

## 7 Live audiovisuals

AMY ALEXANDER AND NICK COLLINS

From festivals and dances, through opera, theatre and shadow play, from Wagner's *Gesamtkunstwerk* (total artwork), to cinema and virtual reality, the arts have often confronted the problems and potential of engaging many human senses (modalities) at once. Such multisensory (multimodal) entertainments are often underlined by strongly traditional narratives, yet linear storytelling is not necessarily the primary concern of some alternative artistic ventures. The degree to which any of these media allows for live performance varies, and this chapter will particularly treat the circumstance where the artistic output can be influenced during the course of performance itself, rather than being cast as a fixed product prior to presentation. A parallel chapter on music for broadcast media will analyse the opposing case, where the determination of a finished product, even if subject to a deadline, can be carried out free of realtime concert constraints. Yet there will necessarily be some overlap, and this chapter will in particular treat the case of some formative historical influences on contemporary live performers including the non-realtime work of abstract film visionaries such as Oskar Fischinger. We shall further broach some of the psychological and analytical perspectives on audiovisual work.

To give an immediate example of current concerns, one contemporary manifestation of realtime performance is exhibited by club VJs – video or visual jockeys. Whilst their profile in publicity billing and on-stage position has not matched historically to that of their foils, the club DJ (disc jockey), interest in VJ practice is very much on the ascendant in the arts (Spinrad 2005; Jaeger 2005). The typical VJ, if such an artist can be said to exist, will use dedicated software packages on a laptop computer, often mixed in realtime with prerecorded imagery on DVD and/or live video from a camera. The resulting imagery is centrally displayed by projector(s) in the performance environment. Frequently, analysis of the audio signal, tap tempo, or other control allows the synchronisation of visual events to music. It should be acknowledged, however, that these techniques are by no means universally performed; many VJs control all visuals manually.

A significant trend is the push towards a fuller integration of the senses, as shown by dedicated audiovisual performance groups whose protagonists are long-term collaborators from different backgrounds, or who themselves have developed skills across multiple modalities. Yet there has also been

[126]

a strong historical counter-movement against over-integration by visual artists who want to emphasise the independence of moving visuals from audio, often considering moving visuals a form of music in their own right. There is a rich history behind this current enterprise which we shall endeavour to expose during this chapter. And whilst we might have introduced the club VJ in the previous paragraph, art is never limited to single functions or social settings. Performances unhindered by music club conventions can allow for a more focused style of live visual or audiovisual performance, an arena often dubbed live cinema. Nevertheless, both VJing and live cinema grow out of notions of expanded cinema, visual music and multimedia events. Indeed, whilst our survey will have to omit many theories concerning opera, film, media or virtual reality, the reader can anticipate the wide-ranging influences that must pervade practice which treats multiple senses. Visual and sonic arts have their own dense histories which have often cross-bred, one interface being their combination in audiovisual performance.

### **Colour organs and visual music**

A futile attempt to tie up all the historical threads of audiovisual performance might lead us through landmarks in the history of theatre, the philosophical speculations of Ancient Greece or the ceremonies of pre-history. It is possibly safer to begin with a common source mentioned in all audiovisual histories, the colour organ (Moritz 1997, Peacock 1988), an invention that has been continually reinvented for about the last three hundred years. A colour organ is a device for the projection of areas of colour cued in a musical manner, often from a console similar to a musical instrument, most typically a keyboard. Even if based on an alternative control interface, the colour organ should at least allow the production of visual events over time; such interactive sequencing is analogous to the ordered revelation of music. It might be used in accompanying or complementing music, or in projecting novel visual work even independent of sound. Whilst early devices were fragile in their reactions, and had little control over the projected shapes, later devices in the twentieth century attempted to refine the quality and quantity of objects that could be presented. They also achieved a very different presence in terms of luminosity and quality of light to modern projectors.

Louis Bertrand Castel's first theoretical writing on the colour organ appeared in 1725, and acknowledges a debt to Athanasius Kircher's popularisation of the magic lantern (1646) and Isaac Newton's speculations aligning the spectrum to the diatonic scale (1704). Though he had intended only to

write of the possibility of a *clavecin oculaire* (ocular harpsichord), a sceptical reaction prompted experiments in actually constructing the device. A small-scale prototype model was built by 1734, and whilst it is unlikely that he managed to construct any large-scale fully functioning colour organ (Peacock 1988), in principle his key-operated candle covers could reveal light through coloured paper filters under the control of an operator.

After Castel, in the second half of the nineteenth and first half of the twentieth century came a succession of inventions of functioning colour organs. Early examples include a contraption by D. D. Jameson (1844), Frederic Kastner's pyrophone (gas jets in tubes), Bainbridge Bishop's organ-top light projector (1877) and Alexander Wallace Rimington's Colour Organ (patented 1893).<sup>1</sup> The latter in particular was used in well-documented concert tours by its creator amid legions of self-publicity, a tactic followed by so many designer-performers, often claiming a spurious originality for their devices. With the field already established, that the score of Skryabin's *Prometheus* (completed 1910) has a part for light simply captures a spirit of the times, and perhaps spurred the creation of even more instruments (Peacock 1988).

Building on, and often contributing to, the tradition of colour organs is the genre of abstract filmmaking and visual performance known as visual music. Visual music filmmaking began in the early twentieth century, and continues to this day. Its earliest practitioners were largely abstract painters, already used to working with spatial rhythms in their static work, who then began working in film, thus introducing the element of time into their work. Although abstract filmmaking has not been universally considered by its practitioners as 'visual music', it's clearly been a recurrent theme. The earliest known text on abstract cinema, documenting possibly the first work in abstract filmmaking, was Bruno Corra's document, 'Abstract Cinema – Chromatic Music', published in 1912. Malcolm Le Grice points out:

The title 'Chromatic Music' introduces a recurring tendency of artists concerned with abstract film to pursue a musical analogy for their work. It is difficult to think of music, certainly instrumental music, as ever having been other than essentially abstract, and considering that film like music is a time-based medium, it is not surprising that the analogy with music should be used, and that this analogy should continue to effect [*sic*] contemporary abstract film-makers. (Le Grice 1977, p. 17)

Visual music takes as a central idea the strength of the visual forms on their own, rather than as subordinate or 'accompaniment' to musical sound. However, visual music films often have synchronous sound, and there are a range of approaches to the question of integrating sound and image – often even within the body of work of a given filmmaker. For example, the film

*Radio Dynamics* (1941), by probably the best-known abstract filmmaker, Oskar Fischinger, was intentionally made without sound; Fischinger's intent was to demonstrate that non-objective imagery could work on its own (Moritz 2004b). In fact, the film begins with a title slide that says, in large, handwritten letters, 'Please! *No Music* – Experiment in Color-Rhythm' (Fischinger 1942). In *Radio Dynamics*, as in most of Fischinger's films, the abstract forms create their own spatial and temporal rhythms. Fischinger had to make his silent film in secret, however, as he was at the time contracted by the Guggenheim Foundation to make a film synchronised to Bach's Brandenburg Concerto No. 3. Even here, the resulting contracted film, *Motion Painting*, was not synchronised to sound in the customary manner; rather than make the requested cel animation, Fischinger photographed a frame for each brush stroke of a multi-layered oil painting in progress. As William Moritz (2004b) has pointed out, 'his multi-layered style merely parallels the structure of the Bach music without any tight synchronization'. Despite this reluctance to regard his imagery as merely synchronised accompaniment to visuals, Fischinger did at other times intentionally synchronise sound and visuals. In his 1932 film, *Tönende Ornamente* (Ornament sound), the soundtrack was created by drawing directly onto the optical soundtrack. Fischinger saw this as the wave (literally) of the future for music composition, writing at the time: 'Now control of every fine gradation and nuance is granted to the music-painting artist, who bases everything exclusively on the primary fundamental of music, namely the wave – vibration or oscillation in and of itself. In the process, surface new perceptions that until now were overlooked and remain neglected' (Fischinger 1932).

In touch with currents in live performance, in 1926 Fischinger provided a multiple projector show which upstaged the Hungarian concert pianist Alexander Laszlo who had commissioned it; Laszlo responded by cutting Fischinger's films from his tour. In another show, *Vakuum*, as reported by the disgruntled Laszlo, Fischinger had seven projectors accompany a percussion group, the noise of the projectors almost overwhelming the musicians (Moritz 2004, p. 12). Fischinger also created and patented his own colour organ, the *Lumigraph*, in 1950 (Moritz 2004, p. 137). The Lumigraph was itself silent, though it could accompany music; it was performed live by manipulating a stretched elastic skin from behind, pushing portions of the skin into planes of coloured light that were projected just above the skin's normally unlit surface.

Although there is a well-known body of visual music work from the first half of the twentieth century, the practice continues to this day, both in filmmaking and live performance contexts. Some contemporary artists have taken to computer graphics and VJing, while abstract animation created using more traditional techniques continues as well.

The lineage of animation and live performance intertwines, as seen from the history of visual music and colour organ performance. Even if much early visual music was laboriously constructed, as a polished finished artwork for later presentation, its aesthetic is a precursor of many contemporary practices now possible in a live context. Just as technology has empowered the live production of electronic music that was once built outside of realtime, so technology has facilitated realtime visual performance. Again analogously to electronic music, the history of live visuals takes in the mechanical, electro-mechanical and analogue before the digital age.

### **Light shows**

The 1960s brought psychedelia, social consciousness and communal activity. All these came together in visual performances known as light shows. Typically presented as visual accompaniment to rock concerts, these shows were generally performed by light show ensembles who were attached to particular venues and played with whatever bands appeared there. The visuals utilised various media, such as 16mm film clips, slides, transparencies, and coloured oils and liquids in clear dishes projected using an overhead projector. The media were displayed simultaneously to create the effect of superimposed layers, and they were manipulated live by the light show group: for example, the oils and liquids would be swirled in a dish; films might be looped or reversed, portions of the film frames might be masked by the performers' hands. Projections might be further modified by colour and strobe wheels rotated in front of the projection lenses. Some techniques were common to various light show ensembles, but individual ensembles also commonly developed techniques on their own. Since the group members were interacting live with one another and with the music being performed, group improvisation was an important element of light shows. David James writes of performances by one Los Angeles-based light show ensemble, Single Wing Turquoise Bird (SWTB):

The most commonly invoked analogy to this group improvisation is the combined composition and performance situation of modern jazz, or indeed that of the Grateful Dead, and others of the bands whom they accompanied who had abandoned the regular repetitive structures of early rock 'n' roll for extended jams. The interaction among the projectionists themselves mirrored their responsiveness to the music, for rhythms, textures, and even graphic images were conjured out of their sensitivity to the bands' performances; sometimes the bands themselves would turn and face the screen and play to the images they saw, and indeed on several occasions the light show continued after the band had finished. At these

points, rather than the light show taking its direction from the music and being subordinated to it, the whole ensemble was a fully reciprocal collective audio-visual organism. (James 2005, pp. 14–15)

Although light shows were best known as accompaniment to music at rock concerts, SWTB went on to perform in other settings as well. The ensemble had started out in early 1968 performing at LA's Shrine Exposition Hall, accompanying bands such as the Velvet Underground, Pink Floyd and The Grateful Dead. By late 1968, the abstract painter Sam Francis had befriended the group as a patron; through Francis they came to perform at art venues including museums and universities, as well as at studio spaces such as Francis's studio and eventually the Cumberland Mountain Film Co. loft above the Fox Venice Theater. At these post-Shrine performances, SWTB performed as the 'headliner'. They still performed to music; the music at most shows now consisted of preselected records and tapes, including tapes the group had custom edited for their performances.<sup>2</sup> However at some shows they performed with live musicians, and in some cases they generated the sound themselves – for example by miking the outside street sound and playing it amplified in the space, or by performing to the output of a white noise generator.<sup>3</sup> Since they could now rehearse to the same music or sound they would perform with, the ensemble were able to refine and build more complex shows, whilst still collaboratively improvising in performance (James 2005, p. 16). In that the ensemble had crossed over from an accompaniment role in mainstream venues to headlining in art venues, providing, as the group put it, 'instant cinema', SWTB's history can be seen as a precursor to the transition some contemporary performers have made from ambient VJing in clubs to live cinema performances.<sup>4</sup>

Light shows stand apart from most other historical forms of visual performance in that collaboration and improvisation between several performers was central to the form. Contemporary VJ and live cinema shows are sometimes performed by 'crews' who project collaboratively; however, they typically encompass significantly fewer performers, projections, and individual modes of performance than did light shows. With commonly half a dozen and sometimes up to a dozen performers projecting simultaneously, techniques parallel to those used in musical improvisation such as 'laying in and out' were critical.<sup>5</sup> Whilst most known light show activity took place in the UK and the US, light show groups are known to have existed in several other countries throughout the world.<sup>6</sup> Although best known as a phenomenon of the 1960s and 70s, there are still some 'psychedelic' light shows in existence today. Further, the use of liquids has re-emerged at contemporary concerts and other events, largely as a reference or homage to the light shows of the psychedelic era (Spinrad 2005).

## From analogue video synthesisers to software

Realtime analogue video synthesisers, which were popular among video artists in the 1970s, are one bridge from the light show to the current day.<sup>7</sup> By processing analogue camera signals, or synthesising novel signals, they provided inspiring new tools, though the difficulty of their construction and associated price at first restricted their availability to special research institutions or studios. Video synths enabled realtime performance, but due to the size, expense and rarity of the equipment, were for the most part impractical for public performance. Even if used to create prerecorded works, much of the output resembles contemporary club or live cinema visuals.

From the 1960s into the 70s, video itself was becoming a medium of serious regard in art, through the efforts of such pioneers as Nam June Paik (who himself collaborated on an early video synth with Shuya Abe), or Woody and Steina Vasulka. Video was used for alternative presentations in galleries and by the late 1970s began to be part of visual display in some club settings.

Video synths could be entirely analogue, though analogue/digital hybrids (such as the Fairlight CVI from 1984) would later appear. Of particular interest in the history of electronic music was Laurie Spiegel's use of Max Mathews' *GROOVE* (Generated Realtime Output Operations on Voltage-controlled Equipment) hybrid system, a small computer controlling analogue equipment which just happened to include a video output. The *VAMPIRE* (Video And Music Program for Interactive Realtime Exploration/Experimentation) system developed by Spiegel from 1974 to 1979, was aptly named for the propensity of artists at Bell Labs to work during the early hours of the morning when the systems were not used for telecommunications research. It enabled her to write programs which closely controlled both audio and visuals as time-based signals (Spiegel 1998).

Digital computer technology was gradually to take over. Anticipating later visualisers, Atari released an Atari Video Music in 1978, even before the classic Atari 2600 games console, which could take in an audio signal and synthesise animated graphics onto home television screens.

By the 1980s, the cheapness of video tape had made bedroom production accessible to many artists. In the UK in particular, the scratch video movement saw cut-and-paste treatments of often political material for viewing in clubs. Meanwhile, the explosion in popular music video followed the 1981 launch of Music TeleVision. MTV dubbed their presenters 'video jockeys', a parallel definition to that claimed by a new generation of club performers.

The age of warehouse raves filled with Atari ST computers controlling sound was also the age of Amiga computers controlling video. Digital VJing

was inevitable and irresistible; as has often been proved, digital technology makes experimentation very accessible to a wide base of artists, through the combination of power of processing<sup>8</sup> and relative cheapness of hardware. Nevertheless, many audiovisual practitioners remain aware of the rich history of the analogue domain, even if some are destined to reinvent or rediscover the concerns of earlier artists before the digital age.

There is a proliferation of hardware and software for audiovisual performance at the moment, and VJ gear has become as much a revenue stream for companies as DJ technology. Despite our provisos concerning the use of further equipment, from video cameras to video mixers to alternative controllers (just as standalone audio has explored), the entry set-up for many artists might be a software program on a laptop computer. Both commercial programs and freeware are available, and the usual continuums of customisation from limited proprietary interfaces to very flexible programming environments is evident. There are contrasts of visual-only generators (packages like Arkaos VJ or Motion Dive for example) and integrated environments for both audio and video signal networks (such as Max/MSP with Jitter or PD with GEM). Many programs support intercommunication with other software via MIDI or network protocols like OSC, enabling a user to blend their favoured visual and audio packages. Indeed, a general multi-modal trend is evident in the audio field, as video support is becoming a standard in previously audio-only packages, from NRT media-composing software like Pro Tools or Logic, to live sequencers such as Ableton Live. Innovative projects, however, are often built using more customisable or self-built software, from Dave Griffiths' *fluxus*, a live coded 3D animation environment, to Andrew Sorenson's *Impromptu*, a performance programming environment for audio and graphics, both of which use the language Scheme.

No doubt fashions will change concerning artists' favoured audiovisual set-ups.<sup>9</sup> In the following we concentrate more on general principles and aesthetics independent of equipment.

### **Approaches to contemporary audiovisual performance**

A point that's often missed is that contemporary audiovisual performance isn't just one type of artistic practice. There are various contexts in which such performance is taking place, and while there is substantial overlap, they often have different goals in mind.

In club VJing, the focus is often on ambient performance; although the VJ wants attention paid to her visuals, she also wants to provide an appropriate atmosphere for dancing and socialising, not to have audience members





Figure 7.1 VJ Olga Mink (Oxygen) (photo: Mark Trash)

focus solely on what's on the screen. This type of performance also tends to be very concerned with interpreting and integrating with the music played in the club. How tightly the VJ chooses to 'follow' the music is a matter of their preference and the influence of the audience, DJ and venue. The VJ often interprets the music by manually triggering, manipulating – and in some cases generating from scratch – animations, effects and video clips. Thus she improvises visuals with the music in much the same way as a jazz musician might improvise with an ensemble. The VJ may also choose to use hardware- or software-based automated sync features to directly 'visualise' the music to a greater or lesser degree. But whilst some software visualisers (like the iTunes energy tracking animations) might give the impression that automated visualisation is the central focus of mainstream audiovisual performance, VJ practice is usually far more varied and spontaneous. However, with VJing we more generally see a convergence of audio and visuals than with other contemporary modes of audiovisual performance.

A practice that's become increasingly familiar within electronic arts circles in recent years is that of 'live cinema.' Live cinema tends to make more use of a linear and/or narrative structure than does club VJing, and it is definitely less ambient. Audiences are often seated as though watching a concert

or a movie. Frequently the audio and visuals are created by the same artists and developed together, and often the music is developed as subordinate to the visuals in reaction to club practice. In any case, there is little emphasis on visuals solely as an interpretation of audio.

It's worth noting here that live cinema and VJing have a good deal of overlap – just as visual music filmmaking practice has drawn both from the structures of music and experimental narrative film, live cinema practitioners often see their work as music as well as narrative. According to HC Gilje, from 242.pilots, one of the best-known live cinema ensembles:

242.pilots have been compared to free-jazz groups, operating on the outer fringes of experimental cinema. Using our individual video instruments the three of us respond to and interact with each other's images in a subtle and intuitive way. The images are layered, contrasted, merged and transformed in realtime combining with the improvised soundtrack into an audiovisual experience. (Gilje 2005)

However, Gilje also notes:

People always look for some sort of story no matter how abstract and non-narrative the video is, and I find it interesting this dialogue between us and the audience in terms of creating meaning. Our improvisations are like taking a walk in some unknown landscape, and depending on the curiosity/attentiveness of each individual in the audience, they will all walk out of the space with their own unique experience. (Poole 2003)

Amongst audiovisual union groups, there is a great and healthy diversity of exploration, and some promising original takes on audiovisual performance itself are emerging, from the live audiovisual sampling cut and paste descendant from the scratch video circuit (EBN, Coldcut, Addictive TV) to audiovisual instrument models (chdh), a clash of narratives from a world of information (Farmer's Manual) or continual improvised renegotiation of mappings and audiovisual feedback (klipp av). Some groups are very adaptable to different contexts, where improvisation or preparation for specific shows allow them to attempt both VJ and live cinema sets on different nights. But touring acts working to be taken seriously within the art world often favour a live cinema setting, such as is exploited for expanded cinema style performances by groups like the Light Surgeons.

Both VJing and live cinema, while different in aim and drawing from various historical and contemporary influences, operate within a traditional performing arts context. A third, and lesser-known type of audiovisual performance practice operates within a performing arts context while also drawing from conceptual, performance art, and new media art practices. In the absence of a commonly agreed-upon name for this practice, we can

refer to it here as ‘conceptual audiovisual performance’. Examples of this type of practice include *WIMP*, by Victor Laskin and Alexei Shulgin, in which the visuals are composed entirely from elements of the Windows desktop of the performance computer; Sven Koenig’s *ScrambledHackz*, in which audio and visuals are composed in realtime from familiar music video clips controlled by the performer’s voice; *Movie Mincer* by Sergey Teterin, in which visuals are controlled by a hand-cranked, Soviet-era kitchen mincer; and Amy Alexander’s *CyberSpaceLand* and *Extreme Whitespace*, two projects in which all the visuals are comprised of text, and the gestures of office work and gaming are exaggerated to become mechanisms of stage performance. These projects function to varying degrees as ‘normal’ VJ or live cinema projects; however, there is additional intentionality. Audiovisual performance itself is approached critically as part of the content; in addition, other topics, such as the role of software in contemporary culture, are also part of the subtext.

### The psychology and analysis of AV

In this section of the chapter we consider some possible approaches to the theoretical analysis of audiovisual works. As a useful basis for such discussion we wish to draw the reader’s attention to some issues in the cognition of such work for an observer. In spite of a clear separation of modalities so common in everyday parlance, we must go beyond the treatment of the modalities as separate entities, and consider their combination. In psychology, this is the area of crossmodal perception and multisensory integration, where the sense data input through different sense organs may interact at the neural level (Stein and Meredith 1993; Welch and Warren 1986).

There is some evidence to suggest that the prototypical state of a neonate (newborn baby), especially within the first three months of development, is a world of highly intertwined sense data, with extensive neural pathways for crossmodal information transfer (Harrison 2001). Such pathways are substantially pruned in the brain’s natural early development, but some individuals (most likely determined by genetics) may retain more connections between modality-specific brain regions, giving rise to developmental synaesthesia. This condition is thus a lifelong, natural facet of existence for the synaesthete, whereby stimulus in one modality may automatically and involuntarily cause correlated activity in another representation. Whilst there are other possible cross-connections, directly relevant to our purposes is so-called ‘coloured hearing’, the projection of colours in response to sound, usually tones or spoken words.

It is inevitable in discussion of audiovisual art that the term synaesthesia intrudes, though its use in artistic practice has often not kept abreast of

scientific investigation. As a neurological phenomenon, real synaesthesia is automatic and highly personal, thus providing no basis for generalisation to an audience any larger than the individual synaesthetic artist themselves. In terms of the prevalence of the condition, estimates vary widely, from one in twenty-three (for all kinds of synaesthetic experience) to one in a hundred (for a specific type, grapheme-colour) in the latest large-scale study at the time of writing (Simner *et al.* 2006), up to one in two thousand or one in twenty-five thousand (Baron-Cohen and Harrison 1997). Whilst some artists have been discussed as synaesthetes, many cases, including Skryabin's, have been debunked (Harrison 2001), and there remains some controversy as to the existence of any increased prevalence amongst artists or innate predilection of synaesthetes to artistic endeavour (Ramachandran 2001).

Aside from the pure developmental synaesthesia, there can exist associative, learnt synaesthesia (tending to be more voluntary and less intense), and also many confounding cases of simile, metaphor and linguistic convention (a blue Monday, red for rage, the ringing of the clarion sunset). What has been dubbed 'synaesthetic art' is really just art where the mapping between audio and visuals is held constant and is of an obviously high correlation. It is voluntarily embedded into a work by the artist. Such direct one-to-one mappings are not necessary, nor ubiquitous in art. Whilst certain novel techniques might favour injective mappings of this kind, such mappings can often become tiresome if overused.

The balance of power between the modalities is often a central aesthetical concern in artworks, and has implications in the analysis of work. Often, there is an inherent bias, perhaps from the perspective of who judges or creates a work, and the conventions of that art form. For instance, the music analyst's treatment of opera might remain overly locked to the score rather than the staging and narrative, or vice versa.

There is an often expressed prejudice both in science and culture in favour of visual information (Posner *et al.* 1976), ranking vision above the 'second sense' of hearing. Yet sound provides an environmental cue for fast-moving processes of much higher resolution than video, with a typical delay (to cortex) of five milliseconds, as opposed to thirty to fifty for visual information. Film and audiovisual art systematically exploit this; think of the punch sounds accompanying movie fights. 'Sound helps to imprint rapid visual sensations into memory' (Chion 1994, p. 122).<sup>10</sup>

However, from an analytic perspective, many authors have expressed reservations about assumptions of visual primacy (Lipsomb and Tolchinsky 2005; Cook 1998). Cook (1998) recognises that the typical situation of 'film music', where music is a subservient underscoring of the narrative action, is inverted in much multimedia practice to 'music film', the primary message in audition being supported by visuals. The latter is certainly the case in many

instances of VJ practice, though again, we have noted that this factor may be inverted in live cinema back in favour of film – a tussle of the modalities indeed, often varying during the course of a show.

In practice, the combination of the two modalities may further empower both. But there are a number of strategies for the presentation of audition and vision, which may show varying degrees of object correlation and conflux of meaning (Chion 1994; Cook 1998). Even when a direct opposition of modalities is sought out, we have a tendency to impose our own alignments in making sense of the scene: ‘Certain experimental videos and films demonstrate that synchresis can even work out of thin air – that is, with images and sounds that strictly speaking have nothing to do with each other, forming monstrous yet inevitable and irresistible agglomerations in our perception’ (Chion 1994, p. 63). Our streaming capabilities in both visual and auditory modalities may only allow the simultaneous tracking of three to four objects at once; think of trying to follow the voices of a fugue, or individual birds in a flock. And when associations are clashed between modalities, the load on our attentional resources across many projector screens and loudspeakers can go beyond the level where we have a hope of following every event. This is demonstrated by Cage and Hiller’s spectacle *HPSCHD* (first performed 1969); their solution to this overload of live harpsichord, tapes, slides and films was to have the audience wander round exploring rather than trying to take in everything at once.

The psychology of audiovisuals is under study at the present time, and naturally a complex problem. Studies may reveal dimensions in our attentional resources, the inherent crossmodal pathways, and the interaction of meaning. The artist and analyst must allow that our apprehension of multiple simultaneously presented modalities transforms the situation where either one is solo.

## Conclusions

We hope that this chapter has demonstrated the divergent practices and given a flavour of the complex history of audiovisual performance. This rich field is populated by projects as diverse as Handel’s *Music for the Royal Fireworks*, the multimedia theatrical spectacles of late nineteenth century Paris, Xenakis’s *Polytopes*, Jean-Michel Jarre’s laser light shows, and the raft of current experimenters in (often digital) audiovisual art.

The case of multiple modalities has always been a consideration in art, but has become extremely explicit in recent multimedia practice. We have seen how contemporary VJ and live cinema work is grounded in such facets as colour organs, visual music, light shows and analogue video synths. Whilst

digital technology has empowered some novel aspects of live audiovisual activity, as well as making it highly accessible to producers and consumers, there is much to learn from historical approaches, and analogue experimental techniques and technologies are still evident and healthily represented in current praxis. Furthermore, many variations are to be expected in future art, from the foregrounding of conceptual and critical VJing, through new close unions of audio and visual artists, to novel narrative structures in live cinema work.

Again, it is not our place to prescribe that artworks should be predominantly audiovisual, with audio primary, or visualaudio, with visuals dominant, or indeed any precise blend of audio and visuals. Indeed, most new projects, where artists collaborate from the start from a crossmodal perspective, are seeking a better balance, a healthy coalition or competition between the two which may conceivably vary during the course of a show, or be subservient to some further unifying mathematical or conceptual principle. It is clear that audiovisual performance is now a mainstream within electronic music and provides a fertile ground for future work, especially if approached with an eye and an ear to its rich history and practice.