synaesthesia is widespread and generally consistent. Most people (through weak synaesthesia) are able to discern which shape corresponds with kiki and which corresponds with bouba. For a strong synaesthete, the letter A might automatically trigger an association with the colour red without ‘red’ being presented. But in weak synaesthesia, both need to be present for the correspondence to be apparent. With strong synaesthesia, correspondences are often idiosyncratic: where one synaesthete might experience a correspondence between the letter A and the colour red, another might instead connect that character with the colour green. With weak synaesthesia, most people agree on what corresponds with what. Strong synaesthesia is also unidirectional – meaning that the letter A might evoke the colour red, but the colour red would not necessarily evoke the letter A. Weak synaesthesia, by contrast, is bidirectional in the sense that the word kiki evokes its corresponding shape and vice versa.

While artists are able to match amodal invariants during the creative process, spectators are able to detect them while viewing the resulting works; weak synaesthetic correspondences thus become an integral part of the aesthetic expression and appeal of amodal invariant films, and the viewer may find aesthetic interest in the work by identifying the common properties between the music and the moving shapes, instead of expecting or searching for a narrative thread. In Fischinger’s *Studie Nr. 7* (1931), synchronized shapes emulate the musical notes played in Brahms’ ‘Hungarian Dance No. 5’ (Moritz 2004: 213). The qual-

ity of the sounds is mimicked by the character of the moving shapes. For example, long smooth musical notes played on stringed instruments are matched by smooth, flowing lines (Figure 5.5). Brief, spritely sounds are matched with small, quick shapes (Figure 5.6).

Fischinger's use of music is intimately connected to the images that appear onscreen. Bill Alves describes some of this artist's work as 'a kind of supple choreography distilled to abstraction, but relying on an intuitive sense of connection to musical form' (Alves 2005: 45). Mladen Milicevic comments that while Fischinger devoted much of his career to visualized music, he reluctantly agreed to add musical accompaniment to his films in order to allow a broader audience to appreciate their abstractions; Fischinger found it peculiar that viewers struggled with abstract visual imagery, while no one objected to the abstract nature of music (Milicevic 1997).

Mary Ellen Bute's *Tarantella* (1940) provides another example of weak synaesthetic correspondences. In this film, Bute creates visual analogies to accompany a quirky and inharmonious solo piano piece. Free-associative, unpredictable shapes wiggle, crunch and zig-zag across the screen. In tight synchronization, cut-out shapes move in unison across the frame, changing dimensions, blinking,

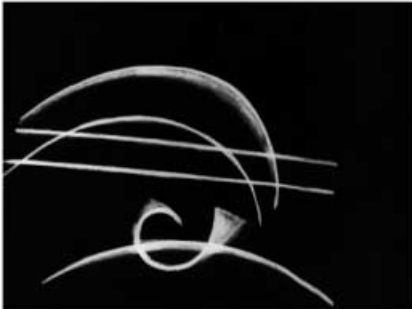


Fig. 5.5

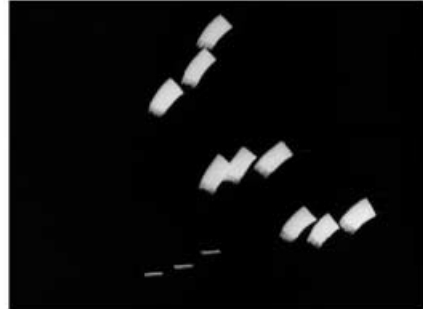


Fig. 5.6

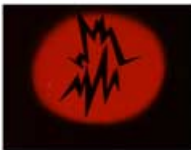


Fig. 5.7



Fig. 5.8



Fig. 5.9



Fig. 5.10



Fig. 5.11



Fig. 5.12

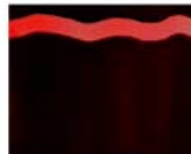


Fig. 5.13



Fig. 5.14

Figures 5.5–5.14. Amodal invariant correspondences in *Studie Nr. 7* (1931; 5.5, 5.6), *Tarantella* (1940; 5.7–5.10) and *Swinging the Lambeth Walk* (1940; 5.13–5.14). Screen captures by the author.

expanding and contracting. Dissonant chords crunch back and forth (Figures 5.7 and 5.8), a high-pitched trill spirals downwards (Figure 5.9) and disorienting shapes accompany a disorienting melody (Figure 5.10).

Len Lye also produced amodal invariant films. He commented on his creative method in the 1940s, before synaesthesia had been recognized as a legitimate condition, or the distinction between strong and weak synaesthesia had been made:

there might have been a passage that I liked so well in the music I found that I'll start designs very specifically (as in the double bass in *Swinging the Lambeth Walk*, boomp ta da boomp boomp) that looked to me like sound sounded; for instance guitar, where a guitar goes twang twang, I would accompany it with a twangy stringy image. I would get an image which matched the sound. (Lye, quoted in Russett and Starr 1988: 68)

This quotation points to two aspects of his working method: first, cross-modal synaesthetic abstractions are at play; second, the associative dimension of his work – he associates guitar sounds with stringy imagery. *Swinging the Lambeth Walk* (1940) features both of these tendencies, with a wobbly violin trill (Figure 5.11), a sharp organ sound (Figure 5.12), a high pitched guitar (Figure 5.13) and a thick double bass (Figure 5.14).

The 'stringy' imagery that represents stringed instruments is evidently associative, and the thickness of the double bass string might also be associative. The wobbly trills, sharp organ sound and the 'high' note all appear to be based on weak synaesthetic abstractions.

The creation and detection of weak synaesthetic correspondences has presumably been present as a cognitive capacity since the earliest stages of human reliance on symbolic thought. It is a curious twist of fate that the link between the words 'kiki' and 'bouba' and their corresponding shapes were scientifically recognized at about the same time that Fischinger, Lye and Bute had the means to artistically exploit weak synaesthesia through creative means in a temporal, bi-modal art form.

Mechanical Synaesthesia

In mechanical synaesthesia the correspondences are generated by a machine rather than the human mind. Analogue and digital information is ported through a device that outputs sensory information into a modality different from the one that the original data was intended for. For example, in the case of the digitization of sound, the properties of music take the form of binary information, which can be translated into different visual invariants. Friedrich Kittler has argued that 'the general digitization of channels and information erases the differences

among individual media . . . inside the computers themselves everything becomes a number: quantity without image, sound, or voice. And once optical fiber networks turn formerly distinct data flows into a standardized series of digitized numbers, any medium can be translated into any other' (Kittler 1999: 1–2).

To give some illustrative instances of what Kittler means, screensaver software developed for home computers translates sound data into ornate and colourful imagery. One example is *Whitecap*, which visually responds to music being played by the computer in synchronization and is advertised as a dynamic and reactive 'music visualizer'.⁹ Similarly, the graphic equalizer on modern stereo systems also visualizes sound data, where the height of a series of light bars corresponds with the volume of various frequency bands. Alternatively, other modern applications, such as iTunes and Winamp, visualize sound data in unique ways, while programs Jitter and Gem allow deeper programming-level control over the visualization.¹⁰ Reversing the process (transferring the imagery back into sound) is also possible with the latter programs. For reasons such as these, Christoph Cox proposes that 'digital technologies offer, if not a union of the senses, then something akin: the intertranslatability of media, the ability to render sound as image, and vice versa' (Cox 2005: 35).¹¹

We should also note that data can be rechannelled with analogue equipment too, such as a traditional projector and a celluloid film. Fischinger was among the first filmmakers to experiment with a type of medium equivalence known as 'direct sound', in which sound elements are created by passing visual data through the optical sound reader of a film projector. His *Ornament Sound* film from 1932, for example, was created by drawing a series of geometric images on paper and then photographing these in the optical soundtrack part of the negative. This sort of correlation is machine-reliant and falls under the category of mechanical synaesthesia.

Another example is Lis Rhodes's film *Dresden Dynamo* (1972), which features abstract patterns of colour rapidly flashing across the screen; as the filmstrip passes over the projector's optical sound head, corresponding sounds are generated. There are pulsating, jittering and flickering patterns of blue, red and black, and the sonic pitch changes in close synchronization with the imagery, depending on the thickness of the lines and whether they are positioned horizontally or vertically. Flickering circular patterns produce a rattling, popping sound, while multiple rotating lines bend the pitch of a buzzing noise. Plain red and plain blue produce only a light hiss. The more kinetic imagery that is present, the more abrasive and loud the sound becomes. Moving circles, hard lines and curves produce modulations in pitch, volume and frequency. Small circles produce a high pitch, while larger circles produce a lower pitch.

Guy Sherwin's *Railings* (1977) is similar but uses real-world footage to create sounds. In this case, the filmstrip contains images of iron railings shot from different perspectives that are converted into sounds as they pass over the projector's

optical sound head. Spectators 'hear' the footage and see the images that created the sound synchronized together. The sound produced is that of a stick clattering along the railings. The more onscreen motion appears, the louder the rattling is. When the film stock is awash with white or black through under- or overexposure, the soundtrack goes quiet. When there is more pavement or more grass behind the railings, or the optic printer distorts or speeds up the imagery, the sound is affected. Again, then, the retinal impression and sound frequencies change together in synchronization through mechanical correspondences.

Synaesthetic Affect

The final category of synaesthetic film identified in this survey, synaesthetic affect, uses the term 'synaesthetic' conceptually, and perhaps in a broader sense than the other categories detailed above. Here, various elements of the same sequence in a film, such as colour, camera movement, music and shape all point towards the same emotion. While the other categories described in this chapter are original, Carl Plantinga first proposed the idea of 'synaesthetic affect' in his monograph *Moving Viewers*, and explained the concept in the following way: 'spectators often find their response to stimuli in one modality to fit with the responses to stimuli in another. Disruptive editing may fit with chaotic music; conversely, a slow, smooth tracking shot could fit with the elegant movements of a ballet dancer. We might call this *synesthetic affect*' (Plantinga 2009: 157). Filmmakers commonly coordinate sound design and visual elements to reinforce each other in ways identical – or at very least, highly similar – to that which Plantinga describes. The broad concepts ('chaotic', 'elegant') that he invokes within the quote given above are matched across modalities. In this respect, synaesthetic affect is similar to the phenomenon of weak synaesthesia discussed earlier in this chapter. The difference between weak synaesthesia and synaesthetic affect, however, is that synaesthetic affect is not automatically or characteristically concerned with finding a direct equivalent to every detail from one modality to another. Rather, it is about broad concepts matching one another through filmmakers' careful coordination of a range of different expressive means.

This expressive technique can be found in a wide range of works spanning all eras in film history. For example, in German expressionist films, filmmakers guided controllable elements towards the same affective impression.¹² In *The Cabinet of Dr. Caligari* (1920), visual design elements were stylized to create aesthetic unity. For example, when the central female character, Jane, is either safe or in danger, the set design tells the viewer so through recourse to physical forms that are sharp and threatening (when she is being kidnapped, for instance) or gentle and curvaceous (when she is secure in her 'feminine' home). We see similar formal strategies employed within recent commercial movies, too: Peter

Jackson's *The Lord of the Rings: The Return of the King* (2003), for instance, also marshals a variety of aesthetic elements that combine to establish a consistent emotional impression. Late in the film, Frodo (Elijah Wood) passes out in a perilous location that resembles hell, but then awakens in a safe location amongst friends that resembles heaven. The colour scheme takes on a comforting orange and brown hue, faces and objects are bathed in light, and visual forms, like Jane's home in *Dr Caligari*, are curvaceous and unthreatening. All of these elements build towards the same gentle mode of affect. A similar synaesthetic technique is utilized in some examples of visual music.

While synaesthetic affect can suggest a wide variety of emotions, in visual music films it often evokes a state of ambient entrancement.¹³ Examples of this phenomenon can be found in a number of Jordan Belson's films. In *Allures* (1961), for instance, the music is consistent overall with the film's enigmatic imagery, such as a slowly revolving mandala or a 'cosmic eye'; both the imagery and the soundtrack work in conjunction to draw the viewer into a trance-like state, enhanced by the mandala forms that appear in the film. Mandalas are symmetrical images, usually circular, which are components of Hindu and Buddhist religious practices and are used to assist concentration and meditation. Mandalas are usually still, but when used in a film, they often move (as is the case in the Belson work discussed here). As a result, Maureen Furniss writes, the viewer 'can become entranced by the light in combination with the rhythmic, hypnotic imagery projected on the screen. The moving mandala works in time, more like music, to induce a trance-like state' (Furniss 2008: 253).

The opening images in *Allures* create the impression that the spectator is being pulled through a cosmic tunnel. Once the viewer is drawn into this beguiling imaginative space, they are presented with patterns of intersecting dots, flicker effects, distant spirals and revolving mandalas. The viewer's attention is continually drawn back to the centre of the frame. The soundtrack of *Allures* features bells, electronic sounds, a deep humming noise, distorted gongs and rumbling. The work's sonic and visual components are carefully correlated in terms of atmosphere, functioning together to create a single, unified experience of entrancement.

Scott Draves's *Electric Sheep* (2002) evokes an atmosphere similar to *Allures*, featuring ambient buzzing, humming, rumbling, synth pads and distant woodland creatures on its soundtrack. This sound collage is matched by ambient, diffuse imagery resembling fractal patterns, assuming a variety of shapes and combinations. There is too much visual activity to focus on any one object for a sustained period of time. Threads of kaleidoscopic colour spin while rotating around the centre of the frame, like a centrifugal force, evoking the balletic dance of the solar system or teacups in a fairground ride (Figure 5.15). Falling in and out of symmetrical patterns, the viewer's sense of spatial relations is continually pulled between the distant (staring into a cosmos) and the close (staring into an atom).



Figure 5.15. The visual accompaniment of a sound collage in *Electric Sheep* (2002). Screen capture by the author.

The sound creates a comparable impression, from distant echoes to the intimate sound of a whispering voice.

The pioneering computer animator John Whitney imagined a time when ‘composers will discover a congruence of aural-visual partnership as productive as that which they found for centuries in writing for combinations of all kinds . . . that partnership will be grounded on valid harmonic interrelationships equally applicable to sound and image’ (Whitney 1981: 18). He warns, however, that a direct visual mapping of music’s most basic parameters (such as volume, timbre or pitch) fails to capture the full expressive range of music. For Whitney, music is more dependent on the multidimensional interplay of tension and resolution than the visual patterns that artists create (Alves 2005: 45). The reductive form of ‘direct mapping’ that he cautions against is also criticized by a wide range of other important theorists, including sociologist Theodor Adorno, composer Hanns Eisler and filmmaker Sergei Eisenstein, all of whom argued that there is no benefit in redoubling an effect in two different media simultaneously (Leslie 2002: 184). John Whitney’s later work applied the synaesthetic affect form in films like *Arabesque* (1975), which features mysterious symmetrical patterns built from small dots that rotate and reconfigure into different patterns, accompanied by similarly enigmatic Persian classical music. Instead of attempting to directly synchronize the sound with equivalent moving shapes, however, Whitney creates an expressive interplay between image and sound.

One might suggest that the ‘synaesthetic affect’ approach provides another way of negotiating the relationship between sound and image without seeking a direct correspondence between them (as the other categories discussed above

arguably do) or rejecting music outright. Echoing the sentiments of Whitney, Adorno, Eisler and Eisenstein, Cristoph Cox contends that ‘the best sound works neither reject the visual nor succumb to it, but instead amplify differences among media and sensory modalities, drawing attention to sound as a semiautonomous power. They are complex engagements with the visual that intensify the moment of translation and the movement of metaphor’ (Cox 2005: 37). Applying synaesthetic affect is another way to negotiate possible correspondences between the audio and the visual without attempting to provide or force a direct equivalence between the two.

Conclusion

Concepts related to synaesthetic art are significant in discussing the aesthetics of motion picture media. Some artworks that form part of this large and diverse field were first referred to as ‘synaesthetic’, when the condition was considered a Romantic ideal by artists and an oddity by scientists. Today, the condition is understood more clearly, yet the concept of synaesthetic art continues to be applied in romantic or metaphorical ways; in fact, it represents a complex range of aesthetic effects and experiences, and possibilities emerge from different traditions of film practice that explore and exploit correspondences between sound and image in different ways and for different ends. The subcategories proposed in this chapter provide critics, scholars and artists with the initial means of investigating sensory correspondences in moving images; however, there is room for expanding these divisions in order to further define related practices and to understand parallels and distinctions between temporally and geographically dispersed synaesthetic works of art in aesthetic, creative and technological terms.

This chapter demonstrates an element of the creative process related to correspondence-based films. Once again, experimental filmmakers take sense as muse and produce work based on their own cognitive and perceptual capacities. In the case of actual synaesthetes, they draw from a rare and distinctive form of synaesthesia. In contrast, those who draw creatively from the more widespread ‘weak’ form of synaesthesia (producing medium equivalence films) exploit a commonly shared perceptual capacity that allows spectators to exercise a familiar, yet under-rehearsed audiovisual perceptual facility. Medium equivalence films are compelling and easily discernible for the general viewer without specialist knowledge or training.

Though these two concepts are related to synaesthetic practices in particular, one can find in them links to animation more generally, as animators universally relate to their images through strong internal ties – in the creative process of transferring the artist’s inner vision and physical energy to his or her animated artwork and environments. The efforts of artists who have developed correspon-

dence-based synaesthetic films have the potential to expand our understanding of animation aesthetics in an even larger sense. More may be done – in both practice and theory – to expand on these developments and how we, as artists, viewers and theorists, experience and interpret them.

Notes

1. For examples of synaesthetic films and their creators, see for example: Kerry Brougher and Olivia Mattis *Visual Music: Synesthesia in Art and Music Since 1900* (2005) and Cretien Van Campen *The Hidden Sense: Synesthesia in Art and Science* (2007).

2. The last category, synaesthetic affect, was developed by film scholar Carl Plantinga in his *Moving Viewers: American Films and the Spectator's Experience* (2009: 157).

3. Note that this chapter does not outline every possible use of the notion of synaesthetic film. For further examples, consider Eisenstein's discussion, as explored in Robert Robertson's *Eisenstein on the Audiovisual: The Montage of Music, Image and Sound in Cinema* (2010), and also consider Gene Youngblood's concept of synaesthetic film in *Expanded Cinema* (1970).

4. See, for example, Richard Cytowic, *Synesthesia: A Union of the Senses* (1989); A. Aleman et al. 'Activation of Striate Cortex in the Absence of Visual Stimulation: An fMRI Study of Synesthesia' (2001: 2827–30).

5. Moore discovered with a group of psychologists that non-synaesthete spectators generally preferred synaesthetic audiovisual correspondences in animation over random audiovisual pairings (Ward et al. 2007: 1285–96).

6. To see invariants of sound ported into another medium, think of the grooves on a vinyl record as a synaesthetic sculpture, or imagine the binary code of an mp3 file as a form of synaesthetic literature. Also note, however, that these literal equivalents are unlikely to lead to a vivid aesthetic response, since we are not endowed with the ability to draw meaningful patterns from mp3 code, for example. Sensory information needs to be translated into a modality from which the viewer/listener can discern meaningful patterns.

7. For an extended discussion of Oskar Fischinger, and some discussion of his work as synaesthetic art, see William Moritz, *Optical Poetry: The Life and Work of Oskar Fischinger* (2004) and also Cindy Keefer, *Oskar Fischinger 1900 – 1967: Experiments in Cinematic Abstraction* (2013).

8. The relevance of the kiki/bouba experiment to visual music is discussed in Chuck Jones, 'Music and the Animated Cartoon' (1946: 364–70), among other sources; see also, for instance, R. Jones and B. Neville, 'Creating Visual Music in Jitter: Approaches and Techniques' (2005: 55–70).

9. Anonymous, 'Whitecap', *Soundspectrum*. Online at <http://www.soundspectrum.com/whitecap/>.

10. For an example of this, see Parag Mital's *Polychora* (2009). Online at <https://vimeo.com/9337944>.

11. See also Jeremy Strick, 'Visual Music' (2005).

12. For further detail, see the essays collected in Dietrich Scheunemann, *Expressionist Film: New Perspectives* (2006).

13. For recent examples, see David West's *Samadhi* (2012), Richard Lainhart's *Pneuma* (2008), Jean Piché's *Oceanes* (2011), and Bret Battey's *Mercurious* (2007), all of which are currently available for online streaming.