<u>Visual Music</u>

Researched and Presented by Maura McDonnell for Music and Image Course 2003, for students attending the M.Phil in Music and Media Technology, Trinity College, Dublin, Ireland

Hans Richter - Scroll Painting - Orchestration - Positive Negative Relationships - Time

"*...a vertical line was accentuated by a horizontal, a strong line connected with a weak one, a single line gained importance from many lines etc.*"

Richter and Eggeling founded the new art form of the scroll. Preludium (above) was Richter's first major attempt at the scroll. The development across the large, very long canvas forces a type of rhythmic expression into the painting. It is not something that the viewer can take in all at once, but instead is a journey from one end to the other. The eyes actively participate in forming the rhythm of the painting.

Crossing what Leopald Survage calls "the glistening bridge" from still to moving art.

> "The idea of visual music, a synthesis of motion, color and sound, informs the entirety of 20th Century Modernism. One cannot grasp the meaning of abstract art without an understanding of the importance that related arts and sciences played upon it. Most of modernist abstraction, in fact, is a consideration of synthesis, an attempt to convey visually the interaction of the senses or the impact of modern media such as photography, cinema..."
> http://artscenecal.com/ArticlesFile/Archive/Articles1998/Articles0498/OFischingerA.html

Abstract Animation

Animation is a visual technique that creates the illusion of motion, rather than recording motion through live action. The technique is used mainly for motion pictures. Animation can be created by animators,illustrators, filmmakers, video makers, and computer specialists.
Some abstract animation focuses on the abstract possibilities of moving visuals that are analagous to the more abstract experience of music.

In postwar Berlin, while Max Fleischer was making his first Koko the Clown cartoons in the U.S., three abstract artists named Walter Ruttmann, Hans Richter and Viking Eggeling created their history-making films, *Opus I, Rhytbm 21* and *Diagonal Symphony* respectively, thus crossing what Survage had called "the glistening bridge" from still to moving art.
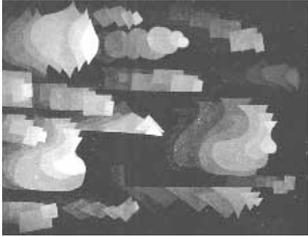
Cameraless Film/Animation

Many filmmakers/digital artists take music as their inspiration. Art through the ages has had its fair share of artists who focused on music as their subject matter and inspiration, however it is art/film that explores the condition of music or some aspect of musical composition that could be termed visual music.
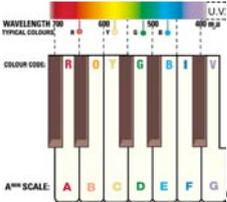
Painting and Music Form

Paintings that explore the metaphor of musical form. Abstraction in painters such as Klee and Kandinsky arose out of an expression or exploration of music. The non-representational aspect of music was explored analagously in picture - painting. The painting becomes a music in its non-representation. Many facets of music were explored

Example Painters

Contrasting Sounds 1923

Kandinsky
"Kandinsky, himself an accomplished musician, once said "Color is the keyboard, the eyes are the harmonies, the soul is the piano with many strings. The artist is the hand that plays, touching one key or another, to cause vibrations in the soul." The concept that color and musical harmony are linked has a long history, intriguing scientists such as Sir Isaac Newton. Kandinsky used color in a highly theoretical way associating tone with timbre (the sound's character), hue with pitch, and saturation with the volume of sound. He even claimed that when he saw color he heard music. "
http://www.ibiblio.org/wm/paint/auth/kandinsky/

Fugue in Red - Paul Klee

Paul Klee
Paul Klee's 1921 monochrome "Fugue in Red"painting is a clear metaphor for a musical form: the idea of different themes, frequently repeated by quite separate musical voices is nicely achieved. Klee, a gifted musician, gives the impression of movement from left to right, consistent with the direction in which music is read from a manuscript.
http://home.vicnet.net.au/~colourmusic/maistre3.htm
the various fugal themes were shown as different shapes progressing across a dark ground from left to right, leaving trails of after-images like the repetitions of the themes.

"RHYTHMIC COMPOSITION IN YELLOW GREEN MINOR."
Roy De Maistre, 1919

De Maistre and his Colour Music

DeMaistre was a musician turned painter. DeMaistre used Colour Charts., showing how specific musical notes corresponded to different hues to form a colour-music code.
http://home.vicnet.net.au/~colourmusic/maistre.htm

Colour Music Code.

Music by Luigi Russolo

Luigi Russolo

Though he joined the Futurists as a militant painter, Russolo soon turned his attention to music. He created a range of novel instruments, called *intonarumori*, and published "The Art of Noises" in 1916.
http://home.vicnet.net.au/~colourmusic/maistre1.htm

Manifesto: The Art of Noises
http://cmt.siba.fi/studies/Courses/2001-2002/_hidden/tutorials/crossover/Futurism/Manifesto_Art_of_Noises.htm

Techniques/Aesthetics/Parameters of Music relevant to Visual Music Work

orchestration

>*-time* - temporal changes over time of visual elements similar to music
>*-transformation* - elements transform overtime
>*-counterpoint* in visuals similar to counterpoint in music
>*-harmony* -
>-form -shape, geometrics - utilising forms, shapes and geometrics changing over time as the visual orchestration. Non narrative to abstract visual work...not neccesarily confined to this
>*-timbre*
>*-colour*

instruments

>*early colour sound instruments*
>>playing light like music, creating light sound shows
>*lumia - light and sound*
>*playing images like music*
>*generative images from music - music visualisers; software.*
>>Can be generated for realtime performance or can generate the visuals used to create a video that is then played with music in a performance.

rhythm

>*music editing of visuals/video* - chris cunningham
>synchronisation - synchronise rhythm of music with rhythm of visuals
>events in music matches events in visuals - dramatic approach - animation
>*tempo*

movement / motion

>*composing motion - movement elements in music match movement elements in music*
>*painting brought to life*

multimedia

>*-visuals created in response to music for purposes of multimedia performance. Music performance may involve live musicians.*

concepts and ideas

>-focusing on shared concepts, for example mathematical laws, biological, growth process
>-intermodal - filmmaker on vector new york salon site
>-sound art

acoustical laws/language

>-Exploring spatial info re music and image, surround sound,,,,multi screen video...immersive video. Joran Rudi (not great) Immersive Landscape DVD book a bit better
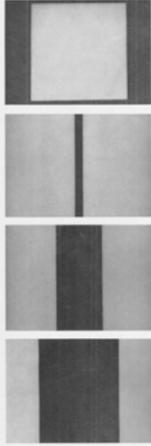
In each of the following sections, the focus is on showing examples that demonstrate the above parameters, techniques, forms of music identified. It is to be noted that each artist/filmmaker focused on for that particular parameter is dealing with multifaceted issues and techniques.

orchestration and composition
>   *-time* - temporal changes over time of visual elements similar to music
>   *-transformation* - elements transform overtime
>   *-counterpoint* in visuals similar to counterpoint in music
>   *-harmony* -
>   *-form* -shape, geometrics - utilising forms, shapes and geometrics changing over time as the visual
>   orchestration. Non narrative to abstract visual work...not neccesarily confined to this
>   *-timbre*
>   *-colour*

Orchestration in music can be also utilsied in visuals. The visual elements are like the intruments in an orchestra. In this section, examples shown are those that focus on visual elements within the screen such aas in film/video. In music, the instruments contribute to the timbre, rhythm, and that temporal evolution of timbre and rhythm. The patterns that music created via such means as harmony and counterpoint can also be emulated in visual elements, whereby they too can create patterns of couterpoint and harmony. The predeeding section on instruments is another procedure or approach to orchestration, however I have chosed to put instruments in a section of its own to draw attention to visual music work that focuses on building actual instruments or virtual instruments, in this section the focus is more on those works that compose visual orchestration in a analagous manner to music within the confines of a screen such as in film/video. It is in this area, that much can be done with visual and music combinations, focusing on creating relations between images and music that can now be crafted in digital editing software. Early innovators in this visual music craft via film, are a good source of inspiration to us today who now have such ease of access to visual parameters of an image for film/animation/video output.

counterpoint

In 1921 Richter created his first film, Rhythmus 21

Hans Richter (1888 - 1976)
Possibilities of Cinemetography

Main Point - Exploring Visual elements that transform through different stages creating a transformation and movement for the eye.

Hans Richter was one of the first to recognise the possibilities cinematography offered the artist. He participated in the first avant-garde film movement alongside other artist/filmmakers Leger, Duchamp, Man ray, Picabia, Cocteau and Dali. He was an exponent of Dada.
Scroll Paintings
Richter and his collaborator Viking Eggeling explored themes or instruments, that transformed from one form to another. They also explored time and continuity via their scroll paintings, the orchestration of a given instrument through different stages. He moved into film from experiments with scroll paintings.
Films
He handpainted films exploring Rhythm
FILM CLIP EXAMPLE RHYTHMUS 21
http://www.re-voir.com/html/richterprojection.html
ARTICLE: Easel-Scroll-Film by Hans Richter
available to download from http://rhythmiclight.com website
Related Topics
Dada - Dada Manifestos
Abstract Cinema Manifesto
Resources
http://www4.hmc.edu:8001/humanities/mus127s/richter02/richter02.html
While continuing his work in Dadaism, Richter was also studying counterpoint in music. Counterpart became another element, apart from rhythm, that Richter attempted to imitate in art. He would use what he termed "positive-negative relationshsips" to structure his pieces. Doing this in paintings, scroll paintings and then film.

Harmony
Whitney Brothers

Used simple algorithms for producing a pleasing time variant image by modulating spirals.
John Whitney Senior
http://www.siggraph.org/artdesign/profile/whitney/whitney.html
"The compositions at best are intended to point a way toward future developments in the arts. Above all, I want to demonstrate that electronic music and electronic color-in-action combine to make an inseparable whole that is much greater than its parts."
FILM EXAMPLE - DIGITAL HARMONY

Maura McDonnell (Ireland) - Music and Image Harmony

Utilising the geometric form of the Tetractys , that embodied the ratios of music harmony to create a visual form that changes over time. The ratios in this form represented the music intervals of the fourth, the fifth and the octave. These notes were created with FM synthesis and composed into a simple sound designed arpeggio music composition. The music was created first. The Tetractys form was also created. The temporal evolution of this form was crafted in After Effects. The intent was to create something of beauty. Since harmony was considered to be the embodiment of beauty. This clip is taken from the video Towards One
FILM EXAMPLE - "Beautiful" section - CLIP URL: http://www.soundingvisual.com/projects/tw1.htm

Timbre

Jeremy Hollister - Music For 18 Musicians (1999)

This video was an exercise in modern design. Our goal was to execute repeating visual themes, similar in approach to the repeating tonal themes of Steve Reich's music.
FILM EXAMPLE: from ResFest 1999 Cinema Electronica (www.resfest.com)

Brian (MusTechGraduate2000)

Created a great video that explores visually and temporally the timbre of a piece of electronic music with extraordinary transforming visuals.
EXAMPLE CLIP

Len Lye (active 1930 - 1960)

composing motion

Main Point - Direct Film techniques exploring the energy of Jazz Music

Len Lye was a New Zealand filmmaker

Lye believed this kind of work should be seen as composing motion as it reveals the body energy which connects the music and the images. [An Introduction to Film Studies, ed Jill Nelmes(p258)]

'A Colour Box (1935) - 5 minutes duration

This is a completely abstract film. It is created with lines and shapes stencilled directly onto celluloid, changing colour and form throughout. It has dominant lines throughout, with various circles, triangles and grids interupting and temporarily joining the image…The dazzling, dynamic images are set to contemporary jazz-calypso score, which has the effect of bringing further **energy** *and* **spontaniety** *to the piece. [An Introduction to Film Studies (p258)]*

Len Lye was a major figure in experimental filmmaking as well as a leading kinetic sculptor and an innovative theorist, painter and writer. He pioneered 'direct film,' film made without a camera, by painting and scratching images directly onto celluloid, by reworking found footage, by casting shadows of objects onto unexposed film, and by experimenting with a number of early color techniques.

"All of a sudden it hit me – If there was such a thing as composing music, there could be such a thing as composing motion. After all, there are melodic figures, why can't there be figures of motion?"

FILM EXAMPLE - Online Film Clip at: http://www.re-voir.com/html/lenlyeprojection.html

Barbara Neubeur

Direct Film

Contemporary German Filmmaker who also uses direct film techniques to create moving visuals that respond to music.

FILM EXAMPLE - Moondlicht

ONLINE FILM CLIP - Roots http://www.awn.com/mag/issue3.6/3.6pages/3.6neubauerroots.html

Roots: An Experiment in Images and Music - Roots is a metamorphes of colour and form which is painted, drawn and stamped directly on blank film and corresponds to rhythm and music

ONLINE FILM CLIP - Moonlight http://www.awn.com/mag/issue3.6/3.6pages/3.6moritzfilms.html

Richard Reeves

Direct Film

"Richard also works directly on film, also creates the sound by drawing it on the film…The sound, also hand-drawn by Reeves, consists of very beautiful visual images ranging from simple conglomerations of circles and triangles to elaborate structures like peacock feathers, snake skin, or spotted hides of exotic animals. Occasionally these drawn sounds were processed through regular electronic sound equipment to give them an echo or reverberation, which works very well with the fast-paced, evocative imagery."

ONLINE FILM CLIP - Linear Dreams http://www.awn.com/mag/issue3.6/3.6pages/3.6moritzfilms.html
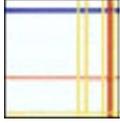
Related Topics

Direct Film

Note

Digital version of direct film (handpainting filmstock is the technique of rotoscoping. You can draw directly on the frame both in After Effects but also in Photoshop when you save a version of your movie and a small segment in the filmstrip file format.

Jarislaw Kapuscinski
Motion Painting to Music

creates compositions with sound and images. His site contains quicktime clips of his pieces. In one of his pieces Mondrian Variations, mondrian paintings move to Jarek's electronic music
EXAMPLE CLIP - Mondrian Variations available at his web site.
http://crca.ucsd.edu/~jarek/index_works.htm

Leopold Survage

Colored Rhythm

Leopold Survage created sequences of abstract paintings (in Paris) which he called Colored Rhythms, and patented what he considered to be a new art form. Failing to persuade the Gaumont Company to film his work in their primitive new color system, Survage abandoned his invention and spent the rest of his long life as a Cubist painter.

ARTICLE - *Leopold Survage and the spatial problem in painting* by Samuel Putnam,1929
Download from www.rhythmiclight.com website - TheGlisteningBridge.pdf

Two interesting sections are: *Rhythm and Art* and *On the Musical Analogy: Colored Rhythm*
in his overview of the picture, he says (p24)

> *"that the thing which painting has lost is rhythm. Painting lost the rhythm of the picture, for the reason that the picture has lost the rhythm of life, of the life of the world, of the universal, that universal with which the medieval primitives were so superbly in tune. For rhythm, the true ballet of life, is the genesis of art."*

The author claims that Leopold Survages paintings are the nearest thing he knows to 'visual music'. He also quotes Leopold Survafes discussion of his film Colored Rhythm (the article also overviews the mechanism of creating projecting this film from 1000 or so coloured plates) (p113)

> *"It is the mode of succession of their elements in time which establishes the analogy between music, sound-rhythm, and that colored rhythm of which I am announcing the realization by means of the cinema. Sound is the primordial element of music. The combinations of musical sounds, based upon the law of simple relations between the vibration-numbers of simultaneous sounds, for musical harmonies. These latter combine in musical phrases. Other factors intervene, the intensity of sounds, their timbre, etc.... But music is always a mode of succession, in time, of various sound-vibrations."*

Stephen Arthurs

FILM EXAMPLE - PRESTO
Creates rhythmic visuals that synchronise with the rhythm of the music.

Chris Cunningham

"With the help of digital technology, Cunningham reveals his extraordinary talents in the synchronization of sound and visual works that he mastered through MTV productions. His anatomical, inner analysis of human bodies and the expressions of their movement, combined with sound effects, provides visceral stimulation to viewers"
Film Example: All is Full of Love, 1999
Music video
http://www.nydigitalsalon.org/salon_10/artwork.php?artwork=66

instruments
> - *early colour sound instruments*
>> playing light like music, creating light sound shows
> - *lumia - light and sound*
> - *playing images like music*
> - *generative images from music - music visualisers; software.*
>> Can be generated for realtime performance or can generate the visuals used to create a video that is then played with music in a performance.

An approach to creating visuals and music that comes close to playing a musical instrument. There has been lots of work done in different art/film/music categories that have explored the playing of visuals and sound. Visuals in this sense can be colour, shape, actual images such as pictures and photographs, or the processes can focus on transforming image/visual parameters and manipulating a given image or visual parameter to generate visuals

Early Colour Sound Instruments

Physical Instruments were created that could play visuals in particular colour and light in the manner in which a musician can play a music instrument.
See my compiled illustrated resources re this topic and visual music available at :
URL: http://www.soundingvisual.com/mi

See also Golan Levins thesis: *Painterly Interfaces for Audiovisual Performances*. in his Appendix A p127 - 137 for A timeline of instruments of Color-Music Performance.

Overview of Colour to Sound Scales compiled by Fred Callopy on his website Rhythmic Light
http://www.rhythmiclight.com/archives/ideas/colorscales.html

> "The first device capable of synchronizing imagery with music was developed in 1734 by **Louis-Bertrand Castel**, a priest, mathematician and philosopher, who created an instrument which provided coloured light in response to music . His instrument, a modified clavichord, contained coloured tapes illuminated from behind by candles.
> Over the centuries, the synchronization of imagery with music has been known as ocular music, visual music, color-music, colour organ, light organ, and music for the eyes (Burnham 1968; Castel 1725; Eisenstein 1947; Klein 1927).
> ...Even though this field of study originates in the early eighteenth century, some contemporary researchers who are pursuing similar work with computerized equipment claim the concept began with sequencing software and real time computer graphics (Pfitzer 1991). In Colour-Music: The Art of Light, a book devoted to the exploration of synchronized sound and image, Adrien Bernard Klein (1927) wrote "...it is an odd fact that almost everyone who develops a color-organ is under the misapprehension that he, or she, is the first mortal to attempt to do so." http://aesthetic-machinery.com/articles-way-of-life.html

Louis-Bertand Castel (1688-1757) - Ocular Harpsichord

1734 - Castel was a mathematician who constructed a colour organ called a Clavecin Oculaire, based on a harpsichord. The action of the harpsichord was coupled to the display of transparent and colored tapes.

Bainbridge Bishop - Color Organ

1877 - Bishop was interested in the concept of painting music. He constructed a device that

sat on top of an organ, allowing light to be projected onto a small screen as a piece of music was being performed on the organ, His projections used daylight at first and then an electric arc.

ARTICLE - *A Souvenir of The Colour Organ with some suggestions in regard to the sould of the rainbow and the harmony of light* By Bainbridge Bishop 1893
View at www.rhythmiclight.com website - HarmonyOfLight.pdf

Wallace Rimington
Color Organ

Rimmingtons Colour Organ

1893 - Rimington patented his device that he called a color organ. The bellows of this device was coupled to an electric colored light projection system.
Book: Colour Music: The Art of Mobile Colour by Rimmington 1911.
His color organ had considerable success in concert halls with his performances of compositions by Wagner, Chopin, Bach, Dvorak. It also formed the basis of the moving lights that accompanied the 1915 New York premiere of composer Scriabins synaesthetic symphony Prometheus: A Poem of Fire.
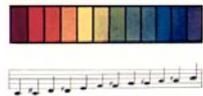
Chromatic Scale in Colour and Music;, Showing Correspondences of intervals when C = lowest spectrum red.

Scriabin
Synaesthesia - Prometheus, the Poem of Fire (1910)

During this century, the most well know composition using synchronized imagery and music is probably Scriabin's Prometheus, the Poem of Fire, written in 1910 and first performed in New York City in 1915. The piece used the **Chromola**, a manual device which presented various patterns of light as indicated in the score.
See: www.lumen.ne/rekveld/files/newart.html

Although composers and visual artists have created other works which incorporated synchronized image and sound during this century, the most refined utilization is found within sound film.

Light and Sound

Thomas Wilfred
LUMIA PERFORMANCES

In 1922, Wilfred made his first public appearance with his Clavilux, hereby marking a concrete use of light for artistic purposes. ". . .on January 10th, 1922,

Article: Thomas Wilfred, *Light and the artist*, The Journal of Aesthetics & Art Criticism, 1947
Thomas played lumia recitals and in 1930 founded the Art Institue of Light for research in Lumia in New York. He discusses and overviews the history of Lumia, the art of light. He defines Lumia as an aesthetic concept,

interesting quote

> *"Aristotle unwittingly launched the unfortunate changeling "Color Music" with the following passage in De Sensu;*
> *"Colors may mutually relate like musical concords for their pleasantest arrangement; like thos concodrs mutually*
> *proportionate….Aristotle believd a definite physical relation existed between the vibrations of light and sound; that each*
> *note in the musical scale had a definite color. Science has long since disproved this theory, .."*

Article focuses on the performance aspects of lumia.

Other Resources: http://www.gis.net/~scatt/clavilux/clavilux.html

Paul Friedlander
LIGHT SCULPTORS
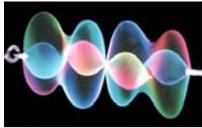
sees his light sculptors as a visual harmony. He discovered physical properties re his sculptors analagous to musical harmony

http://www.paulfriedlander.com/

Nam June Paik
PLAYING WITH LIGHT

Nam June Paik's seminal work, Magnet TV (1965), uses a large magnet which can be moved on the outside of the television set to change the image and create abstract patterns of light.

http://www.nydigitalsalon.org/salon_10/artwork.php?artwork=27#

WEB VIDEO CLIP at url:

Playing Images

A physical type interface is provided so that the user can play images in a similar manner to playing music. The focus is on the images, images are mixed, added or subtracted together. some installations/ web work provide interfaces to play images or play with images, whereby images are played in an intuitive manner similar to a musician playing a music instrument.. The interface for changing images or image parameters are analagous to an instrument. VJ, Video Synthesis, Video Mixing could come under this category also.

Don Ritter
INTERACTIVE VIDEO

Creates Interactive Video performances, whereby the images can be manipulated via music controls. He has collaborated with musicians such as bassist Lisle Ellis (Montreal), saxophonist Amy Denio (Seattle), keyboardist Thomas Dimuzio (Boston), the CEE (Toronto), guitarist Nick Didkovski (NYC) and trumpeter Ben Neill (NYC). For these events, the form of the responsive imagery was typically based on the performer's instrument and playing style.

> "After having collaborated with various improvising musicians, I became increasingly aware that most visual media are unable to combine temporally a work's creation with its experience by an audience. Although I have grown accustomed to the process of creating works alone in my studio and later presenting these works in a gallery, the ability to create an interactive video live before an audience has become an exciting manner of presentation which is completely different from other visual media. Perhaps the most appealing quality within interactive video is that a work seems to become alive when it responds to stimulation, such as improvised music. When a visual medium can be manipulated live before an audience, an audience observes a development rather than contemplating a finished product."
> http://aesthetic-machinery.com/articles-way-of-life.html

VJ

This site contains lots of video clips for example vj artists that can be viewed online or downloaded. Example practitioners and video clips to view on site.
http://www.vjtv.net/visuals/

"Within the vast world of visuals are a variety of mediums of artistic expression. Most content is digitally based, composited and mixed by a variety of CG and VJ software. The purpose of the content varies as well. Some are short self-contained movies, while others are clips designed to be mixed by VJs. Other clips are exerpts from actual VJ mix sessions. The following content represents only a small selection of work by visual artists from our show".

Music Animation Machine
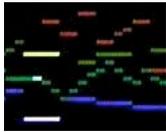
Stephen Malinowski's Music Animation Machine. He plays an electronic keyboard and out comes this animation. In the MAM computer program, each rectangular window represents a note or chord whose vertical position on the screen indicates its pitch, and whose horizontal position corresponds to timing. As the score scrolls from right to left, notes that are stacked vertically atop one another sound simultaneously and last for the length of the rectangle - staccato notes appear as narrow blips, and half-notes or sustained chords as horizontal bars.
http://www.well.com/user/smalin/mamhist.htm
DOWNLOAD VIDEO CLIPS at this site also in the animations section
FILM CLIP EXAMPLE by stefans argent at http://stefansargent.com/chopinvideonew.html

Piano Optophonique

The "*Piano Optophonique*" created by the Russian Futurist painter Vladimir Baranoff Rossiné (1916)
http://www.audiovisualizers.com/toolshak/vidsynth/early/early.htm

web examples:

Pianographique

 - really excellent computer method of playing images......the keyboards is used as the input to play images, creates really interesting image effects. Would be good to see a image/music version of this, whereby the keyboard can be used to play audio and images.. Check it out
URL: http://www.pianographique.org

Amorphoscapes

http://www.amorphoscapes.com/
audio visual relations between art and science
"Among artist/programmers in the world of reactive/autogenerative software, Stanza stands out as a Jedi's Jedi. His pieces not only develop gorgeously and react interestingly, but he has the painterly ability to communicate thematically in the amorphous language of abstract visuals. His 'amorphoscapes' are a meta-series of reactive Director environments, each with its own vibe. One series is warm and retro. Another series is industrial and futuristic. Each series contains multiple pieces, and each piece contains multiple variations. Kind of like a Bach fugue illustrated by Kandinsky in Lingo. - Curt Cloninger "
CHECK OUT THIS SITE LOADS OF ARTISTIC IDEAS

Atmospherics

Generative

Visuals /Images are generated from audio via software hardware programming etc.... for example music visualisers [see links at end of document]. The approach can be to generate real-time visuals that are played in an audio visual performance or to use software, generative processes to generate visuals for video and music playback later. Parameters re image are defined that are triggered with audio events.

Sound Creates Visuals

Tom DeWitt

In his article Visual Music: Searching for an Aesthetic.
He concludes that a new art form, visual music is emerging. Its aesthetic can be deduced partially be examing key features of human visual perception. He compares the relationship between musical harmony and the human hearing mechanism, whereby we appreciate the geometric progression in sound frequencies because our ears seem to produce overtones...applying this to site, he suggests that the eye has intrinsic physical properties that point toward an aesthetic - a visual harmony aesthetic. Gives an account of some of his own work and good. He discusses Visual Harmony, Color, Depth Dimention, Time Dimension, Symmetry, Threshold Borders-Drawing and Bounded Areas-Painting in relation to visual perception. Talks about the use of the piano for visual music performance...He also discusses other controllers, he mentions Laurie Spiegels graphic mouse that triggers chordal structures, his own Pantomation - a conductors baton...Quote from article

> "My notation for visual harmony presumed that a composition was to be constructed from a fixed vocabulary of visual notes, much like the diatonic scale. John Whitney affirms this assumption of mine. In a manner remarkably similar to aural harmony, lagarithmic spiral have stable structures only at fixed intervals of frequency. If a piano keyboard is used for a **musical performance** it can be used simultaneously to produce visual harmony based on Whitney's digital harmony. A demonstration of this technique came in 1974 when Laurie Spiegel, Phil Edelstein, Randy Cohen and I recorded "Studies for Philharmonica" in a live improvisational setting..."

EXAMPLE - PHILHARMONICA
Based on the logarithmic spiral. It was realised using an audio synthesiser to draw pictures. If a sine and its cosine wave form are displayed on an oscilloscope as the vertical and horizontal inputs, a circle or oval will be produced. If these waveforms are amplitude modulated by wave forms at frequencies higher than the sine wave frequency, the circle is pinched into a shape like a flower.....

Golan Levin - URL: http://www.flong.com/

software environments that enable the simultaneous performance of moving image and sound. You can download video clips of his visual music performances.

Fred Callopy
Imager Software for Max

Fred Callopy creates visuals in response to music. The visuals are generated with a sofware program called Imager, which runs under Max on Macintosh computers. His website http://rhythmiclight.com is an excellent resource re visual music. The content of his site deals with 'an introduction to the fine art of playing images in the way that musicians play with sound. It is an art that has been almost three centuries in the birthing and has gone by a variety of names-visual music, color music, audio-visual music, motion graphics, synchromy and lumia. He also provides links to other visual music artists websites
EXAMPLE CLIPS on his website at:
http://rhythmiclight,com/galleries/index.html
FILM EXAMPLE - Following link
http://www.rhythmiclight.com/catalog/UnauthorizedDuets.html

Tim Redfern (Dublin, Ireland) - http://www.eclectronics.org

Tim works in the field of New Media in Dublin. He creates programmes to create visauls from audio.

Videos created with his software for composers/audio artists, can be downloaded from the internet.
For example Americhord track Snowstorm ulilised T Redferns video software. The videos can be seen online
Americhord website - URL: http://www.americhord.com/
For example Decal's electronic music
Decal website- URL: http://www.decal-artifacts.com/

Visuals Create Sound

Toshio Iwai, Japan

***Piano-as image media*, 1995**

Iwai visualized an image of a piano played by light in his *Piano–as image media.* Audience members operate a trackball to draw lighted dots on a grid. The flashing dots move, and as soon as they come close to the piano they accelerate and strike a key. With the sound of the piano, a three-dimensional figure pops out of the keyboard. The audience-drawn shapes play the actual piano. The sound then produces colors and figures.
Installation Details
http://www.iamas.ac.jp/~iwai/artworks/piano.html
A little more difficult to get information on, however some software can create sound from visual information.
Example URL:
Note
AfterEffects provides a facility whereby, one can define amplitude information in the audio to any other filter or property on a visual layer.

Related Topics
What parameters can be utilised in visuals and music to create a generative piece

Multimedia

multimedia
>   *-visuals created in response to music for purposes of multimedia performance. Music performance may involve live musicians.*

DJ Spooky

http://www.nydigitalsalon.org/salon_10/artwork.php?artwork=75
DJ Spooky and 47, United States
Saturation Engine, 2001
Images and sounds of current events are mixed live in a multimedia collage. This represents a ìDJî performance of emotionally loaded imagery and sound that puts the listener in the middle of an uncontrollable world.
http://www.djspooky.com/
VIDEO CLIP
http://www.djspooky.com/index2.html
REMIXING TOPIC
Rebirth of a Nation - Paul D. Miller remixes D.W. Griffith's 1912 film"Birth of a Nation"
http://www.djspooky.com/articles/rebirth.html
DUCHAMP REMIX
http://www.moca.org/museum/digital_gallery/pmiller/opener.html
LINKS TO CLIPS AND ESSAYS

Rebirth of a nation remix clip available here (15mbs)*****DOWNLOAD TCD
http://www.djspooky.com/art.html

'Junk Box Fraud' and 'Metropolis Mutabalis'- Video by Gerry O'Brien and Hugh Reynolds (Ireland)

Created video pieces to music by Irish Composer Donnacha Dennehy. Junk Box Fraud is a video piece in respons
response to musicians and electronics (brilliant work). Metropolis is a 3-Screen abstract video in response to
Donnacha's compostion Metropolis Mutabalis.
EXAMPLE CLIPS - JunkBox Fraud and Metropolis Mutabalis

resources - links

Links page to various music visualisers
http://www.microweb.com/ronpell/MusicVisualisers.html
http://www.atmospherex.com
http://www.arkaos.net/site/en/index.html
http://www.rhythmiclight.com/studios/sites.html

Contemporary Artists
ARTISTS SELECTED AT VECTOR NEW YORK DIGITAL SALON 2003
http://www.nydigitalsalon.org/salon_10/artists.php?nav=artists

Easel-Scroll-Film by Hans Richter
available to download from http://rhythmiclight.com website

Visual Music: Searching for an Aesthetic by Tom DeWitt LEONARDO, Vol20, No. 2, pp. 15-122, 1987
available to download from http://rhythmiclight.com website

Interactive Video as a Way of Life by Don Ritter, originally published in "Music Works," v. 56, p. 48-54, 1993
http://aesthetic-machinery.com/articles-way-of-life.html

Interface Metaphors and Signal Representation for Audiovisual Performance Systems by Golan Levin
http://acg.media.mit.edu/people/golan/thesis/proposal/

Articles on the New York Digital Salon Site from the Vectors Conference
Complete List of Essays
http://www.nydigitalsalon.org/salon_10/essays.php?nav=essays

Music and Life by Joel Chadabe
http://www.nydigitalsalon.org/salon_10/essay.php?essay=10

Ten Key Texts on Digital Art: 1970-2000 by Lev Manovich
http://www.nydigitalsalon.org/salon_10/essay.php?essay=11

The Antennae of the Race by Nina Colosi
http://www.nydigitalsalon.org/salon_10/essay.php?essay=4
> *Recently, she produced and created evo1, an exhibition of art and music created by artists responding to a world increasinly influenced by technology (www.evo1.org). evo1 premiered in Mosco in October 2001 and will tour internationally.*
> www.evo1.org

Renderings of Digital Art by Christiane Paul
http://www.nydigitalsalon.org/salon_10/essay.php?essay=5
> *Quote..*
> *In 1968, the exhibition Cybernetic Serendipity at the ICA in London presented works ranging from plotter graphics to light and sound environments and sensing "robots." These now seem only like the humble origins of digital art (and could be criticized for clunkiness and overly technical approaches). Yet at the same time they still show characteristics and narratives of the medium today. Now there are works focused on the aesthetics of machines and transformation, such as painting machines and pattern or poetry generators. Others are dynamic and process-oriented, exploring possibilities of interaction and the "open" system-a "post-object." In his articles "Systems Esthetics" and "Real Time Systems" (published in Artforum in 1968 and 1969, respectively), Jack Burnham already explored a systems approach to art: "A systems viewpoint is focused on the creation of stable, ongoing relationships between organic and non-organic systems" [1]. In modified form, this approach still holds a noticeable position in today's critical discourse on digital art.*
> www.intelligentagent.com
> http://airport.whitney.org

Ten Myths of Internet Art by Jon Ippolito
http://www.nydigitalsalon.org/salon_10/essay.php?essay=6
> *His collaboration Fair e-Tales can be found at http://www.three.org. The Edge of Art, a book on creativity and the Internet revolution is forthcoming from Thames & Hudson.*

Past, Present and Future Tense by Gregor Muir
http://www.nydigitalsalon.org/salon_10/essay.php?essay=7
> *Given the task on hand, "to select new media works that have changed or are impacting the course of new media art and music," the author, along with his colleagues, set out to identify the fullness of the digital spectrum. The article explains his selections of artwork by consciously establishing a part, present, and future media collection. He begins with a 1965 pice from Nam June Paik and ends with JODI.org, acknowledging the large jump mode from past to present media. Concluding the article with a look at the history of digital art, the author raises comparisions and dilemmas that allow readers to question and reflect on the status of new media art.*
> *QUote*
> *In 1998, Gebhard Sengm¸ller, in co-operation with Martin Diamant, G¸nter Erhart, and "Best Before" produced Vinyl-Videoô (1998), "a new, wondrous and fascinating development in the history of audio-visual media." VinylVideoô makes it possible to store video (moving image and sound) onto analog long-play records. Playback from the VinylVideoô Picture Disk is made possible with the VinylVideoô Unit, which consists of a normal turntable, a special conversion box, the VinylVideoô Home Kit, and a television set. "With the extremely reduced picture and sound quality, a new mode of audio-visual perception evolves. In this way, VinylVideoô reconstructs a home movie as a missing link in the history of recorded moving images, while simultaneously encompassing contemporary forms of DJ-ing and VJ-ing."*

Ten Dreams of Technology by Steve Dietz
http://www.nydigitalsalon.org/salon_10/essay.php?essay=8

Art in Digital Times: From Technology to Instrument by Benjamin Weil
http://www.nydigitalsalon.org/salon_10/essay.php?essay=9
> *The author's appraoch to selecting digital art encompasses four major themes. The first relates to reprocessing information and the use of sampling as a means of representing the culturescape we inhabit. The seond involves the emergence of internactive environments and installations. New forms of storytelling frame the third view and the final theme relates to bridging the categorical gaps, as demonstrated in computer generated multimedia work.*

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Space, Oskar Fishinger, and Desktop Computer Animation. Copyright by Byron Grush
http://www.swcp.co/~asifa/grush2.htm

Film Alchemy by Leah.M Bosworth
http://www.swcp.com/~alchemy.htm

Links to articles re visual music
http://www.lumen.nu/rekveld/files.html

William C. Wees, "*Light Moving in Time, Studies in the Visual Aesthetics of Avant-Garde Film*" , UCP, Berkeley 1992)

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Fred Callopy's website Rhythmic Light provides links and bibliography etc re visual music references
http://rhythmiclight.com/archives/bibliography.html
Good Resource re articles and books that deal with the topic of visual music. Extensive List - worth checking out.

PDF articles available to download on his website.

Fred Callopy and Robert M. Fuhrer "*A visual programming language expressing visual rhythms*" Journal of Visual Programming Languages 2001, 283-297
This article documents an object-based toolkit Sonnet+Imager for creating instruments that produce abstract graphics in real-time. Identifying principle limitations in the Max based graphics engine master.

Fred Callopy, *Color, form, and motion: Dimensions of a musical art* of Leonardo, Vol 33, No 5,2000 355-360
Play images in the way that musicians play with sounds.

Fred Callopy, Robert M. Fuhrer, David Jameson "*Visual music ..visual programming language*" IEEE Symposium on Visual Languages 111-118

Tom DeWitt, "*Visual Music: Searching for an aesthetic*" Leonardo, 20(115-122)

Hans Richter, "E*asel-Scroll-Film*", Magazine of Art, February 1952
Thomas Wilfred, "*Light and the artist*", Journal of Aesthetics and Art Criticism, June 1947, 247-255 [PDF to download]
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Gene Youngblood, *Expanded cinema*, New York: E.P. Dutton, 1970
This book relates synaesthesia, post-modernism, cybernetics, ecological awareness and aesthetics to tv, holography and other emerging entertainment narratives. A full text version of this book is available to download from the Art and Science Laboratory site

Fine Art Animation by Cecile Starr, 1987
Reprinted from *The Art of the Animated Image*, edited by Charles Solomon, published by The American Film Institute. Available at the following url: http://mypage.direct.ca/w/writer/FAA.html

Quote on topic of women in animation
"University film schools and art colleges helped create today's large and productive generation of young animation artists, by offering opportunities to learn the manual skills and providing access to new, complex and costly equipment. They also opened the door to women for the first time in the history of American animation, which has led to refreshing new styles and subjects, often reflecting a decidedly feminine point of view. Recent films by female animators include Maureen Selwood's The Rug, selectively colored line drawings based on an Edna O'Brien short story about an Irish countrywoman's life of disappointments; Joanna Priestley's Voices, humorous self-portraits about fear and uneasiness; Amy Kravitz's River Lethe, near-abstract graphite drawings and rubbings on paper, evoking life beyond consciousness; and Karen Aqua's autobiographical catharsis, Vis-a-Vis."

Chapter 15: Experimental, Avant-Garde and Art Films By John Halas and Roger Manvell, 1959
Reprinted from *The Technique of Film Animation* (Focal Press). Available at the following url:
http://mypage.direct.ca/w/writer/FAA.html

A Brief History of Synesthesia in the Arts
http://www.users.muohio.edu/daysa/art-history.html

A Brief History of Synaesthesia and Music by Sean A. Day. http://www.thereminvox.com/printstory/28

Colour, Music, Light
http://www.ex.ac.uk/drama/strand/history/colourmusic1.htm

Useful Links Page
http://wozzeck.esm.rochester.edu/ims/links.html

Notes

Paul Friedler outlines 3 types of visual music
http://www.paulfriedlander.com/text/visualmusic.html

First Kind: Visual Music is a means of converting music to images using a system or set of rules which can be implemented as a machine or computer code. There are screen savers which respond to sound, but apart from synchronisation of sound and image, what do they do? How can they express the content of the music? This idea has been around longer that either the computer or the 'sound light converter' found in night clubs. Some famous people have speculated about this, Goethe for one, and Beethoven also was known to have produced a table of equivalence between musical key and color. Beethoven and Goethe did not agree as to which color corresponded to which key and the whole process of establishing a 'sound light' relationship is an ongoing and unfulfilled activity.

Second Kind: Visual Music is a means of expressing music in visual form requiring the active involvement of an artist, designer or director to interpret the music and find the means to express it visually. This is perhaps too narrow a definition since many of the events and happenings of the 60s involved a collaboration between different forms: theatre, dance music, etc. where no single element prevailed but the performance was a kind of Visual Music. This is also where the word multimedia originated. Rock videos could be said to fall into this category but the most wonderful examples are more abstract and can be spell binding, awesome even. The presentation of a Pink Floyd concert is a perfect example of this second form .

Third Kind: Visual Music has no relationship with music as such, although it maybe viewed with or juxtaposed with music. Visual music is about creating visual relationships which change over time. It is primarily about abstract qualities of movement or changing form or color. This is the kind of visual music closest to my own sensibilities, it is perhaps the most illusive or least understood form. The earliest proponents used mechanical or optical means. The Whitney Brothers started making what would now look like psychedelic (before the word had been invented) animation's in the 50s and 60s. The first great creation of Visual Music to receive widespread notice by the public was the Stargate sequence in the movie 2001. In the 70s, artists like Tom DeWitt and Richard Monkhouse started creating special analogue electronic 'image synthesisers'. More recently with the advent of desk top computers, there has been an explosion of activity in this area. But much of this work is animation which is restricted by the fact that it must have a beginning, middle and end. I prefer a form without time limits, where you can watch for a minute or an hour, it all depends on your state of mind. No beginnings, no endings, no fixed form, ever changing, every time you return to the piece, something slightly different happens.

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Topics
adding movement to images photographs, fine art and graphic design in an analagous manner to music
Performance - instruments to perform visual music to computer instruments and controllers