

ADRIANO ABBADO

Excerpt from the bachelor's thesis of

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CHAPTER I (1978-1988)

From the beginning to the Venice Biennale (1978-1986)

Adriano Abbado was born into a family of musicians in Milan on March 16, 1958. In 1978 he received his diploma from the *Giuseppe Verdi Conservatory* in Milan where he majored in Electronic Music Composition under Maestro Angelo Paccagnini. Abbado began experimenting in the visual arts while still a student. The Scottish director Norman McLaren⁴¹, who is closely associated with *pixilation* (step one animation of real characters), drawing on film without a camera, and other new processes, was a major early influence. McLaren will be forever linked to these types of procedures that over time will encourage other directors to experiment with making their own movies using a wide variety of techniques and materials (e.g. sand, pearls, pins, tissues, paper cuts and computers) and create new forms of expression that enriched the art form of cinema.

Abbado's musical interests, in addition to electronic and concrete sounds, also included elements of pop music, particularly *Whole Lotta Love* by *Led Zeppelin*, *Ummagumma* and *Atom Heart Mother* by *Pink Floyd*. Before enrolling in the Electronic Music Composition class, Abbado created two tapes of concrete sounds, ironically dubbed *Perfezione n. 1* e *Perfezione n. 2*. With them, Abbado tried to recreate the feeling of different environments and the research he conducted led to a project that would later be known as Virtual Reality (Appendix II).

During these early years, Abbado was interested in the interaction of light and color and made prints based on the superimposition of slides. He also made an abstract hand-painted film (*Pinocchietto*), and super-8 movies in which distorted or otherwise modified images suggested fantastic landscapes and dreamlike visions.

The images used were usually taken during his travels and, borrowing a concept typical of frequency modulation, were often divided between a carrier image and a modulating image.⁴²

During this period Abbado received significant encouragement from the sculptor, painter and multimedia artist Paolo Carosone, who had worked in various European countries, Japan and the United States, where he had been in touch with John Whitney, James Turrell and other artists. Carosone motivated him to expand his knowledge of English and to investigate digital technology, at the time still an emerging field. Abbado cites Carosone as a fundamental figure in his artistic development, an extraordinary master and an irreplaceable reference point.

Also in 1978, Abbado takes computer music classes at C.N.U.C.E. in Pisa and “arts e informatique” (composition musicale/création visuelle) at I.R.I.A. in Paris.

From the very beginning of his career, Abbado showed an interest in electronic images and video synthesizers. At the studios of *RAI* (Italian National Radio & Television) he was impressed by an experimental tape with colored shapes and analog images.

Among his first experiences after graduating, was participating, together with the photographer Giovanni Bai, in the exhibit *In Negativo*, at the *Arengario* in Milan in 1979. Abbado's pictures, based on the destructuralization of images and the decomposition of colors, already reflected a form of research focused on technological and linguistic aspects of visual communication.⁴³ The photographic image is a basic medium that can be treated by means of different techniques (manual, optical, chemical, editing) that modify and give a new value to the initial point of

⁴¹ founder, in 1941, of the Department of Animation of *NFB* (*National Film Board*), Ottawa.

⁴² Intervista ad Adriano Abbado, “Bit” n°40, June 1983.

⁴³ Review published on “Quotidiano dei lavoratori,” February 21th, 1979.

reference. Moving from there to digital technology was a short step for Abbado who at the beginning of the Eighties created his first digital animations.

Digital technologies, music and the visual arts became the axis around which Abbado's work rotated, his pieces communicating in an audiovisual language that always encompassed these three components. These three expressive media were used in equal proportion in his work, varied according to the linguistic structure of each component and the specific qualities of the medium used. Beginning with a general interest in the transposition of ideas from their original context to a new and different one, Abbado sought an original rather than a traditional approach to explore the relationships between visual and musical languages. This was based on a series of ideas tied to thoughts about the future of electronic music. Abbado saw this future closely related to the chances of finding new ways to create, and given the growing importance of visual communication the association of music and images had the highest priority. The computer, besides offering almost infinite ways of modifying images, is very adaptable and can deal with both audio and visual instruments. Because of this, it was the ideal tool to connect images and music. The goal was always esthetic. The main problem was giving life to objects that could be considered mundane. Adapting to this new art form required Abbado to establish new canons and criteria as well as to develop his own recognizable style. "Style is a personal and specific way with which each artist deals with language in order to get the desired products," Abbado said in an interview with Antonio Caronia.⁴⁴ Writing software became comparable to writing a poem, however in this case the language and syntax of the computer articulated and produced esthetic objects: sound-shapes. It did not matter whether it was the artist himself or a technician doing the writing, unless these affected the timetable and costs involved with developing the work. Abbado operated both ways, sometimes writing the software himself, sometimes asking someone else to write it, following his instructions.

Between the end of the 1970s and the beginning of the 1980s, motivated by his father who knew that area very well, Adriano Abbado traveled to Latin America (Mexico City, Tegucigalpa, Bogotá, Quito, Guayaquil, Lima, Montevideo, Rio de Janeiro) where he gave a series of concert-lectures. At that time the political and social climates of those countries were stormy and Abbado connected with a bizarre artistic environment while maintaining ties to Italy's Embassies and Cultural Institutes. The works he created upon returning home, like *Viaggio*, *Satellite* and *Voyager*, reflect that period, his love of travel and the experiences he had in those countries, where he was exposed to ancient indigenous civilizations. In those works one finds Abbado's two great passions, both related to his drive towards the unknown: astronomy or anything connected with the deep space, and archeology and ancient cultures. The latter, stimulated by his contact with native peoples during his journeys in Guatemala, Peru, Colombia and Bolivia, found further outlets in his activities with the group *Futuro Antico, suoni e immagini dai primitivi all'elettronica*.

The members of this group included Riccardo Sinigaglia, Abbado's former colleague at the Conservatory with whom he had taken memorable trips to France and Morocco, and the musicians Walter Maioli and Gabin Dabiré. Its goal was to study, learn and disseminate the music of so called "primitive" cultures and apply the tenets of fields ranging from ethnomusicology to electronic music and from theatrical to audiovisual systems to promote concerts combining projections of images and staged pieces with music and dance. Beginning with the idea that the growth of communication technologies had abruptly put in contact vastly different cultural realities, *Futuro Antico* made a statement about the interactions of extremely distant worlds, and on the transformations resulting from the intersection of world views and thought models from different cultures.

Abbado's role within this group, whose most important activity was the *Festival del Teatro di Piazza* in Sant'Arcangelo di Romagna, was limited to visual projections, yet the experience was an

⁴⁴ A. CARONIA, *Numero & Arte*. "AlterAlter," n°3, August 1985.

important one from the cultural and social points of view, especially in regards to his association with Maioli, who had spent many years in Nepal.

Abbado found "primitive" cultures particularly interesting for another reason: indigenous populations were, through their rites and dances, making audiovisual expressions while keeping their traditions alive. The example of the so-called "primitive" cultures, according to Abbado, had to "encourage, despite the inability to integrate their world into ours, the construction of something non intellectual, yet spectacular, entertaining and stimulating to the senses."⁴⁵ This perspective can be seen as his reaction to an excess of rationalism that had led to the development of a certain type of inward looking art and electronic music scene, aimed at a limited and elite audience of specialists.

A paradigm from this period is *Viaggio*, a 20-minute videotape in which a series of static images dissolve one into another documenting a hypothetical journey in space and time, and featuring astronomical iconography and prehistoric graffiti. The work was realized with support from the *Centro Televisivo Universitario* of the *Università degli Studi* of Milan. At that time, the only way to create the images was by transferring them on tape, and *C.T.U.* put at Abbado's disposal its studio and equipment (*Sony 3/4 U-Matic*).

The piece was divided into six segments of 1, 1, 2, 3, 5, 8 minutes that correspond to the first six numbers of the Fibonacci progression.⁴⁶ The first minute was dedicated to the opening credits, while the others comprised the work itself. Brief black pauses separated each section from the next one. The music was made with analog instruments (synthesizers) and included voices, jet engines, gongs, electric guitar and other sounds. During the processing phase, in which Riccardo Sinigaglia participated, echoes and filters of various types were used. The visual section was composed of 53 drawings, created with an *Apple II* computer, and a series of twelve fade-outs produced by a piece of software written with Michele Böhm. The transfer of the music to tape and the visual editing were done at the studios of *C.T.U.* using its equipments. In this first video one can already see Abbado's desire to completely balance sound and image. The typical tendency in videos to focus on images at the expense of sound was avoided by slowing down the rhythm of the images to concentrate on the sounds.

Viaggio was followed by *Voyager*, one of Abbado's first digital animations, which was completed in 1984. The software used to create *Voyager* was developed with Michele Böhm and the hardware used were an *Apple II 64K* and an *Apple graphic tablet*.⁴⁷

A 3-minute piece, *Voyager* follows a path that travels through primitive cultures with some side trips, accompanied by an electronic music soundtrack.⁴⁸ In the symbolic path of the composition, the user encounters different visions that go from the Big-Bang, to a hypothetical planet, to a transcendent and technological return into the universe. The succession of digital images is determined by a piece of software, again developed with the cooperation of Michele Böhm, that created a fade-out for each image.

⁴⁵ Interview with Adriano Abbado, "Bit" n°40, June 1983.

⁴⁶ Italian mathematician of the XIII century, who introduced Arab numbers in Italy. Fibonacci also found a particular relationship recurrent in some natural phenomena, the so called Fibonacci progression, and more precisely those where one can find the logarithmic spiral (in galaxies, shells, etc.).

⁴⁷ Between the Seventies and the Eighties, Michele Böhm collaborates with *La Gaia scienza*, an experimental theatre group composed by Marco Solari, Alessandra Vanzi and Giorgio Barberio Corsetti, who made the first projects of scenography created with the help of a computer (<http://www.trax.it>, September 2004).

⁴⁸ The images and the general information about the life and works of Adriano Abbado are taken from the website: <http://www.abbado.com> and from materials put on hand by the artist himself.

(N.B. Before *Voyager*, an edited version of *Viaggio* was produced, dedicated to *Pioneer 10*, the first human object to exit the solar system. Dubbed *Satellite*, this five-minute piece was conceived to be contained on a floppy disk, and therefore able to be played on any PC.)



Voyager, digital animation, 1982-84, 3 min., stereo, color, 280 x 192, software: Adriano Abbado, Michele Böhm, hardware: *Apple II 64K*, *Apple graphic tablet*

The PC made technology, and consequently the products associated with it, accessible to a global audience. It stimulated the development of works that could be transferred to and stored on floppy disks and other media, transforming the creative process into a "democratic" one with infinite possibilities. At the same time new research avenues were also invented. Among the most important figures we find Michele Böhm and Marco Tece (*Crudelity Stoffe*), who were the flag wavers for using the PC in an esthetic manner. The color and resolution limitations of the first *Apple* computers were challenging yardsticks with which to measure one's creative possibilities, presenting technical hurdles that had to be overcome to give birth to distinguished works from the visual point of view. *Satellite*, in this regard, presented a very precise, almost photographic chromatic spectrum that made one forget the limits of the color palette. The reconstruction of human evolution seen through the archetypal figure of a labyrinth, in which ritual masks of "primitive" cultures blend with urban and planetary landscapes, was developed by the deliberately slow pace of the superimposed images.

Between 1982 and 1985 Abbado participated in all of the important exhibits in Italy and elsewhere in Europe dedicated to the use of electronics to create new forms of artistic expression. He presented *Voyager* at *Film-Maker* in Milan (1982), at *Antidogma Musica* (Turin, 1982) and at *L'immagine elettronica* (Bologna; Sicof, 1983), where he also showed a series of photographic pictures processed with a computer. He exhibited *Orbital City* at the *Festival di Arte Elettronica* in Camerino (1984), at the *Videoart Festival* of Locarno (1985), at *Digital art* (Maastricht, 1985), and in Ferrara (*Elettrica*, 1985). He also exhibited in Rome (*Galleria 5 x 5*) and in Milan (*Palazzo Reale*, 1984). Here, within the exhibit dedicated to the "Patafisica," in addition to historical documents, was a section devoted to the computer where visitors could write a novel or draw a self-portrait with the help of a PC.

In 1984, Abbado was invited to teach one of the first computer graphics classes in Italy at the *Istituto Europeo di Design* in Milan. The idea was to provide students with some programming fundamentals that would enable them to explore the endless processing possibilities computers offered. Moreover, the students were learning how to use existing software to create trademarks, logos, 3D images and video image processing. At this time Abbado began to create advertisements.

In 1985 he wrote *Immagini con il Computer* (together with Claudio Mordà and Gianluigi Rocca, *Arnoldo Mondadori Editore*), a computer graphics manual full of illustrations. The book was conceived for both novices and experts. In it, technical processes for the creation of digital images are treated in-depth, as are the possibilities of applying computer graphics to different fields (e.g. TV, cinema, videogames, business, etc.). A wide range of potential future uses is also proposed.

In 1985 Abbado helped found the group *Correnti Magnetiche*, a name he invented. Working with him again is Riccardo Sinigaglia, with whom he had already collaborated on *Futuro Antico*, and the painter Mario Canali, a classmate of Abbado's class at the *Istituto Europeo di Design*.

Those years were a turning point, the beginning of what would be a key decade for digital art. In fact, from '85 to '95 the way of observing, representing and living reality underwent rapid and radical changes. The digital revolution produces deep transformations in the personal and collective imagery, creating the need (especially with the advent of the Internet) for a redefinition of the concepts of time, space, identity and interpersonal relationships. As far as the art world is concerned, a profound change took place regarding the definition of "artwork," because of the modified conditions of development, production and conservation of the visual pieces themselves. The artists are faced with images that are "immaterial," that tend to be "replicable and modifiable endless times," in which external reality can be manipulated and transformed to limits unimaginable before, if even considered. The origin of synthetic images is not physical reality, but a mathematical abstraction, digital shapes and colors are the result of numerical combinations. This essentially abstract characteristic also manifested itself during the production process, where artists have to face an object that lacks three-dimensional form. Their action happens in real time and the relationship with the image is no longer direct, but mediated by keyboards, a "mouse," scanners and other devices.⁴⁹ Manual expertise and dexterity were no longer required and a machine itself – sometimes with the intervention of specialized technicians – became the medium in and from which the artwork materialized. This was basis of heated discussions about whether digital images could be considered "art." This interactivity upsets predefined roles historically assigned to the artwork, the artist and the viewer even though throughout the history of art the vanguard was at the forefront for the very reason that its members used new technologies.⁵⁰

In May '85, *Correnti Magnetiche* exhibited its work in Milan, at the gallery *il Diagramma* di Luciano Inga-Pin (a vanguard art gallery manager and psychiatrist).⁵¹ During the exhibition, *Installazione sonovisuale spazializzata*, six video programs were presented.⁵² They were: *Orbital City*, *Voyager*, *Minima* (a study on the meaning of primary shapes through short graphic tales), *Opus* (semi-random shapes in evolution), *Ringspiel* (generation of cyclic audiovisual structures), and *Watertube* (generation of concrete structures with soundtracks composed by Riccardo Sinigaglia using sounds made by shaking rubber tubes in water).⁵³ In addition to the digital performances, the book *Immagini con il Computer* was presented.

Abbado's association with *Correnti Magnetiche* is brief. After creating a work for *Pitti Trend* in Florence (*Computer Style*, 1985) and a few other things related to the world of fashion, he leaves the group, although he maintains good relationships with its remaining members.

The beautiful *Orbital City* -- a four-minute animation with timbres created by Riccardo Sinigaglia and selected by Abbado -- came out of that period. The work exemplifies the core visual art-music-technology, its structure developed following the idea of "visual and aural frames." The scenes, therefore, follow a process of parallel modification in both the audio and visual parts.

The entire architecture, both in its temporal development and within the audiovisual frames, is based on the Fibonacci progression (0, 1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89, 144, 233, 377, etc.), and mirrors the harmony rules of the *Golden Section*. In fact, the division of any of its numbers by the preceding one resulted in an approximation of π , the golden constant.

⁴⁹ S. BORDINI, *Come gli artisti adoperano il computer*, in *A Memoria di Bite, Storie di Artisti e di Computer*, cit.

⁵⁰ M.G. MATTEI, cit.

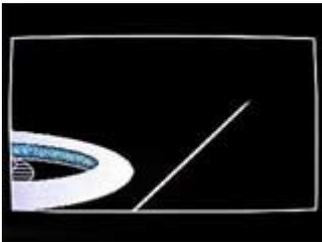
⁵¹ P. BAIOCCHI, *Video e cuffie per l'arte sul computer*. "L'Unità," May 1985.

⁵² E. MANTAUT, *Protagonista è il computer*. "L'Unità," 1985.

⁵³ *Correnti Magnetiche*. "Strumenti Musicali" n°66, June 1985.

Orbital City is composed of eight sections whose duration is respectively 55, 34, 89, 55, 34, 55, 21 and 34 seconds, all numbers belonging to the Fibonacci progression. The images (e.g. points, lines and geometrical shapes) appear within golden rectangles projected upon the golden rectangle of the screen. The work ends as a hologram developing itself in deep space, an ideal environment tuned to perfect harmonies. The essence of the graphic style borders on abstraction, and is underlined by the gilded beauty of electronic music. *Orbital City* was created with a *Yamaha CX5 MSX* computer that included a music synthesizer, chosen for its audio-video capabilities that made it a compelling multimedia tool. In this way, the digital instrument was the generator of both sound and images, as well as the organizer of the composition.

The work is shown at the *Festival di Camerino*, together with a wooden icosahedron (the last of the platonic solids, which contains the other four), made at the *Istituto Europeo di Design*, and a hologram, always of an icosahedron.



Orbital City, digital animation, 1985, 4 min., stereo, color, software: Adriano Abbado, hardware: *Yamaha CX5 MSX*, musical timbres: Riccardo Sinigaglia

There was also an interactive version of *Orbital City*, in which the user could take part on the development of the composition. This idea was following the outline of research developed at the time at *M.I.T.* and of some videogames. Adriano Abbado viewed videogames as a form of “Trojan horse,” capable of introducing computer science technology inside families, opening the route to more advanced tools. Above all, videogames had shown that it was possible to manage laser based audiovisual media using personal computers. These media also allowed quick access to audiovisual sequences located at any point on a disc. This in turn permitted a composition to be thought of not in terms of a sequential structure, but as a structure organized in any desired way, controllable by the user in real time.

In 1986, the Venice *Biennale* hosted for the first time a section entirely dedicated to electronics: *Arte e scienza nell’età delle scienze esatte – Tecnologia e informatica*, which included installations, workshops, networks, synthetic and three-dimensional images. Abbado participated in a workshop laboratory on computer imaging with computer generated isomorphic images and music. That same year he exhibited at the *Galleria Luciano Inga-Pin* in Milan, and received a commission from *Commodore Italiana* to create *Isomorfismi suono luce* (*Studio 1, Studio 2, Studio 3, Ritratto*), shown at the *Biennale*. These three works represent a further step in regard of his study of visual and audio languages for the creation of a specific code in audiovisual works.

Studio 1 is a 90-second digital animation made with a *Commodore Amiga* and software by Abbado. In the animation, one sees a series of colored rectangles, each corresponding to a musical note. Each horizontal stripe represents an instrumental voice. The width of the rectangles represents the duration, while the type of note controls the hue, and the brightness changes according to volume. Each rectangle appears on the right side of the screen, in synch with the corresponding note. The audio-video correspondences make reference to the theory of the painter Luigi Veronesi (a major figure in Italian abstractionism) and his *Diagrammi Musicali*. The *Diagrammi Musicali* are chromatic transpositions of musical scores, in which he tries to get a precise mathematical rendering of timbres and pitches in painting. Veronesi’s earliest thoughts on this subject date back to the late

'30s, but they were not realized until the late '60s, when he used color as a parameter of height and width. With the help of a measuring tool, a spectroscope, he could associate hue to the wavelength of each note.⁵⁴

Veronesi worked with classical compositions and the music of *Studio 1* was by J. S. Bach. The chosen composition, *A Musical Offering*, was a “theoretical” composition by Bach, in other words not tied to any specific instrument, and therefore could be performed also by a computer for which it was ideally suited being an infinite canon.

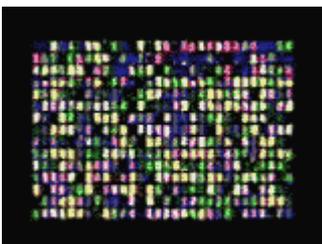


Luigi Veronesi, *Erik Satie- Gnossienne n.2, 1*, 1979-94

In *Studio 2*, which follows *Studio 1*, each colored rectangle corresponds to a note on the musical scale, and appears only when the correct note is played, creating a sort of colored keyboard. Of the three musical voices, two are only heard while the third is only visualized. Colors are set by pitch, while brightness is controlled by volume. The music is the same one used in *Studio 1*.

Studio 3 follows a somewhat similar approach, but is not tied to the traditional musical scale, but rather to the entire spectrum of audio frequencies, thus the corresponding colors completely fill the screen. The generation of pitches and their duration is completely random.

Ritratto is a 3-minute digital animation in which completely synthetic abstract images and analog images taken with a camera are processed and edited into an abstract digital sequence. The music was created using both synthetic and recorded sounds.

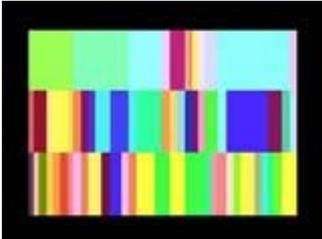


Ritratto, digital animation, 1986

⁵⁴ <http://www.museion.it>. July 2004



Studio 2, digital animation, 1986



Studio 1, digital animation, 1986

Two Years In The U.S.

In 1986, Abbado was awarded a coveted scholarship from the Fulbright Foundation. It is only given to 30 people in different disciplines in each country each year, and recipients could spend one year at one of three schools. In 1984, while he was traveling around the United States to gather material for his book *Immagini per il Computer*, Abbado had the opportunity to visit Boston, among other cities. Abbado chose to attend Massachusetts Institute of Technology – the future site of the *M.I.T. Media Lab* -- for his scholarship that was renewed the following year. The two years spent in Boston were very important, not only because he was at one of the world's leading centers of new technologies, but also because of his human experience. Living abroad, with people of different nationalities and with interesting backgrounds, widened his vision and enriched it with new perspectives.

During this first trip to the United States, Abbado had the opportunity to meet figures like John Whitney and Larry Cuba.⁵⁵ At the time, Whitney was developing his thoughts on digital harmony. With a musical genre that was inquiring on the “special relationships between music and visual design,” he had conceived a new kind of composer: somebody who could simultaneously elaborate his own ideas in a visual and musical way. Examples of this approach are *Spirals* or *Moondrum*, a series of works influenced by Native American culture.⁵⁶ Of Whitney, Abbado will read and appreciate “Digital Harmony,” in which sets out his research on visual that hypothesized there was a corresponding code between sound and light. Whitney also encouraged Abbado to pursue his interests in digital audiovisual art and in ethnic cultures. Larry Cuba created *Calculated Movements*, in the mid-Eighties, his first work in which sophisticated vectorial equipment permits him to substitute light points used in his previous works with three-dimensional solids.

Dynamics is the final product of Abbado's American experience. By the end of his second year at *M.I.T.*, he had earned a Master of Science degree under the guidance of his advisor Tod Machover, a renowned composer and now head of the *Hyperinstruments/Opera of the Future* group. *Dynamics* was in fact part of Abbado's thesis created in part with a grant from the *Council for the Arts at M.I.T.* *Dynamics* is an audiovisual piece conceived and made with digital equipment, shown originally with two digital synchronized stereo recorders, a video recorder, a video projector, a large screen (4x3 meters) and four loudspeakers located at the four corners of the screen. Through these

⁵⁵ Larry Cuba (who cooperates with Whitney for the making of *Arabesque*) created his first digital animation in 1974, becoming one of the leading figures of the so called “second generation” of computer artists. (cfr. <http://www.well.com>, September 2004).

⁵⁶ <http://www.siggraph.org>, September 2004

speakers (and synchronizing the two stereo recorders with the videotape) it was possible to spatialize the sound along both vertical and horizontal axes.

This work was produced at the *M.I.T. Media Lab*, using technologies belonging to the *Visual Language Workshop*, the *Animation Group*, the *Film and Video Group* and the *Music and Cognition Group*, and was part of the thesis *Perceptual Correspondences of Abstract Animation and Synthetic Sound*, discussed at *M.I.T.* in 1988.

Dynamics certainly represents a fundamental moment within a research that, starting from two different “entities,” the aural “object” and the visual “object,” aims to link them as a third audiovisual “object,” with its own identity and a coherent language, and harmonic from either point of view. Under this light, the various correspondences (audio-visual or between frequencies) are not to be considered a goal but a starting point for the creation of the “alphabet,” that is at the basis of the language. By proposing a music composition based on timbre, Abbado tries to establish some parallel behaviors between elements belonging to music and the visual arts, particularly between synthetic sounds and abstract shapes.

The first relationship taken into account is that between timbre and “visual appearance” (shape and texture), in which the root of his new audiovisual language is found. One is predisposed to consider sounds and images as independent “objects,” characterized perceptually as either timbre or shape. What distinguished Abbado’s approach was that most artists considered color but not shapes or textures, when creating correspondences with music. For Abbado, there is a clear relationship between timbre and shape/texture. He thinks that shape is more important than color for the definition of visual objects. This was not just an esthetic question, but something related to vision and that is also derived from an interest in the world and for how human beings “function.” In fact, from the perceptual point of view, shape is more important than color – for example some animals can only see in black and white. So it is shape that defines the objects that make up the world that surrounds us. A colorless world, or one with only undefined colors, is a relaxing if meaningless form of paradise, while a colorless world, does not lose its intelligibility.

In *Dynamics*, Abbado corresponds “harmonic sounds with smooth shapes and dissonant sounds with jagged ones.” He explains his choice this way:

“I usually hear notes in harmonic ratio as non-aggressive, and in turn I identify them with smoothness, whereas I hear dissonant sounds as irregular, aggressive objects. For example, in this work white noise was represented as a highly irregular, bumpy and shiny object, while filtered white noise (with high frequencies filtered out) was represented as a much more regular shape, although still shiny.”⁵⁷

Generally speaking, when creating these correspondences, Abbado did not use fixed reference schemes, but referred to intuition and sensitivity, which better adapt to artistic creation. Of course, these are personal criteria, but they are based on previous studies, among them those of Ehreshman and Wessel⁵⁸, Grey,⁵⁹, and above all Kandinsky, Schönberg and Stroppa.

As music evolved from a naturalistic art form to an abstract one, its importance in relation to the visual arts was addressed in a letter written in 1910⁶⁰ by the Russian artist Wassily Kandinsky, a pioneer of abstract painting strongly influenced by musical elements, to the Austro-Hungarian composer Arnold Schönberg, the father of 12-tone music. In it Kandinsky praises “the qualities of

⁵⁷ <http://www.abbado.com>. Excerpt revisited da: A. Abbado, *Perceptual Correspondences of Abstract Animation and Synthetic Sound*, Leonardo 1990.

⁵⁸ *Perception of Timbral Analogies*, IRCAM, Paris 1978, or also *Low Dimensional Control of Musical Timbre*, IRCAM, Paris 1978

⁵⁹ *An exploration of Musical Timbre* M.aster’s thesis, Stanford University, 1975

⁶⁰ V. TORSELLI, *Arte visiva e musica* (guide.supereva.it/arte_moderna/interventi/2004/05/)

the musical art, connected to the realm of immateriality and therefore independently sovereign from the visible world and from the laws of naturalistic reproducibility, on which visual arts instead depend.” That year, Kandinsky would take his final step to liberate painting from its mimetic function by elaborating his first completely abstract watercolor, conceived with the intention of “painting” music. The principle of “inner need” is the key principle of Kandinsky’s entire body of work, a force that pushes the artist to search for a formal expression that could approximate his inner feelings, an essentially spiritual concept of reality. Music, the art form that, by its excellence, has been able to express the inner self, represents then for painting the model to follow for a radical renewal oriented towards an artist’s inner life. In 1912, Kandinsky’s essay *Concerning the Spiritual in Art* sets as an absolute value for the “inner sound” of colors and shapes, a fundamental treatise on the relationships between music and painting. In *Concerning the Spiritual in Art*, music takes the function of a real “spiritual” model in regards to painting. For Kandinsky music resides in the domain of the non-figurative and the immaterial and is therefore more suitable for connecting directly to the human soul than other art forms. Because of this, he concentrated on the search for analogies of musical composition and painting techniques (rhythm, chromatic repetition, movement, etc.) and elaborated a “harmonic theory of colors” in which the various hues are associated with musical instruments (yellow for trumpet, light blue for flute, etc.). Color assumes an emotive and psychological connotation that enables it to convey a certain mood to the viewer. From this point on, countless essays on the relationships between sound and color will follow Kandinsky’s groundbreaking epistle.⁶¹

Discovering the work of Schönberg -- whose *Quartetto per archi* and the *Klavierstücke* Kandinsky heard in Munich in 1911 – had, along with Wagner’s music, a profound effect on the painter. The “atonal” music Schönberg invented, with its chromatic nature and violent and strong contrasts, reflected expressionistic tension. A form of music with strong psychological content, it was capable of reflecting different facets of the soul. A renowned musician and an eclectic personality, Schönberg was also a painter and was particularly active from 1906 through 1912 when he executed 70 works in oil and 160 watercolors and drawings in a style related to Secessionism and Expressionism. Noteworthy in these paintings are concepts related to the unconscious. In one of his letters to Kandinsky, he wrote “art belongs to the unconscious! It is necessary to express yourself! To express directly! Not your own taste, your education, your intelligence, your knowledge [...] but rather, those that are innate, instinctive. Not all these capabilities are innate”⁶².

Besides the research conducted by Schönberg⁶³, enhanced by the computer’s capability of synthesizing new sounds, Abbado also relates to that of Marco Stroppa,⁶⁴ a musician and student at *M.I.T.* from 1984 to 1986. After his initial investigations of 12-tone music, Stroppa explored the relationships between music, the visual arts and science. Of particular interest to him were the new opportunities provided by using a computer, and the changes in the “form” of audio content resulting from using this new medium. In 1994 Stroppa wrote:⁶⁵

“Whether the composer likes it or not, the computer is the only instrument invented in this century [...] The computer created an interdisciplinary environment common to activities till then completely isolated. [...] The use of audio structures derived from non instrumental sources enabled the composer to imagine forms inconceivable until then and provided the audience with the chance to listen to music in a different way, to experience new emotions, etc.”

⁶¹ M. BATTISTINI, *Kandinsky e la musica*, (<http://www.swif.uniba.it/lei/filmusica/fmprospkandinsky.htm> Filosofia della Musica June 2004)

⁶² R. RUTIGLIANO, *Arnold Schönberg pittore* (<http://www.lagazzettaweb.it> June 2004)

⁶³ A. SCHÖNBERG, *Manuale di Armonia*, Il Saggiatore, Milan 1963, pag. 528-529

⁶⁴ M. STROPPA, *L'esplorazione e la manipolazione del timbro*, Quaderno 5, Limb/La Biennale, Venice 1985

⁶⁵ M. STROPPA, *Il connubio fra musica e scienza, ossia da Pitagora al CEMAT*, (spf.m.unipv.it/scuola/guida/programmi/Materiali/debenedictis/stroppa/connubio)

Stroppa's work was enriched by research into disciplines like "psychoacoustics," a field descended from experimental psychology that enquired about the mechanisms explaining the links between the physical nature of sound and the images that are formed in our mind while listening, and linguistics, which led to his viewing music as a "language," with precise rules about grammar and syntax.

In researching the concept of spatial localization in both art and music, Abbado consulted, in addition to the music and writings of Edgar Varèse and Karlheinz Stockhausen, those of Henry Brant⁶⁶ and György Ligeti. Brant, an American, invented "spatial" music in 1950, a style in which it was essential to plan the positions of musicians in a concert hall and on stage. Once the various groups were placed, a different piece was given to each one with the direction of origin of each sound relating the timbres, textures and aural lines to the audience with a clarity unthinkable with traditional instrument placement.⁶⁷ Ligeti worked with Stockhausen at the Köln electronic music studio, taught in Hamburg and Stockholm and conducted some summer classes at the "Neue Musik" workshop in Darmstadt. Particularly interested in audio research, Ligeti used the modern resources of electronics and computer music to "actualize" the sonorities of traditional instruments including historical ones like a XVIII century harpsichord. His composing was notable for concealing the different instrumental voices as though the sound had neither a beginning nor an end but rather existed in a *continuum* of time frame⁶⁸. Several pieces by Ligeti have been used by film directors in the soundtracks to notable movies, among them Stanley Kubrick's *2001: A Space Odyssey* and *The Shining*⁶⁹.

Computers, DVDs and other tools provide new possibilities to explore sensory perception from the moment the brain receives impulses. Here is an explanation Abbado cited of the phenomenon of "sound spatialization" at a neurological level:

"It is interesting to note that the human brain is structured so that there is only one area that can be truly called "audiovisual," namely, the "superior colliculus." This organ is a phylogenetically older area than the visual cortex. In many lower animals, such as frogs and fish, the superior colliculus represents *the* major brain center for visual processing. [...] Besides receiving visual input, cells in the superior colliculus also receive auditory input from the ears, as evidenced by their responsiveness to sound stimulation because they receive sensory input from the eyes *and* ears, these are called *multisensory cells*. In order for most multisensory cells to respond, auditory and visual stimulation has to originate from the same region in space. For example, if some multi sensory cell responds to a light flash in the upper right portion of the visual field, that cell will respond to a sound only if it too comes from the same vicinity. Additionally, when visual and auditory inputs occur simultaneously, a multi sensory cell responds more strongly than when either input occurs alone." (R. Sekuler and R. Blake: Perception, Alfred A. Kopf, New York 1985, pag. 103-104)."⁷⁰

In *Dynamics* a "visual object" has been conceived as emitting from the same position in which it was placed. This recreation of spatial localization was realized using two synchronized digital stereo recorders, a video projector, a large screen and four speakers placed at the four corners of the screen. Abbado explains the procedure this way:

"The speakers thus provided not only the usual stereo image (left-right), but also the top-bottom image, filling the screen with a continuous acoustic signal. To achieve this, I digitized the sounds I had previously generated with FM machines into Csound files (Csound is a C and UNIX-based language written by Prof. Barry Vercoe, running on the *VAX 11/70*, *VAXStation II* and *HP Bobcat*

⁶⁶ R. ERICKSON, *Sound Structure in Music*, University of California Press, Berkeley CA 1975, pag. 141

⁶⁷ <http://www.jaffe.com> April 2004

⁶⁸ <http://www.orfeonellarete.it> April 2004

⁶⁹ <http://www.milanomusica.org/festival/autori/ligeti.html> April 2004

⁷⁰ <http://www.abbado.com>. Excerpt revisited from: A. Abbado, *Perceptual Correspondences of Abstract Animation and Synthetic Sound*, Leonardo 1990.

workstations at the *M.I.T. Media Laboratory*. It is a software package consisting of modules for audio synthesis, analysis and processing). I then wrote two C programs that allow me to input a sound trajectory with a graphic tablet and to use the x and y tables, that define this trajectory, as files for the sampled sounds.”

Sound localization is a function of the spatial extension of sound itself, which, in turn, is a function of the sound’s spectral content.⁷¹ The shape of a figure and its dimension are therefore a function of sound’s spatial extension. Since vertical localization is more difficult to perceive than horizontal, it was necessary that the sound present “noisy” components or, at any rate, frequencies higher than 7000 Hz. In *Dynamics* not all sounds contain high frequencies, so the spatial localization is sometimes vague. Visual objects, as a consequence, softly merge with each other or with the background to better simulate sound effects. A further step was to generate a scale of sizes easily perceivable:

“The sound that contained the highest perceivable frequency was the smallest (precise localization), while the sound with lowest the frequency filled the screen, simulating its vague spatial localization. Through trial and error, I was able to determine a scale of sounds (from the lowest to the highest in frequency, that corresponded to a scale of sizes.”

The last relationship is between sound’s and shape’s intensity (volume and brightness). Increasing the volume corresponded to increasing a shape’s brightness, so when the sound dissolved into silence the visual object became black. Abbado describes the procedure used to relate the two parameters:

“I created a scale of sounds, from the loudest to the weakest, mapping the loudest as white (very bright), and the weakest as barely visible; this was done also taking into account the fact that humans are not linearly sensitive to colors (for example, we are more sensitive to green than to blue). The entire process was empirical [...] To establish more precise correspondences I would have to have immediate feedback that could only have been provided by software that could deal with sounds and visual objects simultaneously.”

Creating the links, the artist modeled the visual objects on sounds (changes in shape are more easily controlled than changes in sounds) by:

- sketching an outline of the temporal behavior of the timbre's main components, indicating the envelope and the sound's peaks.
- imagining a changing shape that would match the behavior of each sound, and indicating its attributes (round, jagged, shiny, etc.).
- after creating the 3D models (with the program *3-dg*, running on a *Symbolics 3600* computer at the *M.I.T. Media Laboratory*), reauditioned the sounds and making any modifications necessary in the visual element to match the sound.

Abbado used two methods to illustrate the effect of change:

- created two 3D models (initial and final), that were automatically and linearly interpolated by the animation software.
- rotated the object along one or more axes. Since the shapes were irregular, they revealed other facets that had not been seen yet, behaving like a sound that, while changing, revealed unknown aspects of it.

In the second stage of realizing the work, Abbado inverted the creation process, no longer starting from the sounds, but rather from the visual objects, matching them with the music afterwards. Had the reverse been done (i.e. composing the music first and then matching it with the visual objects),

⁷¹ C. DODGE and T. JERSE *Computer Music*, Schirmer Books, New York 1985, pag. 240-247.

features characteristic of the visual domain like spatial location, movement and speed would not have played as major a role in the formulation of the music, as they did. Moreover, according to Abbado:

“...the process involved in associating a sound to a visual object forced me to think about the sounds themselves, to look at categories of timbres in great detail and to visualize them. This led me to associate different sounds only because their corresponding visual objects were associated [...] since the notion of timbre is quite loosely defined in terms of form, timbres had to be controlled through attributes related to perception rather than to acoustic data.”

Beginning with *Dynamics*, the concept of “category,” that will repeat in future works based on classifications like *WONOKROMO*, became fundamental. The issue is tied to language, and above all to memory, the first categories formed within the mind itself. The other fundamental aspect is the concept of “metaphor” (i.e. the use of attributes originally taken from a different context and applied to sound, like a liquid sound, a shiny sound, etc), that pervade *Dynamics*, and that will become constants in the work of Abbado. Two important categories are those of “soft” and “harsh” timbres, visualized respectively as jagged and rounded shapes (fig. 3 and 4); other categories used were “shiny” and “opaque,” visualized as shiny and opaque objects. These categories are totally subjective and can traced back to Kandinsky’s concept of antithesis.⁷²

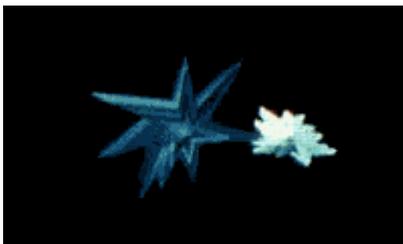


Fig. 3 – Harsh timbres

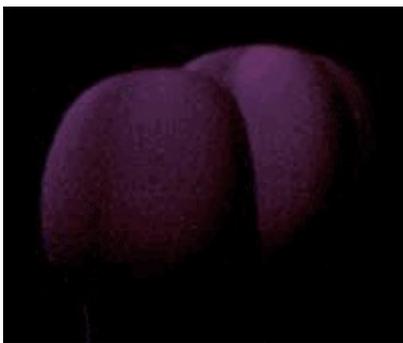


Fig. 4 – Soft timbres

The composition is divided into 6 major sections (fig. 5). The first one is a presentation of nine successive audiovisual events. The events are shown one at a time, with cross-fading effects. The subsequent three sections constitute the body of the piece. Each of the sections is divided into three, three and two episodes respectively.

⁷² W. Kandinsky, *Concerning the Spiritual in Art*, Dover Publications Inc., New York 1977, fig. 1-2.

1	2	3	4		5	6
intro	a b c s1	d e f s2	g h s3		s2 s1	s1 + s2 + s3

Fig. 5 - Sections and episodes

In each episode, one or two audiovisual events perform a specific action. A final episode in each of the three sections constitutes the blending of the previous episodes of the same section. For example, in section 4 the final episode sums up the previous two episodes. In section 5, the previous final episodes are repeated, and so on. Notice that episode *s3* belongs to both sections 4 and 5. The closing section is the sum of the 3 sums of each episode, *s1*, *s2*, and *s3*.

a, *b*, *c*, *d*, *e*, *f*, *g* and *h*, represent the core of the piece. In these episodes, each object is spatially repeated (i.e. multiple copies of the same object are present). *a*, *b* and *c* are sections of time, meaning that variations of time are considered, and the spatial positions are not ordered. In *a*, the object is shown 15 times, very fast, in succession, so that it never overlaps in time. *b* shows an object (and copies of it) that fades in and out, partially overlapping in time. In *c*, the copies of

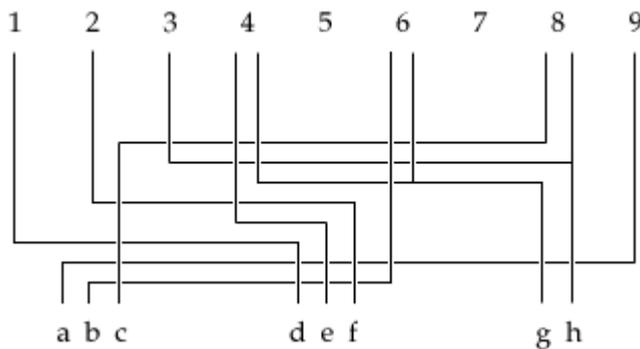


Fig. 6 – The composition scheme

the objects are perfectly synchronized. *d*, *e*, *f* are the episodes where variations of space are made. *d* presents an object (and its copies, again all in synchrony) moving in a jagged trajectory. *e* shows a completely static object whose shape changes, but not its position. In *f*, a regular movement is used. Episodes *g* and *h* combine two objects (and copies) at the same time. In these sections, different visual characteristics are opposed. The objects are all synchronized and move regularly. In *g*, a spiny object contrasts a round object. In *h*, a shiny object contrasts an opaque object. Notice that objects 5 and 7 are used only in the introductory section.

“The organization of the piece was relatively simple. After the presentation of the audiovisual events, I created episodes that were coherent in different ways (i.e. of time, space and oppositional attributes). Each of the final episodes combined the previous episodes of its section, creating a more complex audiovisual texture. The basic idea was the construction of complexity, beginning with simple elements. Because of this, I repeated episodes *s2* and *s3*. This way, after the presentation when each event is seen and heard alone, and after the second part (sections 2, 3 and 4) in which two or three audiovisual objects simultaneously play different roles, I created a sequence where several objects were considered at the same time. In other words, the piece became more and more dense. The final section, in which all the previous sums are added again, shows a very thick audiovisual texture, comparable to a musical *tutti*.”



Fig. 7 – Final sequence



Fig. 8 - Final sequence

CHAPTER II (1989-1999)

The Early '90s

Thanks to technological advances and a significantly improved ratio between quality and price, the 1990s witnessed a dramatic increase in the use of electronics. They provided an expanding consumer base access to technologies that only a few years earlier were exclusively used by a privileged elite. Increasingly “virtual” synthesizers were used -- computer applications that took advantage of the computer’s abilities to create and process digital information convertible to audio signals. All this enabled the emergence of new concepts related to the application of technology to audiovisual art forms.

Music may include sounds recorded in the environment where we live, sounds of nature and words and sounds from other cultures. In other words, music can communicate extra musical content, making us more aware of the world in which we live and as a result, also serving an educational function.⁷³

The technological development during this period led to the development of new kinds of sensors, making possible the introduction of new instruments that expanded the range of creative possibilities. The expansion of the concepts of art and communication, together with the assessment of new technologies as creative tools, gave anyone a level of creativity neither heard nor seen before.

At the end of the '80s, enriched by his American experience that had introduced him to John Whitney and Larry Cuba,⁷⁴ Abbado was very active on the international artistic scene. In 1987 he exhibited at *gallerie/atelier*, in Zürich. In 1988, he participated in the *First International Symposium on Electronic Art* in Utrecht, and gave a lecture at the *Rhode Island School of Design* in Providence. In 1989, he exhibited at the *Video biennale* in Fukui, at *Nuove immagini e formazione* in Venice (*Palazzo Fortuny*), and gave a lecture at *IRCAM* in Paris. In Venice he created a short performance of sounds and images, controlled by a dataglove made available by the Milan based company *Artificial Reality Systems (ARS)*.⁷⁵ The performance in Venice was created by combining the dataglove with the software *AV* that Abbado developed. *AV* was written in Light-Speed C, for *Macintosh II*, and allowed the creation of both animated and still 2D abstract objects. The software was divided into two parts: the *editor* and the *player*.

The *editor* enabled the creation of objects, that is shapes filled with color patterns. Such patterns were, in turn, made of n polygons of different colors that could be drawn with the eight brushes available with *ColorQuickDraw*. When they had to be animated, both patterns and shapes were created by interpolating the start frame with the last one, following a trajectory that could be linear, curved or a combination of the two. The objects were animated on a background that could be a flat color, usually black or a *PICT* image.

An important feature of the *AV* software was the capability of playing a MIDI instrument through a MIDI interface. That made it possible to model the objects on the strength of a synthetic sound already existing, which was then recovered, in synch with its object, in the sound section. In this section, the sounds and the objects already created were assembled and literally “played” together. In a clearly visible parallel with the musical approach, in fact, the connection with the data glove let the user control some short sequences through the movement of fingers. The images could be seen

⁷³ C. SERAFINI, *cit.*

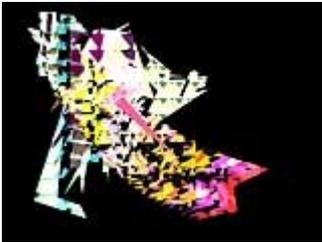
⁷⁴ Larry Cuba (who collaborates with Whitney in the making of *Arabesque*) makes his first digital animation in 1974, becoming one of the lead representatives of the so called “second generation” of computer artists. (cfr. <http://www.well.com>, settembre 2004).

⁷⁵ A. ABBADO, *dataglove and Audiovisual Art*. In *Note di Software*. Università degli studi di Milano, 1990

on a *Macintosh IIcx* computer, while the sound, created with a *Yamaha TX 802*, could be heard with normal stereo equipment.

The Venetian performance was a first step in this direction, and further developments would have allowed the interpreter, wearing the glove, to perform by using his hand in an audiovisual hyperspace. The hyperspace could be imagined as a 1-meter wide cube, subdivided into many small cells, each one containing an audiovisual micro sequence stored in RAM. The performer, moving his hand, could navigate in this artificial world, creating consistent audiovisual events whose images were projected on a large screen.

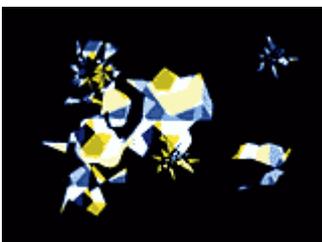
Abbado's next piece was the animation *isole* (2 min. 15 sec.), also made with a piece of software he wrote himself for an *Apple Macintosh II*. *isole* is an abstract animation made by a series of synthetic sequences obtained by moving a mask, whose shapes are generated and controlled by the software, which reveals a series of textures. An interactive version of this animation permitted users to control the animated sequences using a computer keyboard that could be played as a piano where each letter had a corresponding animation.



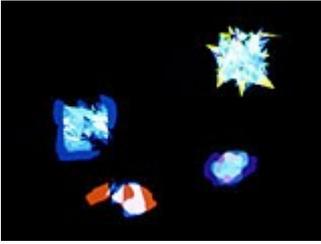
isole, digital animation, 1990

Some sequences taken from the works of this period year were kept as a series of independent digital images. For instance *ram 2*, *clouds* and *clouds 4*.

Digital images highlight the intrinsic musicality of abstract shapes. Even if they are lacking the concreteness of sound, these synthetic “clouds” can “float” and reveal themselves in a dark and absolute space. They appear as pieces of a silent “digital symphony” in which shapes evoke different types of timbres. It also highlights, within the structure of the composition, an ongoing sensation of dynamism or change within a spatial temporal reality, which is one way to define of sound. In stasis, the frozen movement is implicit within shapes. They emerge as unstable appearances caught within an instant of motion, about to rotate beyond the frame's limits and giving way to the calmness of total black.



clouds, digital image, 1991



clouds 4, digital image, 1991

After Boston, Abbado spent nearly a year in Paris, where he met Iannis Xenakis. Xenakis created a music composition system based on a graphic tablet, the *UPIC*, that was able to convert graphic symbols into sounds. While in Paris, Abbado also worked for two computer animation studios but overall his experience in the city left him dissatisfied. During this period, Abbado started to write the software for *isole*, influenced by African textile designs, and is invited to participate in the festival *Rencontres internationales art cinema, art video, art ordinateur*, organized by the Paris videotheque. In this important exhibition, where he shows *Dynamics*, there are also works by Larry Cuba, Ida Gerosa, Mona Hatoum, Derek Jarman, William Latham, Léa Lublin, Vera Molnar, Man Ray, Carolee Shneemann, the Vasulkas, Bill Viola, John Whitney and many other leading video artists and filmmakers from around the world. That year, he also participates in the *Second International Symposium on Electronic Art* in Groningen and in the collective exhibit *Il ritmo colorato* in Bergamo. Between 1991 and 1992, Abbado is invited to deliver two lectures at the *Domus Academy* in Milan. In 1993, he participated in the collective exhibits *Design miroir du XIX siècle* at the Grand Palais in Paris and *La fabbrica estetica, Italian Technology and Design for Quality of Life*, in Seoul and in 1994 attended *Milia* in Cannes.

It was during these years that Abbado created *FLUIDI*, honored at the *First International Quicktime Film Festival* in San Francisco and published on CD-ROM by *Sumeria*.

FLUIDI is a b/w abstract animation composed of a series of synthetic sequences generated by the software *ab stra*, written by Abbado, based on shapes that change over time and space. *ab stra* is conceived around the idea of interpolation of irregular polygons to get a *morphing* of 2D abstract objects. Besides transforming shapes, the software can animate some features as well as assign various types of textures.



FLUIDI, digital animation, 1992, 1 min. 50 sec. , silent, b/w, 512 x 342, 30 fps, 1 bit, *animation* compression, software: *ab stra*, *QuickTime*, hardware: *Apple Macintosh II*.

Unlike his previous works, *FLUIDI* features neither sound nor color. The first reason for this change is technical as Abbado wanted to create a “light” animation, that could be contained on a floppy disk and played on any computer, and therefore required the use of 1 bit images. The second reason was conceptual -- he was again working within the aesthetic that shape is a more important visual feature than color for the definition of visual objects, as already expressed in *Dynamics*.

In *FLUIDI*, the visual tension here between the white background and the black figures clearly reveals that contrast sets the shape and influences the perception of movement. Removing contrast from objects leaves only an undetermined magma. If what is moving has little in contrast with a background, it is harder to perceive changes. Abbado will use this concept again in his subsequent work, *motion picture IV*.

The study of movement is fundamental to the construction of an audiovisual language. A sound is by its very nature something that varies over time and features an unfixed spectral content. When building audio-visual objects, the development of shapes over time needs to occur parallel with sound. That these shapes are consequently changing, underscores the intimately musical nature of abstract shapes.

At this time, urged by the need for a more immediate medium of expression than animation, which often could take months of work before arriving at a definitive result, Abbado made other digital images (*khhh*, *suono I*, *suono II*, *sfera terra*, *sfera fuoco*, *fuoco terra aria acqua*, *rosa*, *grid*). They were excerpted from sequences created with the software *Infini-D* developed by *Specular International*, the first application for the Mac be to morph 3D solids as well as their textures. In spite of the fact that the modeling function was weak, *Infini-D* had been Abbado's warhorse for many years. With it, he also made *blu e luci*, *two spheres*, and all the subsequent images, until 2001. Afterwards, in addition to the program *Cinema4D*, he also used *Bryce* and *Amorphium*.

By using *Infini-D*, it was possible for Abbado to create very complex 3D animations with sophisticated graphic effects as well as "musical" images -- abstract figures that reveal the level of awareness and technical maturity of his audiovisual language.



khhh, digital image, 1993

khhh conveys, from its very title, the scratching noise of static aural interference, which the image of the "metallic" figure, with its cold color and bristling points, expresses perfectly. The shape-sound relationship is in this case of the intuitive type.

Here the importance of instinctive choice -- where the nature of a sound is often related to common sense or to linguistic metaphors like "bright," "dark" or "metallic," etc. -- proves it is possible to define sounds on the strength of characteristics taken from other contexts. In the lack of precise mental reference points for synthetic sounds -- as opposed to, say, what we have for a violin and its sound -- the best solution in fact seemed to be defining them by using the natural language based on the attributes of universal features. Here the mind's capability to create metaphors and use them for cognitive processes is essential.

The metaphor, that is using a term associated with one thing to describe another thing that shares some of the same characteristics -- is the constitutional foundation of language and is the foundation of consciousness. The customary function of the metaphor is to describe something for which there are no concepts, so that, when we want to know something, we look for a metaphor that can make the item seem familiar to us. It is therefore possible to claim that lexical metaphors are at the base of

the way the mind becomes aware of things. The subjective conscious mind is equipped with a vocabulary whose terms are metaphors for the physical world, as in mathematics numbers are metaphors for real quantities. Thus each term used as a metaphor has a series of secondary attributes or ideas associated with it that further enriches it. For instance, the word “metallic” can lead us to think about something cold, sharp and shrill, a shape full of angles suggests harshness and masculinity, while a round one gives a sense of softness and femininity.

Abbado found in the metaphor a meeting point between the visual and the audio languages (i.e. roughness becomes a rough sound or a rough object), starting from the consideration of “binary super classes” (hot/cold, bass/acute) that are present in the cognitive legacy of each human being and seem to define his very existence.

Let us consider, for instance, the concepts of bright/dull. A “bright” sound is a sound without high frequencies, or “flat” (another metaphor). A shape without high frequencies will be, as a consequence, a shape with few details that can be depicted by a smooth texture. As a consequence, as far as appearance is concerned, a dull sound can be represented by more or less uniform colors and textures. By contrast, a bright sound can be represented with a texture full of details.

From the point of view of shape, we can find geometrical analogies. A low angular frequency of continuous curves, without corners, can be associated with low audio frequencies. The low frequency sound will therefore have a round shape approaching that of a sphere, while a sound that contains many high frequencies will have a contour full of acute corners. Visual sharpness will correspond to audio sharpness.

Somehow an analogy is established, so that a sound with many high aspects is represented by an edgy object and with many details, while an object with many spatial frequencies is represented by a sound with many high frequencies. It is also possible to mediate between the two facets and generate an edged object but with few details, or vice versa.

However, in considering Abbado’s work, it is important to remember that, while it can be interesting to demonstrate a variety of relationships, most of his thoughts happen afterwards, to categorize a choice that initially happened in an intuitive way.



suono I, digital image, 1994

In *suono 1* and *suono 2*, we are introduced to the perfect harmony of the sphere. In *suono 1* it impends monumentally over the visual space and rests neatly on the background, filling almost the whole frame. The yellow color is warm and luminous, the image is that of fullness and expansion.



suono II, digital image, 1994

In *sfera terra* and *sfera fuoco* we find references to the four elements that seem to link them to the primeval roots of matter. They are shapes-sounds primo genial, which project the most advanced technology into an ancestral psychological dimension.

In *fuoco terra aria acqua*, the four spheres are suspended on a background whose absolute black is shaded in a gradation that eventually fades to white. The spiral form produces an effect of circular movement.



sfera terra, digital image, 1994



sfera fuoco, digital image, 1994



terra aria fuoco acqua, digital image, 1994

By the mid-'90s, Abbado had at his disposal an articulated vocabulary of shape-sounds and had fully mastered making visually abstract objects correspond to specific synthetic sounds. Yet, his work did not seem to completely satisfy him any more.

“I was suffering from what I call the black background complex. The fact that I was always starting with musical analogies was pushing me to always use images with a black background. Then I got rid of it, going towards the colorful. For me, it has been like taking-out a side that I could not make emerge.”

Approaching the middle of the decade, Abbado seems to seek in his artwork a greater expressive freedom. By getting rid of too rigid schemes, he aimed at a research that was more instinctive and less rational. Aware of the impossibility of establishing precise *a priori* analogies between visual language and audio language, he tried to free himself from the cage of binding relationships that were becoming too restrictive. What mattered was the universal effect both in the aural and the visual realms, even if this contrasted with the definition of precise rules.

At the same time, the problem of finding a correct middle road between a free, arbitrary approach, lacking any interpretative key that avoided wandering into pure descriptivism, and the use of too schematic and precise rules that were imprisoning creativity and artistic intuition.

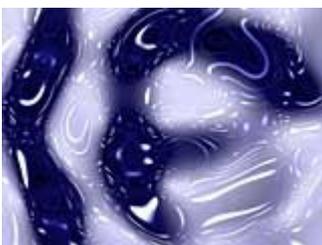
The need, felt in his deepest inner self, for new expressive codes that could answer this problem pushed Abbado to distance himself from artistic creation for several years.

“...the research was interesting but the work was missing something, perhaps it was too established, too much like an exercise with too little spontaneity [...], in other words I was not completely satisfied, so I promised myself to not exhibit again until I could find something good.”

Among the last works made with *Infini-D*, were some very sophisticated animations such as *blu e luci* and *onde verdi giallo*, in which a geometrical-mathematical precision gives way to shapes heading in a more complex and free direction. Both animations were made by using an orthogonal view of a simple plan whose surface is very reflective, modulated by continuously changing waves. The formal taste takes advantage of the greater possibilities offered by technology and gives birth to new aesthetic results.



onde verdi giallo, digital animation, 1994



blu e luci, digital animation, 1994

The Multimedia Experiences and Theatre

For Abbado the Nineties were a period of research and renewal from both the technical and professional point of view. Even if he took a brief hiatus from more exquisitely artistic activity, Abbado continued to explore different fields, looking for new motivating forces. He committed himself to a series of multimedia productions, experimented with vanguard technologies and approached the theatre.

In 1990, he created, together with a Turin based group called *Antidogma Musica*, some real-time projections of processed stage shooting, with dancers and musicians. Through their common love of football, he met Luca Scarzella who, in 1998, asked him to create two animations (*luna* and *valle*) for his staging of *Der Freischutz*

Many consider the opera by Carl Maria von Weber, staged at the *Teatro di Santa Cecilia* in April 1998, the “personification of the romantic opera.” In it, all the elements that define German Romanticism, from music to literature, to philosophy, to the visual arts are assembled in a harmonic synthesis. The opera is presented at *Santa Cecilia* “in forma semiscenica,” under the direction of Daniele Abbado, Adriano’s cousin. The goal was to explore the possibility of using non-traditional forms in the opera genre, through a detachment from scenic tradition, experimenting with new ways of communicating with the audience, stressing the narration and abandoning description and scenic naturalism.

“In this quintessential theatrical form, music took on a new, central role – that of fusing the individual dramatic materials [...], as a river that drags its audio elements of words and notes towards a unique sea, that one of German Romanticism, that is based on a deep ethical feeling of nature.”⁷⁶

luna and *valle* are inserted during a key moment of the action, in which the event is projected in a nocturnal and dramatic dimension, and the plot reaches its climax. The representation is of a magical rite and a meeting with the devil. The tension is increased by the acceleration of music, articulated by spoken words superimposed and amplified by the terrifying echo of hell’s noises. All this is transpiring while nature forces apocalyptical dimensions to be stirred up, showcasing Abbado’s ability to create images and sounds to meet different forms.



⁷⁶ D. ABBADO, *Der Freischutz in forma semiscenica*, in *Carl Maria von Weber, Der Freischutz* opera libretto, 1998.



Der freischutz - Carl Maria von Weber, digital scenography, 1998, 20 sec., silent, color, 768 x 576, 25 fps, 24 bit, no compression, software: Bryce 3D, QuickTime, hardware: Apple Macintosh Quadra 840 av, director: Daniele Abbado, stage installation and lights: Gianni Carluccio, video director: Luca Scarzella, digital animation: Adriano Abbado, conductor: Myung-Whun Chung

In his early '80s work *Immagini con il computer*, Abbado had already suggested that digital scenography would be one of the most interesting fields in which to apply new technologies, and as subsequent events attested, he seemed to be right. In the visual art world, groups like *Studio Azzurro*, with whom Scarzella had collaborated, fully demonstrated the aesthetic possibilities of digital scenography, but its main beneficiaries were the movies, advertisement and above all television. As far as advertisement photography is concerned, even if there are more and more examples of entirely digital images, the most common use is still that of superimposing traditional photographic images with objects created with a computer. 3D digital modeling allowed the creation of photorealistic environments (sets), which can be manipulated at will according to clients' desires. Within the field of theatre, 3D graphics are often used when in scenography. As most architects do, some stage directors also create sets by using CAD software. The computer is of tremendous help when it is necessary to reproduce images on large surfaces. Thanks to plotters, which can print on large formats, parts of stage backgrounds are rapidly created, to be assembled later like a jig saw puzzle. It also became possible to get the correspondent real model from a 3D object, made of foam by using "automatic sculpture." This procedure, though, bears some limitations regarding the depth of the object to be sculpted and its final dimensions.

In the TV industry, despite of high production costs, the trend moved towards the progressive extinction of traditional scenography in favor of more malleable digital scenography. The

continuous evolution of computers guaranteed noteworthy savings in terms of time, personnel and equipment.

The advancement of virtual reality eventually made possible the creation of totally computer generated sets. Digital environments could be created by a computer in 3D or through using retouched photos. This kind of technology was common in the movie industry, where it was used to create special effects or to shoot without risk particularly dangerous scenes (e.g. *The Matrix*). The virtual set is a real production tool, a new form of audiovisual language whose capabilities have still not been completely exploited that multiplies creative possibilities and the fundamentals of the cinematic format. The combination of the perfect knowledge of the computer with traditional shooting techniques enabled master filmmakers to perfectly synchronize scenes shot later on or to superimpose elements while editing.

During the '90s, the use of "hypermedia" like the CD-ROM begins to expand. They would become one of the most used off-line digital media and a very effective interactive instrument. They can contain an enormous amount of images, sounds, animation, etc., that can be instantly accessed and in different ways. In a CD-ROM, the order of data is defined according to non-linear narrative sequences, and determined each time by user's choices. There is no single way to view a CD-ROM. The same user can endlessly experience the same work in a different way every time, establishing a kind of "alliance" with the work of the artist, with whom he has a virtual kind of active dialog. In the U.S., thanks to the advanced technological development and to the existence of important research centers like *M.I.T.*, the development of laser-discs has been at disposal of artists since the early '80s. In Italy, because of the high costs of CD-ROM production and less financial resources, it was necessary to wait until the mid-90s and the exposition *ArteFiera* of Bologna in 1995⁷⁷ to relate, even without much success, this technology to art.

In this area, Adriano Abbado can be considered a pioneer. As early as 1990 he authored several interactive projects, among them the CD-ROMs *Il Carnevale degli Animalì*, *Don Giovanni* and *Grandi Cantanti*.

The first CD-ROMs were commissioned by *ACTA*, later called *Newton Media in Action*, and were aimed at the commercial market. The first one was *Relais & Chateaux* (1991), an association of very sophisticated hotels, and was given for free to the buyers of a certain model of *Alfa Romeo*. *Apple*, made one in black and white using *HyperCard* to introduce the *PowerBook*. *Newton Media in Action* published *Il Carnevale degli Animalì* (1992), a hybrid ROM + Audio. *Il Carnevale degli Animalì* is a composition by Camille Saint Sæens for various instruments and orchestra, and was one of the first interactive CD-ROMs produced in Italy.

It was a CD-ROM for children, with an educational goal – teaching them how to listen to a composition and learn about musical instruments. Each piece was played by a certain instrument and dedicated to an animal. Learning and memorization were stimulated by the association of the music with animated drawings, fresh and amusing, by Dagmar Trinks. Links led to instrument descriptions, to their sound, etc.

Grandi Cantanti, the last one published, actually presented an old production and followed the lead of CDs by *Voyager*, an American company that had produced some music titles in b/w, with *Hypercard*.⁷⁸ For *Voyager* Adriano Abbado created the Italian version of the *Mozart String Quartet*

⁷⁷ AA.VV. *La coscienza Luccicante, dalla videoarte all'arte interattiva*, cit.

⁷⁸ *HyperCard* is a personal management software by *Apple Computer*, presented in 1987 by Bill Atkinson. *HyperCard* is a development environment that put at users' disposal the interface elements of the *Macintosh* in order to create tailor made software. Unlike traditional development tools, there was no need of programming knowledge, but it was enough "to draw" buttons, text fields, and graphical elements. *HyperCard* was a tool that let beginners create applications in a short time. *HyperCard* was using a massive amount of hypertext; actually, it was the very first one to feature this very important innovation.

in *C Major*, “*The Dissonant*,” one of Voyager’s titles during those years. *Grandi Cantanti* featured colors, and presented a series of opera singers of the past, with restored audio recordings from their eras. Each aria was illustrated with animations made, again by Dagmar Trink, with images taken from postcards and programs of the epoch.

Don Giovanni (1996) was the last CD-ROM produced and also the most complex. It was divided into six sections (*Introduction, The Performances, The Plot, Mozart and his Epoch, Full Listening, References*), subdivided into 14 chapters, with 120 pages of text illustrated with 16 bit images and more than 100 hyperlinks. Among the various sections, *Full Listening* was the one that let provided access to the video, the libretto, the score and a guide to the opera. The CD had to contain the entire opera (154 minutes of music with 44 KHz-16 bit quality audio), the software, video of some arias and a slide show of all the other arias, the complete score, both English and German copies of the libretto, all in synch with the music. Moreover, it included a written and illustrated comment in all sections, with also a voice-over. Finally all the music was doubled in order not to have breaks when jumping from one section to another. The illustrations were taken from the collection of the *Mozarteum* in Salzburg, as was the score, the very first one published at the end of ‘700. The director of the Mozarteum, a renowned Mozart expert, wrote the commentary and the graphic design was by Raffaella Colutto. It is not hard to imagine that this was a complex, first class product.

Among the CDs projects that were not realized are some of great interest. Particularly noteworthy is the one that had to be made in cooperation with the no profit organization *Survival International*, which deals with the preservation of tribal populations. The prototype was about three populations: the Inuit of the Arctic, the Yanomami of the Amazons, and the Australian aborigines. Among other features, it contained VR explorations as well as animations of paintings made by the aborigines.

In 1997, at the Milan *Triennale*, Abbado was introduced to a technique called *PHSCologram* and created *two spheres*, of which he also made an animation in which a 3D object is “explored” through a virtual camera movement that brings the observer inside the object itself, two intersecting ellipsoids.



object, QuickTime VR movie, 1998

The term *PHSCologram*⁷⁹, an acronym for photography, holography, sculpture and computer graphics, was invented in 1983 by Ellen Sandor, an international multimedia artist and a pioneer in digital media. Inspired by the work of Man Ray, Duchamp and Moholy Nagy, the first *PHSColograms* combined sculpture and photography in a backlit 3D image. Within collage backgrounds, the objects were shot in slightly different positions, with each shot requiring an exposure of about half an hour. The images were mounted and combined, thanks to a special dark room technique, with a transparent colored film, while a second b/w film, printed with light vertical stripes, was mounted on a piece of Plexiglas, with the image reversed. Since 1990, the *PHSCologram* has become a digital process in which computer graphics techniques have replaced the dark room. Ellen Sandor tuned this innovative technique within the group (*art*)ⁿ, which she

⁷⁹ For news regarding the techniques of *PHSCologram* and the group (*art*)ⁿ cfr. <http://www.artn.com>

founded in 1983 in Chicago. The group was a very successful model of interdisciplinary cooperation that explored the relationships between art and science. Since its inception the group has produced a great number of works exhibited in galleries and museums worldwide, and is represented in both private and public collections.

The original team included sculptors, fashion photographers, hologram makers and video artists. Over more than 20 years it has evolved to include digital artists, *NASA* and military scientists, architects and painters.

The *PHSColograms* are “objects sculpted through special software, in which mathematical equations and scientific data were transformed in translucent forms and surreal structures that recall abstract sculpture and painting of the 20th century.” These “objects” were colored and placed within digital scenographies, photographed using software in slightly different positions along a horizontal plane, edited on a computer and printed on transparent film with a 3D effect. Different tools were used for this technique, both during the dark room stage and also during the pre-print and high-resolution print phases. (*Crosfield, LVT, Iris, Epson, Lamda, Hewlett Packard, Lightjet*, etc.). The computer graphics software mainly used was *Alias, SoftImage, Photoshop, Painter* and others. The group (*art*) was the first one to use, in 1990, the *CyberWare* scanner. The digital contents made before 1992 were programmed in C.



two spheres, PHSCologram, 50 x 40 cm., 1997, interleaved crossfield Cibachrome and Kodalith films, mounted on Plexiglas, framed in a metal light box.
13 sec., silent, color, 320 x 240, 15 fps, 24 bit., *Sorenson video* compression, software: *Infini-D, QuickTime.*, hardware: *Apple Macintosh Quadra 840 av*

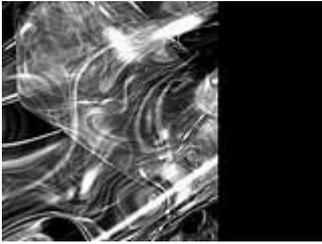
The Late '90s

two spheres marks Abbado's return to the art world from which he had retired in 1994. Besides his previously stated need for renewal, which he had achieved, and the desire to find new forms of expression and freer forms of musical interaction, at the root of his decision was a weariness of the kind of the ghetto art and technology exhibits seem to be placed in.

Finally, in 1999, Abbado ended his period of “silence.” He participated in *Color is Music, Atelier Mendini* and *Eurographics '99*, both in Milan, and *Opera Totale 5* in Venice, and delivers the lecture *Audiovisual Art In The Year 2000* at the *Institut Universitario de l'Audiovisual* in Barcelona.

In *Color is Music* Abbado presents 12 printed images, *two spheres*, the light box *oggetto* and a digital animation, *shape = sound*, created by taking the 12 images shown in the exhibition and providing each of them with a sound. To do so, Abbado used a program called *Metasynt*, a piece of software that can create sounds through the interpretation of an image, and applied the same rules to all the images. *Metasynt* translates in high frequencies the upper part of the image, and in low frequencies the lower part. Volume is determined by the image brightness, while color is omitted. The image is input by being horizontally scanned, while the pixel column is analyzed according to a map of 16 tones where 16 vertical pixels equal a tone. For each column, the software reads the position and brightness values, producing the related sounds given by the sum of sinusoidal

generators. Basically, the sound ranged from 100 Hz to about 11800 Hz. Using images 1024x768 pixels each sound lasted about 23 seconds.



shape = sound, digital animation, 1999, 3 min. 28 sec. in loop, stereo, 44 KHz, 16 bit, *QDesign music 2* compression, color, 1024 x 768, 10 fps, 16 bit, *video* compression, software: *Infini-D, Metasynth, QuickTime*, hardware: *Apple Power Macintosh 7300/200*

Once done, the audio part was edited in sequence and associated to the original images. These revealed themselves to the observer little by little, emitting their sound and simulating the image scan process used to generate the sounds. The hue is shown afterwards, completing the original image.



a + d2, digital print, 1998



15.08 c1, digital print, 1998



05.22, digital print, 1998

The concept of music and images continues with a series of new digital prints that clearly demonstrate, compared to previous artworks, how deep and radical Abbado's renewal process had been during the years he had been gone.



215, digital print, 1999



19, digital print, 1999



1430, digital print, 1999



fasce, digital print, 1999



doppio oro, digital print, 1999

Besides marking a new expressive way, these images are important because they introduce the idea of “exploration,” fundamental in the subsequent works *oggetti* and *colori*. What is explored is a synthetic space, a digital universe in which images and events are caught. A space defined and modified by the exploration itself. All images are actually frames of trial animations, done by entering inside *two spheres*, and “exploring” it. The best ones were put aside and sometimes globally modified with Photoshop to modify only the hue. The deep knowledge of *Infini-D* let Abbado take full advantage of its features, particularly in the creation of a texture, also animated, modulated by sine waves. That, together with transparency, reflective surfaces and lights, let Abbado get phantasmagoric results. The complexity of sound was translated into the complexity of images, and in the possibility of losing oneself inside it having entered a world apart.

The digital prints reproduce the dynamic and tonal grandeur of sound solely through shape, color and a procession of signs, a remarkable achievement given that they are static objects silent by themselves. From the formal point of view, having abandoned any geometric bond, these images appear as beams of free waves, in which intense chromatic tones are lit by glares of white light. The power abstract shapes have to evoke sounds does not rest upon something known to the senses. The similarities between the world of music and that of images are through the inner self and belong to the realm of emotions and of the deepest cognitive processes.

“Most approaches consider events external to the individual and do not consider instead the mental aspects, perceptual and cognitive. The parallels besides the external world have to be searched for within the mind because it is there that the similarities between the two worlds are actually elaborated and caught.”⁸⁰

In this realm, every visual sign and every audio element becomes an expression of the same “entity” or audiovisual “object.” Two different expressions of a unique “being” above the parts, which gives off precise audiovisual stimuli.

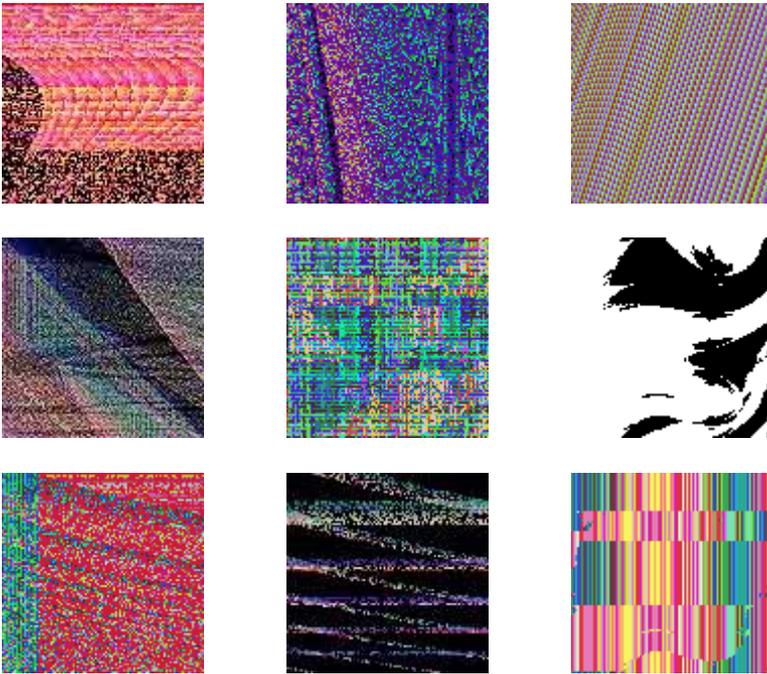
The use of metaphors continues to be a powerful creative tool. But their fundamentally subjective and intrinsically ambiguous nature brings to the foreground the need for cataloguing. The idea emerges to create a pre-existing apparatus of examples following a double process. At first some interesting correlations, perhaps inclusive of a score that could tell the effectiveness of the association, had to be found. Secondly, an automatic system had to be created, so that, on the strength of the knowledge the program had of the audiovisual objects (i.e. the geometry and the appearance of objects, their spectral content, their position, etc.) could generate coherent audiovisual ones. Moreover, such a digital system had to have the capability of learning by subsequent examples, improving it further. Of course, the creation of exact relationships is not sufficient to give life to works of art. It is simply an audiovisual “alphabet,” a starting point for further elaboration. The problem, once the associations are found, is how to assemble them in order to get a real composition, a complete work. One hypothesis could be, given a series of audio objects associated to visual objects, to compose them and to assemble them without listening to them, depending on their visual aspect. The audiovisual work must always take into account the different level of attention the various events generate in the minds of the spectators. So that one expression does not prevail over the other in the final result, but is balanced.⁸¹

From 1997 to 1999, Abbado devoted himself to the creation of the software *genetic art* (written by Marco Stefani). This program (for the Macintosh platform) generates images on the strength of the genetic concepts of mutation and crossover. Mutation basically means the introduction of a random

⁸⁰ A. ABBADO, *Arte audiovisiva*, in *Opera Totale 5, Musica Immagini & Nuove Tecnologie*, catalogue of the exhibition, 1999.

⁸¹ A. ABBADO, *Sul rapporto tra immagine e musica*, <http://www.lacritica.net> maggio 2004

factor, while crossover means to take elements from two sources and mix them. Nine images were proposed: the user had to choose two, which become the parents of the subsequent nine, and so on *ad infinitum*. The best images can be set apart and reintroduced in further generations.

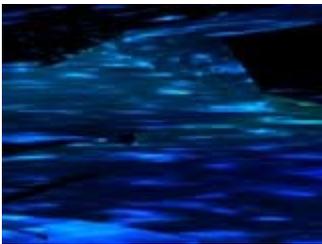


genetic art
software, 1997-99

CHAPTER III (2000-2003)

The New Millennium

In 2000, Abbado exhibited in Barcelona (*Galeria Zero*) having previously shown in Rimini (*Esplorazioni Digitali*). In *Esplorazioni Digitali*, he exhibited two series of large format digital prints (among them *a + d2*, *red gold*, *06.05*, *a + d new*, *09.24*, *15.08 c1*, *00.00 env*, *fasce*, *19* and *doppio oro*) for a total of 18, the light box *oggetto* and *two spheres*. Besides them were the 3D animation with spatialized sounds *variazioni*, the perpetual picture *motion picture* and the interactive installation *genetic art*. The *Meeting di Rimini* makes a large space available to Abbado, with an installation project created by three architecture students from Milan. Six teenagers, three couples in fact, alternated on site and gave explanations to visitors about the artworks. *two spheres* and *oggetto* were placed and the beginning of each series of prints, as matrices of the subsequent works. The result is a veritable digital world made of abstract images with different forms and typologies, still and animated, 2D and 3D interactive and not.⁸²



variazioni, digital animation, 2000 3 min. 17 sec., stereo, 44 KHz, 16 bit, *QDesign music 2* compression, color, 640 x 480, 15 fps, 24 bit, *Sorenson video* compression, software: *Infini-D*, *QuickTime*, *Sound Edit 2*, *Metasynth*, *Deck II*, hardware: *Apple Power Macintosh 7300/200*

Made in a very short time, just seventeen days, *variazioni* is an animation with 3D objects and stereo sounds interacting with each other, in which sudden explosions of colors alternate with sequences in b/w. In the initial image, a perfect blue background is marked by four openings that break the continuity. A dark and pulsing spot is superimposed on them, while an object similar to a heart emerges. A short pause, and from there a synthetic space starts to live, as though after a Big Bang shapes/sounds suddenly manifested themselves. A technological cosmos of abstract completeness, made of light flares and flying forms in the immateriality of digital space. The music had been completed first, existing sound materials having already been digitized and processed. Hundreds of sounds have been realized this way, selected later depending on their possible visualization, and then mixed. Once the soundtrack was complete, the 3D objects representing the sounds were created. Widely speaking the same associations coded in *Dynamics* have been applied, except that in some instances Abbado decided to overcome them when appropriate. The animated sequences were created last, directly within the 3D software used, without any video editing.

motion picture is a dynamic and always changing work. To observe *motion picture* is to dive into a fluid and cozy dimension. To go back with memory to a pre-conceptual condition in which everything is a sensation of soft harmony. Without shapes, the perception of movement is entrusted to light. *motion picture* was conceived to be seen on a plasma 16:9 display, and what appears is the orthogonal top view of the 3D software used. The model is a simple plane, whose very reflective surface is modulated by waves that evolve over time. An environmental map, in this case an abstract image, was reflected on the surface, creating fluid light games that recall those used in the prints. This kind of procedure, based on reflective and/or transparent surfaces, had earlier been used by Abbado in *blu e luci* and *onde verdi giallo*, and has been further developed and refined in the *motion picture* series.

⁸² <http://www.meetingrimini.org>, August 2004



motion picture, digital animation, 2000, 3 min. 20 sec. loop, silent, color, 848 x 480, 15 fps, 24 bit, *Sorenson video* compression, software: *Infini-D*, *QuickTime*, hardware: *Apple Power Macintosh 7300/200*

During these years, Abbado continued traveling. He lectured in Chicago, at the *School of the Art Institute*, and in Santa Barbara, at the *University of California*, Department of Music and *CREATE* (*Center for Research in Electronic Art Technology*).

He created the web site *artevideo.com*, which has three video installations. Each installation shows 16 animated pictures in which the images can be added or subtracted, and can also be dragged at will to different positions. At the same site it is also possible to see three *QuickTime VR* panoramas.

In 2001, he returned to Barcelona for the group exhibit *Entre Imaginacion y utilidad*, gave a lecture in Bologna at *DAMS*, and in Milan at the *Accademia di Brera*.

In November of that year, his work is shown in Santa Barbara at a video and music event called *Visible Sound* organized by the *University of California* music department and *CREATE*.

Among the protagonists of this initiative, besides Abbado (who shows his latest digital animations there) was a “Who’s Who” of musicians and multimedia artists. Among them were: Woon Seung Yeo, with the video *Half-life*, made with Curtis Roads, Gary Nelson, director of the *TIMARA Center*, who presented a video with his own music (*O'er the Sea*), and a work based on spatialized harpsichord sound by the composer Brigitte Robindoré. There are also pieces for percussion and electronic instruments by the Swiss composers Philippe Kocher and Gary Berger, played by Christoph Brunner and Gary Berger. The program also included *Preludes Suspendues*, an electronic music opera by the composer Horacio Vaggione. The music is played with the “*Creatophone spatialiser*,” a sound projection system developed at *CREATE*. It consists of an orchestra of speakers conducted by a composer who works at a console. The speakers are distributed in different positions around the stage and the audience. With the *Creatophone*, every “scene,” every “movement” of a composition (tone, rhythm, volume or timbre) can be intensified by means of spatial movement.

Also participating was the musician and composer Curtis Roads with a video sculpture made in cooperation with the multimedia artist Brian O'Reilly. A close friend of Abbado's since his stay in Boston, Roads is also a leading figure in the digital music world. Associated Professor of Media Arts and Technology, with a joint appointment at the Music department of the *University of California*, Santa Barbara, author of fundamental texts such as *The Computer Music Tutorial* and *Microsound*, he has worked with Xenakis and has introduced the concept of “granular synthesis” to digital music. Granular synthesis is based on “microsounds,” atoms of sounds that last less than a tenth of a second. The most recent technological advances have allowed the processing of these microsounds, fading out the traditional construction of music in blocks – notes and intervals – into a more fluid system in which sounds merge, evaporate and change other sounds. The sensation of pulse (series of points), line (tone) and surface (texture) emerges as an increase of particle density. Composers have used theories of microsounds in computer music since 1950. Among the most famous, we can mention Karlheinz Stockhausen and above all Xenakis.

Also in 2001 Abbado dedicated himself to the production of a CD-ROM called *animazioni*. A compilation of some of his most important works, representative of his research on sound, shape and movement: *FLUIDI, shape = sound, motion picture, variazioni, motion picture II*.



animazioni, CD-ROM, 2001. Software: *Director*, *QuickTime*, hardware: *Apple Power Macintosh 7300/200* with G3/400 board, *Pentium III 500*.

Technical requirements: *Macintosh PPC 604*, 32 MB RAM, 1024 x 768 display, millions of colors, 8x CD-ROM drive, speakers, internet connection, OS 8.1 or later, *QuickTime 4*.

Pentium II, 32 MB RAM, 1024 x 768 display, millions of colors, 8x CD-ROM drive, speakers, *Windows compatible 16 bit sound card*, internet connection, *Windows 98 ME, NT 4, 2000, QuickTime 4*.

motion picture II advances the research involved in creating *motion picture*. It is a moving picture with a very slow development, one that almost gives the feeling of being still. Only after a close observation does one become aware that the delicate colored lines are moving, and that the picture is constantly and subtly changing. The change is so unperceivable that one finds oneself observing a different image without even noticing that the image has changed. It is a work that stimulates the contemplative dimension, forcing to observe the ever-changing harmonic movement of abstract waves. The delicate colors (white, light blue and purple) enforce the “unreal” and immaterial appearance. “This is a truly interactive piece that requires the viewer to relax and slow down, your very heart rate submitting to the pace of the picture, becoming in tune with its movement.”⁸³

The effect of extreme slowness has been achieved with a *QuickTime* movie at 60 frames per second. Afterwards, by using the software *Director*, the movie has been forced to show every frame with slow machines. Unlike *motion picture*, here two reflecting surfaces have been used, instead of one. The first one, closer to the observer, is partially transparent and lets one see through to the underlying one. The result is a very rich and complex texture.



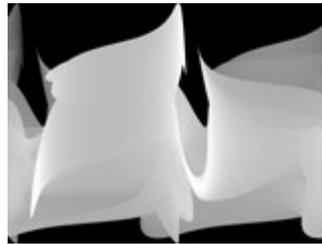
motion picture II, digital animation, 2001, variable length loop, silent, color, 960 x 576, 10 fps, 24 bit, *Photo JPEG* compression, software: *Infini-D, Director, QuickTime*, hardware: *Apple Power Macintosh 7300/200* with G3/400 board. Having earlier applied what he learned during his studies of contrast and the purity of forms in the work *FLUIDI*, Abbado once again used b/w images in *forme luminose*, whose external appearance vaguely recalls the “frames” by Ray, Moholy-Nagy or Ballmer. A strange landscape of milky light is what results from a series of digital b/w images. The sharpness of shape is underlined by the lack of hue and enhanced by the precision of the electronic medium. These images have been made with

⁸³ S. LEI *Tech as Technique. Three Italian Artists Approaches to Technology Offer Differing Results* “Washington Diplomat”

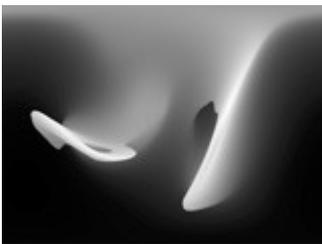
Amorphium, by using cylindrical and spherical projections (instead of perspective) of abstract solids.



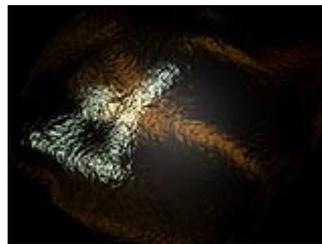
forme lumineuse 2,
digital image, A3+ size, 2001



forme lumineuse,
digital image, A3+ size, 2001



scultura luminosa,
digital image, A3+ size, 2001



suono III b, digital image, 2001

Having thoroughly investigated the opportunities offered by *Infini-D*, Abbado began looking for new directions to explore. In *suono III b*, made with *Bryce*, the focus is on vibration. Forms appear as light reflected on a dark surface of slightly rippling water.

In July of 2002, Abbado was invited to *Loughborough University*, in England. The abundance of equipment and the technical expertise he found there inspired him to create a work on interactivity. The goal was to make a piece on noise, in which sensors monitoring the movement of hands controlled the audiovisual flow. Since the video part always tends to overshadow the audio part, the goal was to control in real time the balance of the audiovisual flow. The work was temporarily called *noise*, and later on *flussi*. Only the first part has been completed, documented with a short digital video showing a figure that moves its hands with a sound corresponding to every movement while a series of digital images appear in the background. A hypothesis was to complete the work without movies, and instead have the audiovisual events generated in real time by the software itself.

The software used was *Max/MSP* plus *Jitter*. *Max/MSP* uses a graphical programming language, with blocks connected to each other. Every block can be expanded and contain other ones. The piece, shown at *Creativity and Cognition 4*, was made of a series of predefined and pre-ordered sequences in which “instead of having to deal with parameters such as timbre, tonality and dimensions, the user was involved in a stream of audiovisual events. The attention was focused on macrostructures, instead of single events: the coupling of different visual and audio elements [...] To create an audiovisual piece is always to confront oneself with a new audiovisual language, and therefore it is always more interesting to see what kind of balance the user can define between two signals and between sources and filters.”⁸⁴

⁸⁴ CANDY, L. AND EDMONDS, E., *The COSTART Exhibition at C&C2002*. in *Creativity & Cognition 2002*. Loughborough, UK, 2002. LUSAD Publications, p11-22.

The module shown lasted 15 seconds and was composed by 9 sounds and 4 movies. The sounds were read in the specific order and memorized preserving the correct sequence. The value of each sound was then interpreted through a sensor that, in turn, was answering emitting 5 values: -2, -1, 0 (normal state), 1, 2. For each sensor value there is a corresponding series of nine values, each one being either 0 or 1. Once the appropriate series is chosen (the one corresponding to -1, for instance), the value *n* of the chosen series is read. If it is 0, the duration of that event (sound) is read, and nothing happens for that period. If it is 1, the event (sound) is performed. Every event can be a single sound or a group of sounds that can also contain silence (background color). In this case, the sounds can last 3, 1, 2, 1, 3, 1, 1, 2, 1 seconds. Videos can last 4, 3, 5, 3 seconds. As far as sounds are concerned, if the sensor value is 2, there are nine sounds; if it is 1, seven sounds; if 0, five sounds; if -1, three; and if -2, one sound. Regarding images: 2/4, 1/3, 0/2, -1/1, -2/0. In the “worst” case scenario there is just one sound and no video, in the “best” case there are nine sounds and four videos along with all the combinations in between.

During 2002, Abbado worked almost exclusively abroad: he was in Japan (Karuizawa) for the exhibit *Synthetic Worlds* with Momi Fujiki; in Strasbourg, for a solo exhibition at the *Italian Cultural Institute*; in Paris (*Villette Numérique*), where he showed the interactive piece *colori* and in New York (*Not Still Art*) with *variazioni*. Besides performances using the computer, 3D digital animations and video art, *Not Still Art*, presented lectures, seminars and workshops about new media. The goal of the festival in 2002 was celebrating the electronically abstract and non-narrative image and its relationship to music and sound. With the possibility real time images guarantee for the production of digital animations, visual art was assimilated by music in production. A fundamental element of the general aesthetic of the works was the capacity the electronic medium has finding unity between music and images.

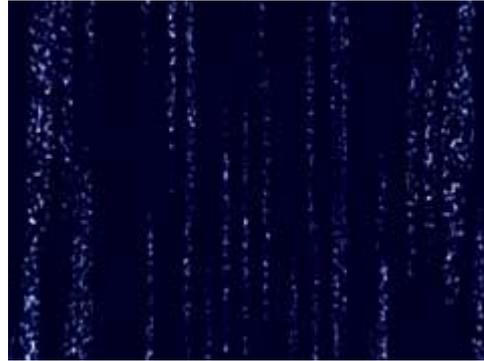
Abbado continued to explore interactive universes with installations like *oggetti*, *colori*, *latino* and *bali*.

“...when I sit in front of a computer screen, I feel like I face the infinite. When I start to create a new image or a new sound, I only have a vague idea of what I want. In fact, I like to consider myself an explorer, but instead of exploring the universe I explore the digital realm I create that exists in front of me.”⁸⁵

oggetti features a 3D interactive environment composed of 18 abstract “objects,” in which the user can “navigate” with a virtual camera, as in videogames, modifying the scene and creating his own digital landscape. The camera can roll and pan, doll forward and backward, and one can also rotate each individual object. Clicking on each object, one can select an “event” chosen among 36 sequences and 7 sounds. These “events” are not interactive. The 3D objects appear as shaded, wire framed, or rendered only as points. The shaded ones give access to animated sequences which represent the artist’s view of that object, the wire framed ones lead to completely abstract animations, the pointed ones represent sounds. The animated sequences are not always the same ones, but are randomly chosen from a group of three. The program keeps track of what it had been seen before, so that repetitions are avoided. Starting from this work, and with *colori*, it becomes clear how important Abbado’s fascination since the ‘90s with videogames was to his work.

“I was using Microsoft Flight Simulator with Michele Böhm and we were thinking about making our own worlds to land on. We crashed in NY so many times, usually with the helicopter. That version of *Director* handled 3D objects and therefore let you easily create interactive worlds. [...] Also, I was and am interested in *mods* or modified videogames, and the graphic engines of videogames. One can do fantastic things with them!”

⁸⁵A. ABBADO, *My Artistic path*, in *digitaly art*, catalogue of the exhibition, 2003



oggetti, interactive 3D world, 2002 1.6 GB, variable length, 44 KHz, 16 bit, color, 800 x 600, 15/30 fps, 24 bit, animation compression, software: *Amorphium*, *Bryce*, *Cinema4D*, *3D Studio Max*, *Photoshop*, *Director*, *QuickTime*, *Super Collider*, *Metasynth*, *Pro Tools*, hardware: *Apple Dual PowerPC G4* 1 GHz, 1 GB RAM, *nVidia GeForce 4 mx*, *Pentium III* 933 MHz, 512 MB RAM, *nVidia GeForce 3 ti 500*

There is also a series of digital prints made out of *oggetti*, created with *Amorphium* and *Cinema4D*. These prints represent a totally new series if compared to the previous ones, less colored and more basic. Of *oggetti 8* and *oggetti 1* there have also been large (100 x 75 cm.) prints on photographic paper mounted on Plexiglas and without frame. There are three numbered and signed copies.



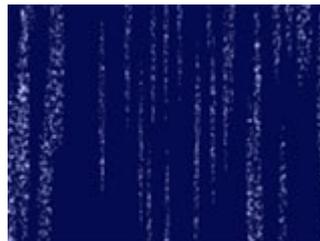
oggetti 8, digital print, A3+ size, 2002



oggetti 1, digital print, A3+ size, 2002

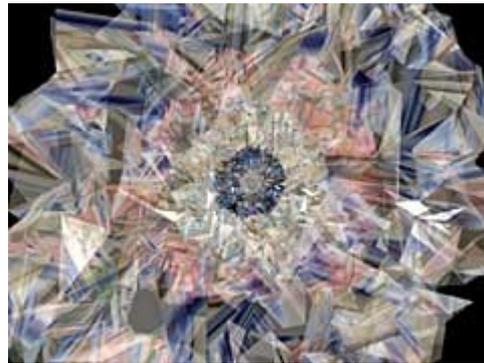


oggetti 0, digital print, A3+ size, 2002



oggetti a3, digital print, A3+ size, 2002

Also *colori*, like *oggetti*, from which it derives, features a 3D interactive environment in which the user can move around. The digital landscape of *colori* is composed of seven solids and seven sounds, and each sound is related to one object. The user can move forward and backward, can pan left and right, while the sound changes according to the movement. The interaction is very simple, so that anyone can easily move around in this 3D space, even people not used to computers, and even less videogames. Moving towards the center of the inner object, one can trigger the so-called “color mode” in which all objects become colorful and all sounds are played together. As one plunges within the solid, in the infinitely small, new universes open up, which reveal an infinity of shapes and colors. It is also possible to switch to another set of colors. In this interactive universe an uninterrupted stream of audiovisual events is created, which changes according to user position and his orientation. There is also a game pad version of *oggetti* and *colori*. Both installations are available on CD-ROM.



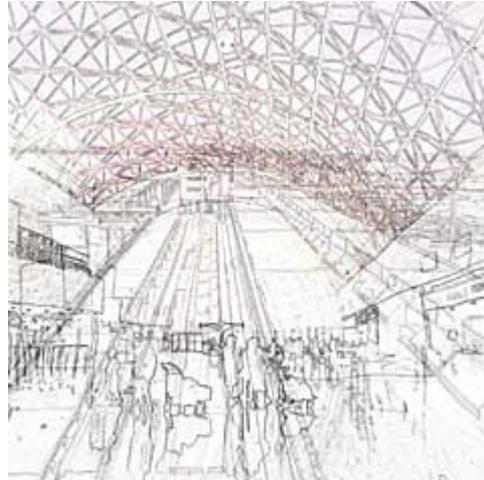
colori, interactive 3D world, 2002, 6.5 MB, variable length, 44 KHz, 16 bit, stereo, *Shockwave* compression 64 kbits/sec, color, 800 x 600, 25 fps, 24 bit, software: *3D Studio Max*, *Photoshop*, *Director*, *Super Collider*, *Metasynth*, *Pro Tools*, hardware: *Apple Dual PowerPC G4* 1 GHz, 1 GB RAM, *nVidia GeForce 4 mx*, *Pentium III* 933 MHz, 512 MB RAM, *nVidia GeForce 3 ti 500*

In 2002 and 2003, Abbado continued to travel a lot. He was often in the United States: in Washington D.C. for *Digitalyart* (*Inter-American Development Bank*); in New York (*Italian Cultural Institute*), and in Santa Barbara (*University of California*), where he gave two lectures.

Digitalyart took place at *IBD* (*Inter-American Development Bank*) Cultural Center's Gallery, in Washington D.C., from February till April 2003. The curator of the exhibition, Félix Ángel, chose Abbado, Fabrizio Plessi and Celestino Soddu to represent Italy. In the presentation of three Italian artists involved in the use of new media, rather than choosing a more classical art that was competing with museums in order to show the wealth of Italian art history, Ángel was going to “offer a vision of Italy that was related to the future instead of the past.”

Abbado considers his exhibit in Washington and the one in Rimini his most important of these years, especially considering the advanced technology Washington put at his disposal.

Abbado showed six works: *colori*, *variazioni*, *slide show II*, *oggetti*, *motion picture II* and *latino*. *latino* is shown with a 20" touch screen LCD, while the others on a 42" plasma display.



latino, interactive 3D slide show, 2003, 112 MB, variable length, 44 KHz, 16 bit, stereo, color, 768 x 768, 25 fps, 24 bit, software: *Streamline*, *Photoshop*, *Director*, *Metasynth*, *Pro Tools*, hardware: 20" LCD touch screen, Apple Dual PowerPC G4 1 GHz, 1 GB RAM, nVidia GeForce 4 mx, Pentium III 933 MHz, 512 MB RAM, nVidia GeForce 3 ti 500.

This is the description Serena Lei⁸⁶ gives Abbado's work in a review that appeared on The Washington Diplomat:

"The third artist in the exhibit, Adriano Abbado, gets it right His is a more technologically driven art than Plessi's, but a more human art than Soddu's. Abbado is concerned with the infinite as well as the connection between visuals and sound. Flat-screen televisions project digitally created images, and Abbado's art comes alive in the clear resolution and brilliant colors on the televisions. A few of these images are interactive, allowing the viewer to rotate an image and effectively recreate the art. Some pieces are accompanied by sounds that relate to a specific image."

⁸⁶ S. LEI *Tech as Technique. Three Italian Artists Approaches to Technology Offer Differing Results*, "Washington Diplomat"

latino is an interactive installation made of four groups of images about Latin America, selected from an *IBD* catalogue: people at work, children, cities and landscapes.

The interaction is done through a touch screen. When one of the images is touched, it generates a sound and a 3D sine wave is also created on the image. At the same time, the image becomes more and more transparent, revealing another one.

After *latino*, Abbado creates *bali*, another interactive installation, made with two groups of images of the island of Bali: rites and landscapes. Also in this case the interaction is done through a touch screen. The touched image generates a 3D sine wave as well as a sound (chosen among sixteen, per group). Once again, at the same time, the image becomes more and more transparent, revealing the next one. Each sound is composed by a soprano voice, mixed with the sound of an “ugal.” This Balinese instrument is made of a series of bronze plates, which are hit with a wooden hammer, and of bamboo resonators placed underneath. The resulting sound is “granulated” and mixed with the voice, each time with a different pitch.

At the end of the ‘90s, as a result of a trip to Bali, Abbado learned how to play the ugal from a local teacher. The “bright” character of its pure and strong sound goes beyond any mathematical calculation and is produced with a physical gesture that makes it a perfect counterpoint for digital sounds. Balinese music is mainly based on rhythm and pitch, while the music of Indian tabla players, or that of Tibetan monks, is based on timbre. In this sense, they are compatible with electronic music. It is not by chance that a number of artists use oriental instruments to provide a minimalist soundtrack for works that are highly technological. Larry Cuba, for instance, in *3/78* presents hundreds of light points that follow a precise choreography of rhythmic transformations based on music played on the *shakuachi*, a traditional Japanese bamboo flute. In *Two space*, on the other hand, there is a series of Islamic patterns, created with simple geometric transformations of a figure, which follows a Javanese gamelan.

In all the artwork of Abbado, the detached technological beauty is animated by a deep poetic sensitivity. But when his gaze changes from the ideal calm of abstraction of digital universes to the human microcosm, his art finds extraordinary warmth. What was perfection in *oggetti*, becomes a delicate tribute to a people and a place in *bali*, a tribute that comes from a deep love for humanity and for the fragile precariousness of everything that is alive.

Also in 2003, Abbado was in Milan for *Miart*, the international contemporary and modern art fair that takes place at *Fiera Milano*, and in Osnabrück (Germany), with *colori*, at the *European Media Art Festival*: an international multimedia art event that hosts both renowned artists and emerging talents. The festival offers a complete overview of the main trends of the last five years in experimental cinema, video, performances, multimedia installations and digital media such as CD-ROM, DVD and the Internet.



bali, interactive 3d slide show, 2003, 87 MB, variable length, 44 KHz, 16 bit, stereo, color, 768 x 768, 25 fps, 24 bit, software: *Director, Photoshop, Macpod, Metasynth, Peak, Premiere*, hardware: 20" LCD touch screen, Apple Dual PowerPC G4 1 GHz, 1 GB RAM, nVidia GeForce 4 mx, Pentium III 933 MHz, 512 MB RAM, nVidia GeForce 3 ti 500

Abbado also created new digital animations, continuing the *motion picture* series with *motion picture III*, *motion picture IV*, *motion picture V* and *motion picture VI*, also made with *Infini-D*. He made a DVD version of all these works, with *motion picture IV* existing only as DVD.

The Most Recent Research

The latest results of Abbado's research seem to move towards the exploration of new techniques and new territories. What distinguishes his work is the variety of techniques and of artworks with variety, as he defines it, the main feature of Nature.

Among the perspectives mentioned by the artist are, besides digital animations, the completion of the project related to sensors begun in England, the development of a new audiovisual software, and a project of automatic classification of his abstract images (under the light of an association with sounds), by using *Matlab*, a piece of software for engineering applications.

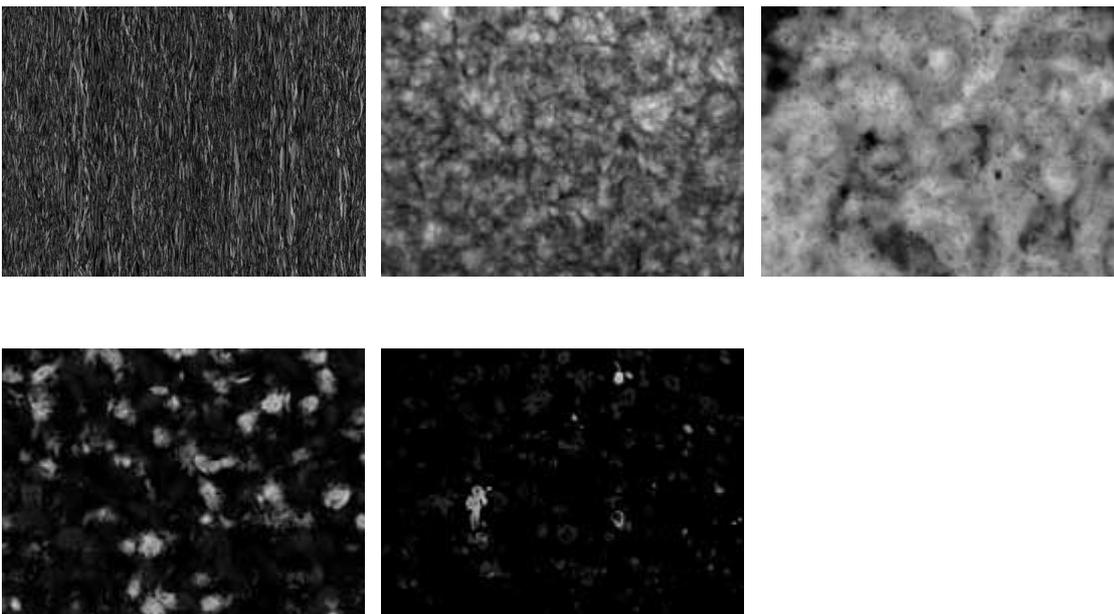
His audiovisual research is more alive than ever, but what is changing are the strategies used in the creation of relationships between rich sounds and complex images.

One of Abbado's most recent productions is *Samson Revisited*, with music by the composer Dinu Ghezzo⁸⁷, temples' pillars, abstract shapes and signs. The piece included some performers, to whom Abbado leaves a special black space in the animation. The piece by Ghezzo is an extension of the music written for John Milton's work *Samson Agonistes*, in which the style of the music intersects with the possibilities of contemporary electronic music. Late Renaissance and early Baroque music are combined according to the sensitivity of the contemporary musician.



Samson Revisited, digital animation, 2003, 8 min. 16 sec., stereo, 44 KHz, 16 bit, NTSC, 4:3, software: *Photoshop, Infini-D, Cinema4D, Premiere, After Effects, QuickTime*, hardware: *Apple Dual PowerPC G4 1 GHz, 1 GB RAM*

Abbado's latest work is *WONOKROMO*, finished in 2004. An abstract animation in two sections without sound that is a study of visual noise. The first section was created with the animation of synthetic hair, changing different parameters. The best sequences have been selected and combined.



WONOKROMO, digital animation, 2003-04, 5 min. 50 sec., silent, b/n, 768 x 576, 25 fps, 8 bit, *Photo JPEG* compression, software: *Cinema4D, Premiere, After Effects, Matlab, FileMaker Pro, QuickTime*, hardware: *Apple Dual PowerPC G4 1 GHz, 1 GB RAM*

The second part required the mapping of different noises onto a flat synthetic surface, and then the creation of various sequences in which the different parameters were changed from time to time. In all 66 sequences were created. Once again they were combined and selected, resulting in a first level of 116 sequences. For each sequence different transfer modes were used: darken, multiply, linear burn, color burn, add, lighten, pin light, exclusion, etc. The fact that for each sequence all

⁸⁷ Composer, performer, Director of the NYU Composition Program; Steinhardt School of Education; Department of Music and Performing Arts Professions; International Director of the New Music Consortium, Inc.; group-in-residence at the *New York University*.

possible combinations had to be tried made this stage particularly long and plodding. The next step was to again select the 60 most interesting results and to combine them to get a second level of 230 sequences. At this point, in order to manage such a large number of sequences, it was necessary to classify them by using a database that could contain different parameters for each sequence. This way, it was possible to choose the most suitable animations for the final sequence. The parameters in the database were: the movie itself, its title, a general category, quality, duration, speed, density, global brightness and maximum brightness. The last two parameters were obtained by analyzing the first frame of each sequence. Other parameters resulted from image analysis, such as average intensity, average contrast, uniformity and entropy. However, these parameters have not actually been taken into account. The second section, composed of 26 animations, was created proceeding this way. Once completed, its global brightness was analyzed and some parts were cut to improve the overall flow.

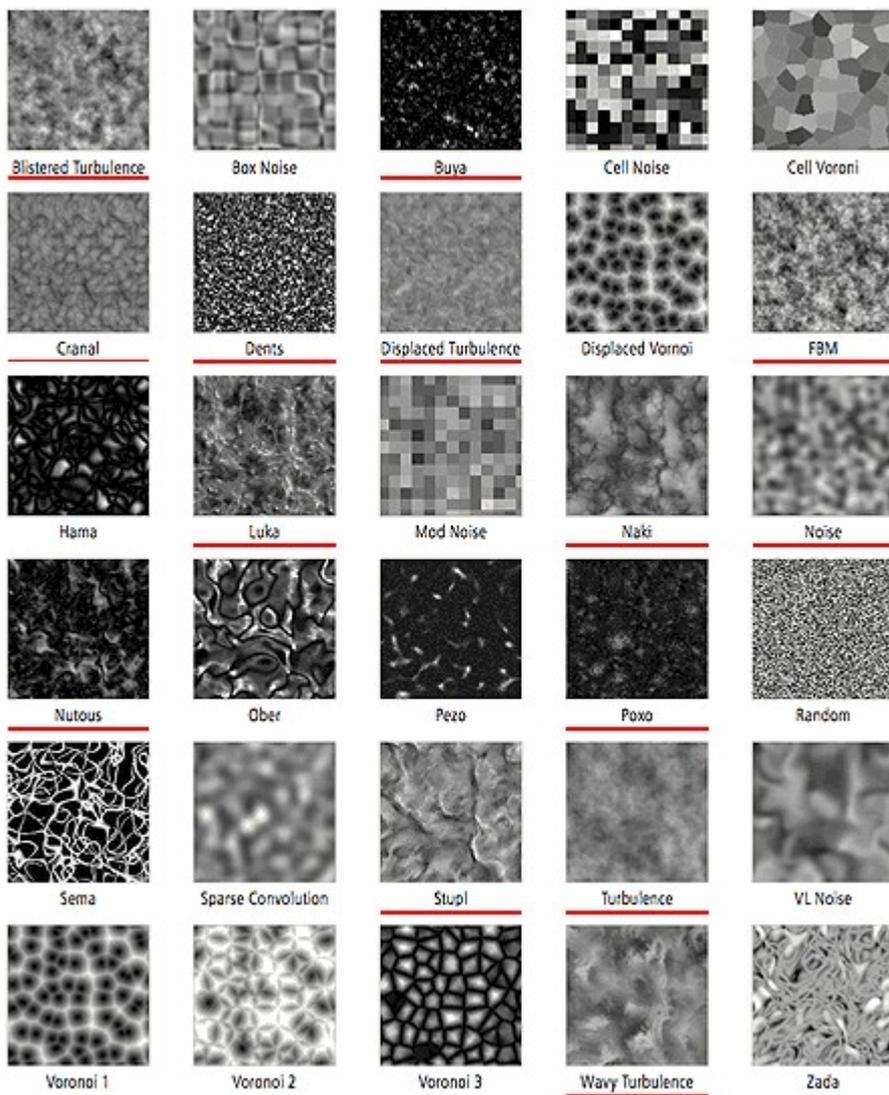


Table of possible noises. The ones used are underlined with red.

Regarding perspectives of development, Abbado studied the statistical classification of images, pattern recognition and neural nets that led to his conducting research with some engineering students of the *Politecnico di Milano*. Giving them a few short videos and their associated sounds, Abbado wanted to observe neural net training to better understand, once the training was done, if one were given certain input, the output would be consistent with expectations. While the results of

that research were inconclusive, Abbado took away from the experience an idea about what caused possible problems, what kind of network to use and which software was suitable to classify the sequences.

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WEBLINKS

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<http://www.well.com>

APPENDIX I: COMMENTS BY EMAIL

16-02-1998

Complimenti! Your work is very impressive, above all your photos.

Elke

14-11-1999

Your colorful digital image are incredible. I don't know what you call them but they're wonderful. They remind me of energetic forms from dreams I've had. And wondering how you imagined and created them borders on magic in my mind.

Richard

02-12-1999

Dear Adriano Abbado,

I am a graduate student at Chico State in California ... and I am doing a 10 minute presentation on your work. ... I respond to your work, especially the pieces that involve sound/music. I have studied classical voice and fine art, your work is the first I have found to visually simulate and combine the two mediums. I recently have been working in sculpture, video and digital art. The video projects are the only ones I have found to combine the two mediums but seeing your work gives me inspiration to continue on exploring. Thank you for your contributions to the world, and write back if you have any questions about this presentation or my work.

Sincerely, Nancie

27-06-2000

Complimenti vivissimi per il suo sito e soprattutto per alcuni suoi quadri che trovo bellissimi e veramente fantasiosi/creativi.

Se mi son preso il disturbo di scriverle è perchè mi ha veramente sorpreso la bellezza dei quadri (1430 e serie)

Fabio

18-10-2000

Egregio Dr. Abbado,

quest'estate io e mia moglie abbiamo visitato, imbattendoci per caso, la mostra delle sue opere realizzata nell'ambito del Meeting di Rimini. Le confesso che siamo rimasti profondamente colpiti dall'originalità e dalla bellezza dei lavori esposti.

Andrea

27-11-2000

Caro signor Adriano, sono un ragazzo che, dopo aver visto il tuo sito e' rimasto stupefatto della semplicita' e, nello stesso tempo, della comunicazione visiva che fornisci.

Luca

11-02-2001

Gentilissimo Sign Abbado,

sono una studentessa del dipartimento di Storia dell'Arte presso

l'Università degli studi di Roma "La Sapienza". Ho visitato il suo sito (www.abbado.com) che mi ha colpito in modo particolare, tanto che ho deciso di farne l'oggetto di una mia tesina d'esame per

la seconda annualità di Storia dell'Arte Contemporanea.
Annalisa

08-05-2002

Hello. I am a deaf student and studying art at university in Australia.

I am really interested in your artwork "a + d2 wide". Can you interpret about this artwork for me please? What is theme for this artwork? What does this artwork means to you?

When I saw your artwork "a + d2 wide", I thought this image expresses a sound. I can see and feel a sounds from "a + d2 wide".

Anita

09-01-2003

My name is Peter Duffin, I am the Director of Creative Services at Lincoln Center for the Performing Arts in New York. I was looking at your wonderful images online, and am interested in using one in an upcoming brochure.

19-07-2003

salve,

nelle mie ricerche sul concetto di visual music (per un paper in semiotica del testo visivo) mi sono spesso imbattuto nel suo nome.

vorrei esprimerle la mia ammirazione per il suo lavoro e chiederle la possibilità di soddisfare qualche curiosità...

giuseppe

17 -02-2004

I love Colori. Great art, Lots of colors, it reminds me of cotton candy. Yum. where is it being shown? Thanks

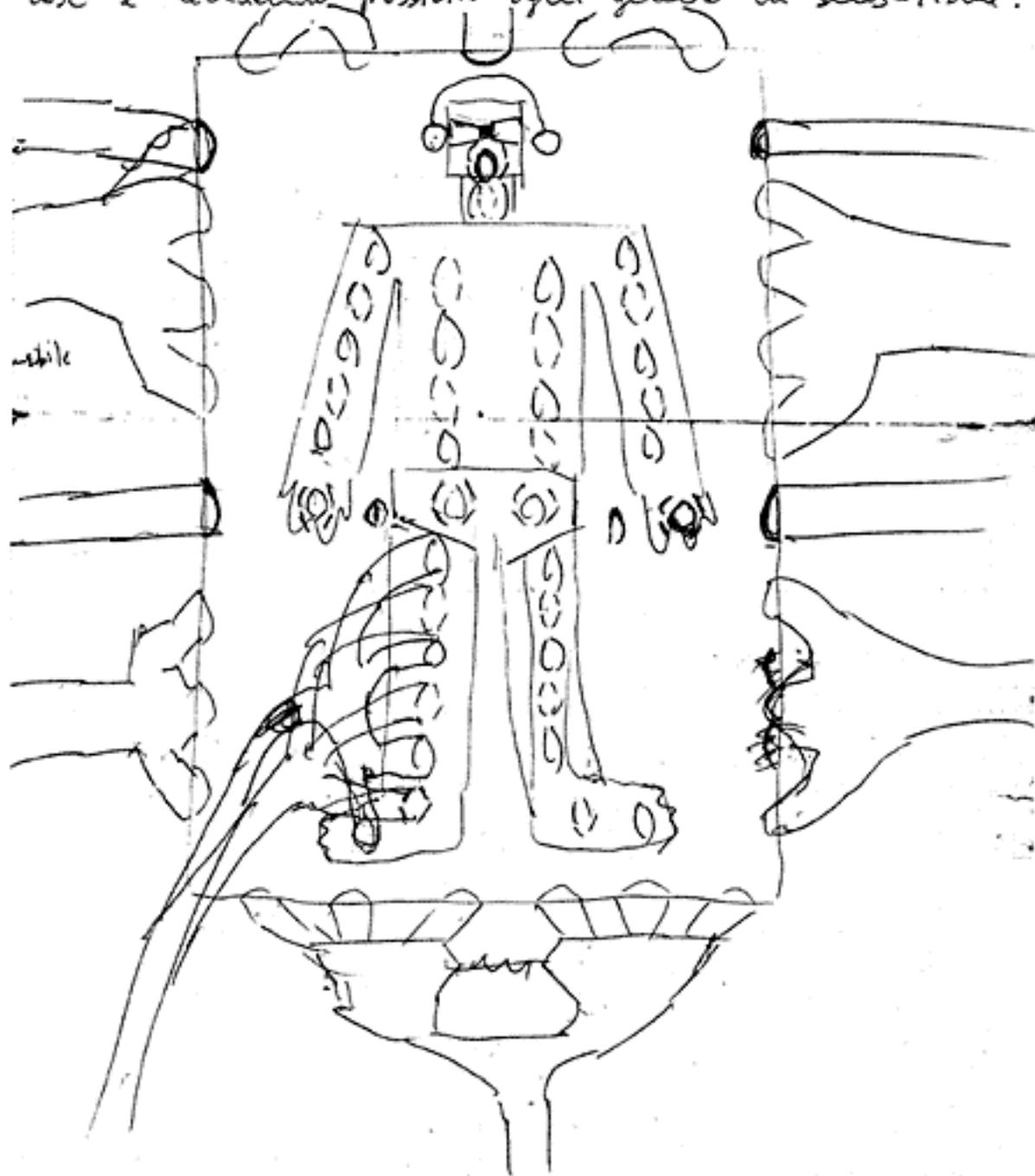
Sean

APPENDIX II: A VIRTUAL REALITY PROJECT

BY ADRIANO ARANO SCRITTO NEL LUGLIO 1972, HANNO
L'idea nasce dalla constatazione della pluralità dei sensi:
Mentre ~~esistono~~ esistono delle arti per il senso della
vista (pittura, scultura, architettura, cinema) e dell'udito (musica,
cinema, teatro, poesia), altrettanto invece non si può dire
per il senso dell'odorato, del gusto e del senso tattile che
è composto da sensazioni di umidità, temperatura e pressione.
L'idea appunto sarebbe quella di unire le varie sensazioni in
modo da fornire uno spettacolo totale. Subito sorge la diffi-
coltà pressoché insormontabile della sensazione gustativa.
Infatti, questa percezione si ottiene solamente ingerendo due
corpi. ~~Questo~~ Ciò comporterebbe un continuo
sforzo fisico e non sarebbe naturale. Per fortuna la sensazione
gustativa è gratificata solamente in poche occasioni.
Lo scopo dello spettacolo è quello di ricostruire nello spettatore quelle
sensazioni che si sono provate altrove. A questo scopo lo spettatore
non deve essere distratto dalla presenza di altri spettatori. Il punto
per questo penserei di creare una cabina in cui sistemare lo
spettatore. Egli dovrebbe stare ^{sotto} su di un sedile ergonomico, ~~la parte~~
~~superiore superiore dovrebbe essere di vetro~~ alta soffice onde ri-
durre al minimo le citazioni ~~le citazioni~~ Una cuffia
stereofonica sarà posta in prossimità delle orecchie ma in modo
che queste non vengano in contatto per evitare un'ulteriore
sensazione tattile. Molto vicino anche qui, ma in modo che non
tuchino, vanno posti 2 occhiali rivestiti di gomma-pardove tipo per-
iscopio che spuntano fuori dalla cabina; questi occhiali devono
avere delle lenti pololite che consentano, unitamente alla proiezio-
ne speciale, una visione tridimensionale.
Esternamente alle cabina, vanno posti un condizionatore, un umidifica-
tore, un ventilatore ~~una~~, una bombola di ossigeno. Questi avranno
il compito (di trasportare nel modo giusto (in tutti i
sensibili) di respirare; ma che dovrà avere anche

nasale, essi dovranno essere sottoposti a "controllo medico". Infatti alcuni odori artificiali possono essere cancerogeni.

In futuro, quando la tecnologia sarà molto raffinata, si potrà agire con impulsi elettronici molto esatti e perfezionati sui nervi sensitivi, semplificando enormemente le cose e rendendo possibile ogni genere di sensazione.



INDEX

INTRODUCTION

<i>Computer Graphics</i>	pag. 1
<i>Electronic Music</i>	pag. 4
<i>Computer Music</i>	pag. 9
<i>Art and software</i>	pag. 11

CHAPTER I (1978-1988)

<i>From the beginning to the Venice Biennale (1978-1986)</i>	pag. 13
<i>Two Years In The U.S.</i>	pag. 20

CHAPTER II (1989-1999)

<i>The Early '90s</i>	pag. 28
<i>The Multimedia Experiences and Theatre</i>	pag. 35
<i>The late '90s</i>	pag. 39

CHAPTER III (2000-2003)

<i>The New Millennium</i>	pag. 43
<i>The Most Recent Research</i>	pag. 52

BIBLIOGRAPHY	pag. 56
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WEBLINKS	pag. 57
-----------------	---------

APPENDIX I: COMMENTS BY EMAIL	pag. 58
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APPENDIX II: A VIRTUAL REALITY PROJECT	pag. 60
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