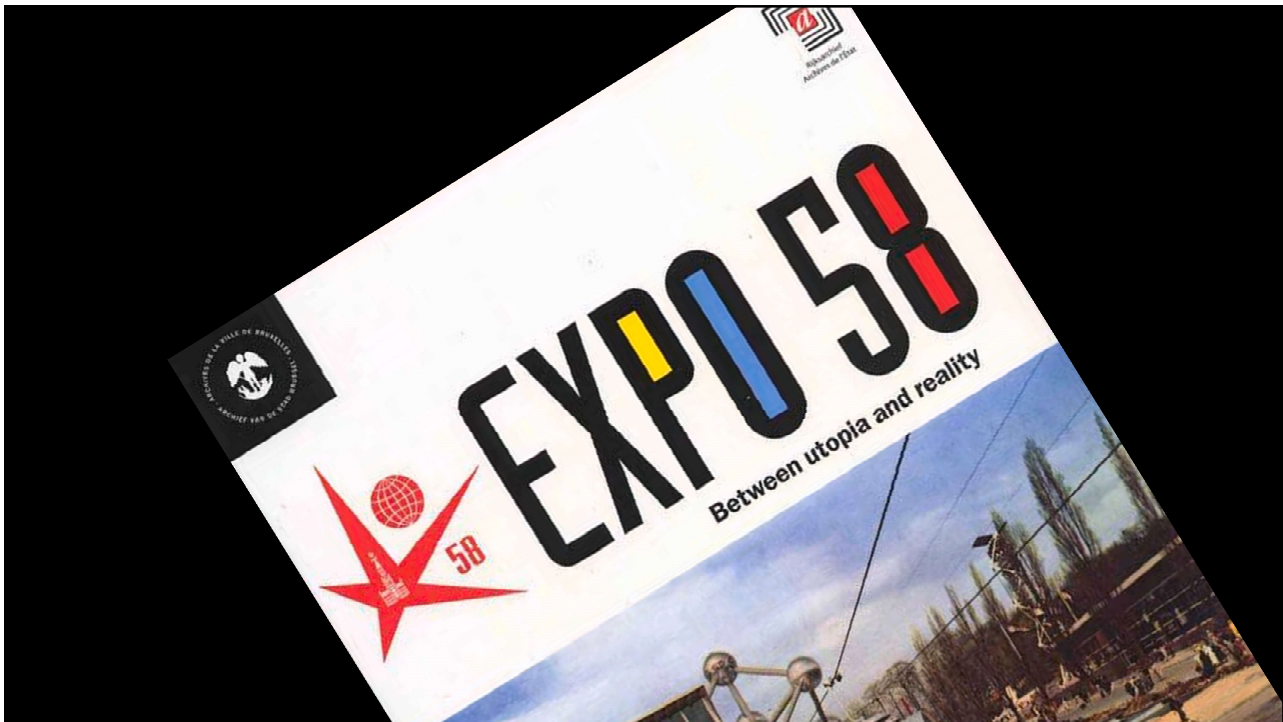


Philips Pavillon

Le Corbusier
Iannis Xenakis
Edgar Varese



Expo '58 + Philips Pavilion / Le Corbusier and Iannis Xenakis

- In 1956, preparations had begun for the 1958 World's Fair in Brussels. This was to be the first World's Fair held since the end of World War II, the concept behind the Expo was to celebrate the rejuvenation of civilization from the destruction of war through the use of technology.
- This World Fair is best known for the musical advances that was combined with architecture, creating a gestalt through an experiential encounter where body meets sound and space.







- At the forefront of this new journey was the Philips electronics company. Not wanting to be outshone by the Americans and their developments with color television, the **Philips Electronics Company** decided to step away from displaying commercial goods and instead create a unique experience for the thousands of people that would be attending the Expo.
- **The experiential space was created by putting together an international team consisting of an architect, an artist and a composer to create a pavilion displaying electronic technology in as many forms as possible, serving arts, culture, and the overall betterment of humankind.**

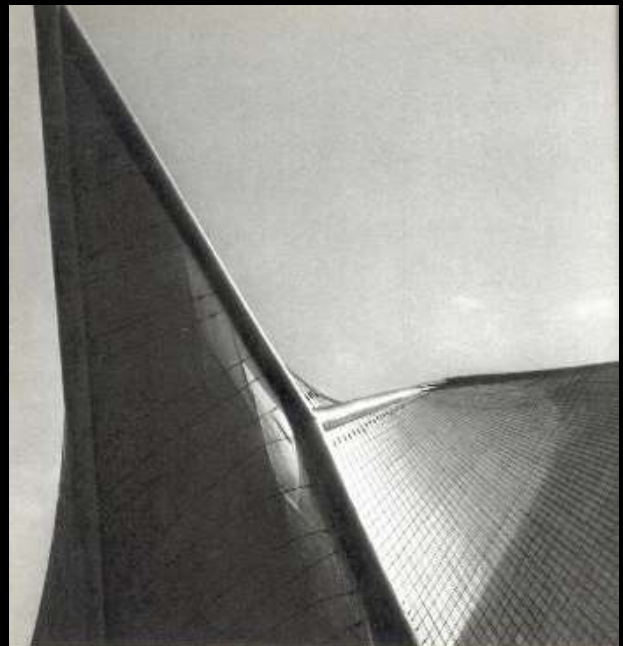


- The Philips electronics company turned to the office of Le Corbusier for the final commission of the pavilion.
- LC replied by saying that, "*I will not make a pavilion for you but an Electronic Poem and a vessel containing the poem; light, color image, rhythm and sound joined together in an organic synthesis*".
- LC would take on the sole task of developing the interior of the vessel, leaving the exterior design of the pavilion to the responsibility of his protégé designer Iannis Xenakis, whom was also trained as an experimental composer and thusly would also create the transitional music that guided you into the formal space of organized sound.

- For the composer of the Poem Electronique, Le Corbusier commissioned Edgard Varese, choosing him over other well know composers of the time such as Benjamin Britten and Aaron Copland, both of whom the Philips company preferred over Varese.
- Le Corbusier gave minimal input into the details of how the interior of the pavilion would work, instead giving only a vague concept of what the experience should accomplish.
- The basic guidelines given to both Xenakis and Varese were that the interior was to be shaped in a manner similar to the stomach of a cow, with the form coming from a basic mathematical algorithm.

- The concept was that audience members would enter in groups of 500 at ten-minute intervals, for two minutes, as the audience filed in through a curved passageway, they would hear Xenakis's transitional piece before entering a room that would go into darkness, enveloping the audience in a space of light and sound for eight minutes while an accompanying video displayed images along the walls of the pavilion.
- At the end of the eight-minute piece, the spectators would exit, digested, through another exit while the next group filed in.

- For the final design of the Pavilion, Xenakis, with a team of engineers and artist, developed a three-pronged tent, constructed with thin-shelled concrete panels of hyperbolic paraboloid shapes. The execution of the design involved a tensile structure of steel cables strung from steel posts at the end of the tent to form the hyperbolic paraboloids. The complex shapes of the pavilion made it impossible to build a conventional poured concrete structure, the solution reached by Xenakis and his engineer Hoyte Duyster, was to create a system of precast concrete panels hung in tension from wire cables.



- The resulting Poem Electronique along with the pavilion, was the first electronic-spatial environment to combine architecture, film, light and music to a total experience made to functions in time and space. It was through these visually inspired concepts that elevated the Philips Pavilion into a complete experience where one could visualize their special movements through a space of sound, light, and time. While the physical form of the pavilion may have been temporary, for those with the privilege of experiencing the space it provided them with a temporary relief of sound through space in their respective time.

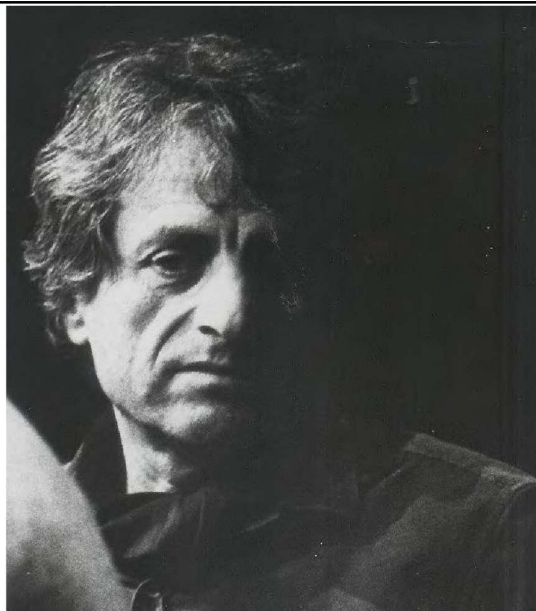
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- } Charles-Edouard Jeanneret-Gris
- } October 6, 1887 - August 27, 1965
- } Swiss-born, French Architect, designer, urbanist, writer, and painter
- } Worked under Auguste Perret, Peter Behrens
- } Vers une architecture (1923)
- } "Dom-ino" House (1914-1915)
- } Five points of Architecture
 - } lifted structure off ground
 - } free facade
 - } open floor plan
 - } continuous row windows
 - } roof garden
- } The Modular
- } "The house is a machine for living in."

philips
pavilion
le corbusier /
iannis xenakis

le corbusier

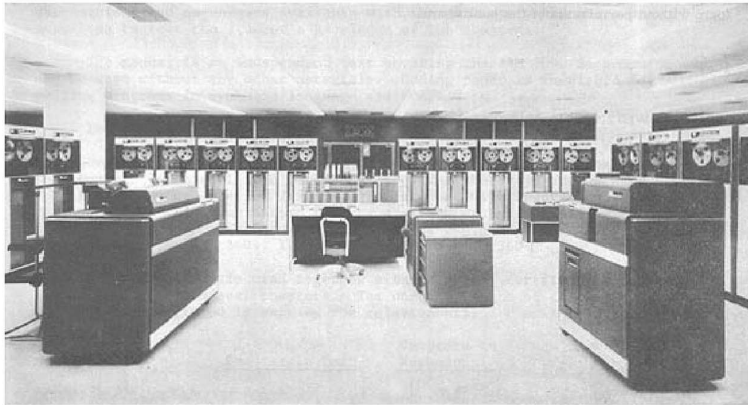


- } May 29, 1922 - February 4, 2001
- } Greek Composer, Architect, Mathematician, Philosopher
- } studied Architecture and Engineering in Athens
- } major figure in postwar development of musical modernism
- } Stochastic music
 - } elements are randomly generated
 - } elements created by strict mathematical processes
- } 1947, hired as Le Corbusier's engineer
- } 1954, composed Metastasis, which Philip's Pavilion is based on, textures of glissandi are based on ruled parabola and graphically conceived [glissandi = glide from one pitch to another]
- } 1959, dismissed by Le Corbusier, and subsequently gave up architecture and shifted his focus towards music
- } "My own musical research on sounds with continuous variation in relation to time [...] led me to lean towards geometric structures based on straight lines : ruled surfaces."

philips
pavilion
le corbusier /
iannis xenakis

iannis xenakis

-) exploring the mathematical law of probabilities in music with the aid of computer
-) 1962, put together a computer program for musical composition, his ST works, with the help of IBM 7090 computer
-) sells for \$ 2,898,000 or rents for \$63,000 a month
-) general purpose data processing system, designed with special attention to needs of engineers and scientists

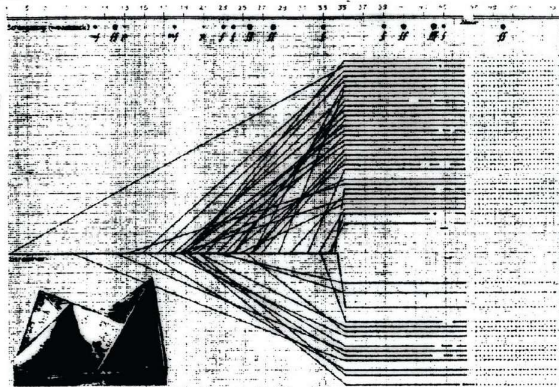


philips pavilion
le corbusier / iannis xenakis

iannis xenakis / IBM 7090 computer

-) a 8-minute orchestral work for 61 musicians
-) inspired by Einstein's view of time, and his memory of the sounds of warfare
-) structured on the ideas of The Modular
-) no two performers played the same part, each player is responsible for completing glissandi at different pitch levels and times
-) opening of strings in unison and split into 46 separate parts

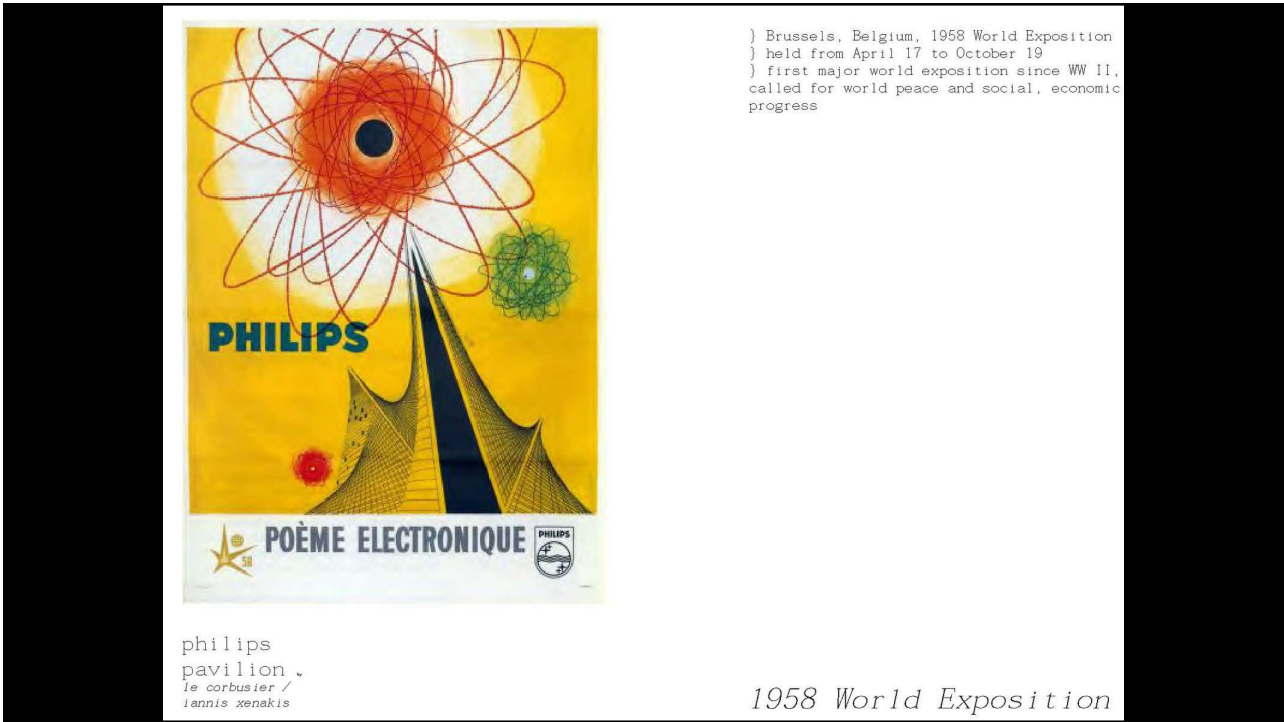
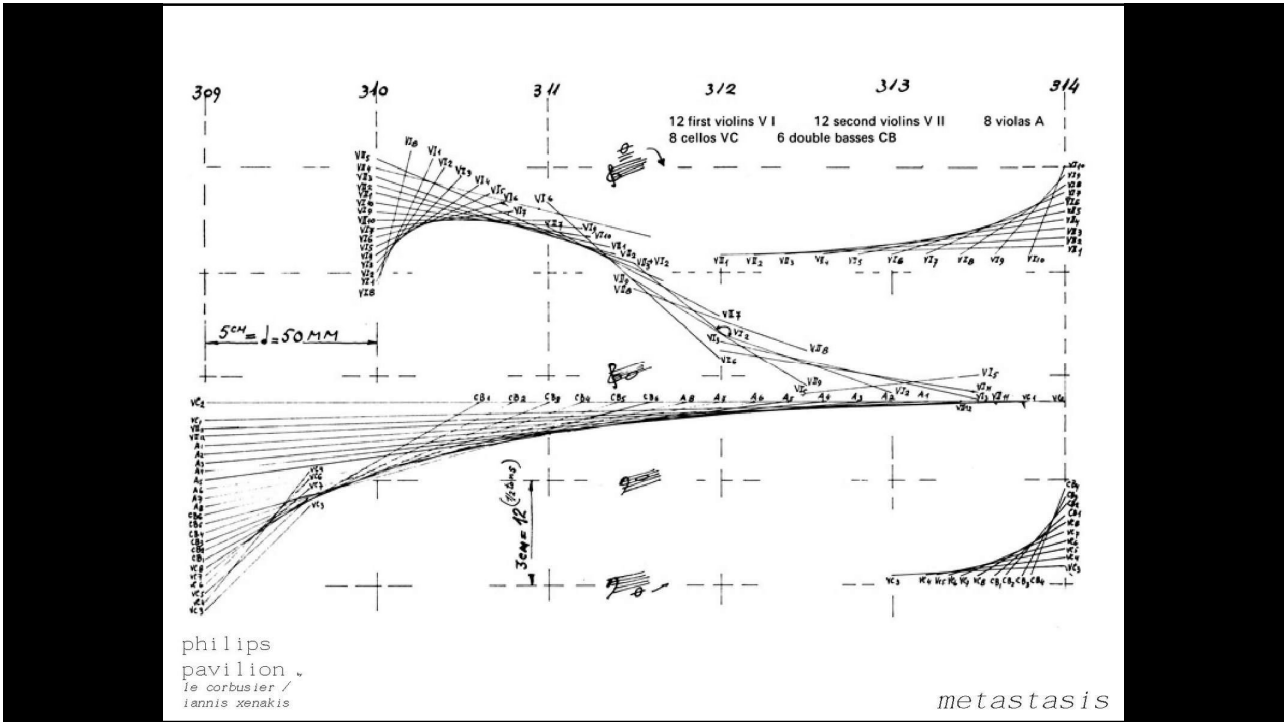
Metastasis: Graph of opening glissandi

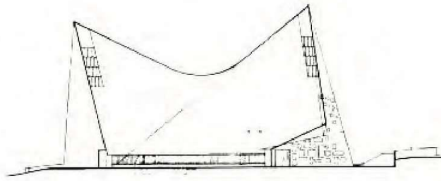


A ufw	
	b' = ais'
	as' = gis'
	ges' = fis'
	es' = dis'
	des' = cis'
	b = ais
	as = gis
	ges = fis
	es = dis
	des = cis
	B = Ais

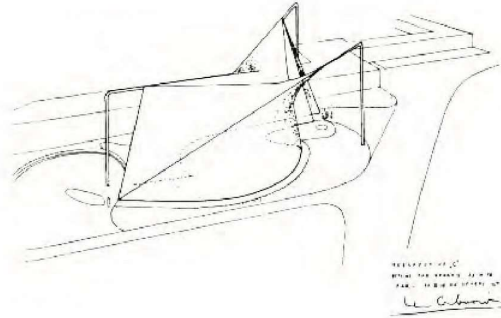
philips pavilion
le corbusier / iannis xenakis

metastasis





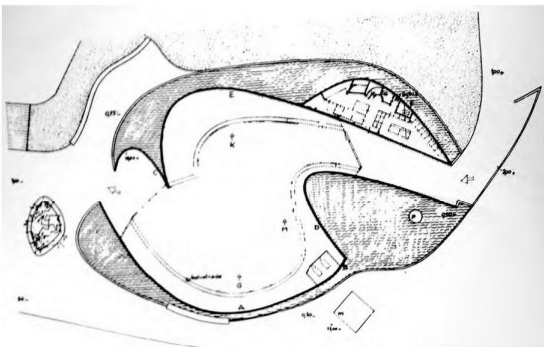
-) an international team of architect, an artist, and composer
-) Le Corbusier
-) Iannis Xenakis
-) Edgard Varese



RELEVÉ DE LA
MISE EN ŒUVRE DE LA
PARK - 10.000 M. DE LONGUEUR
Le Corbusier

philips
pavilion
le corbusier /
iannis xenakis

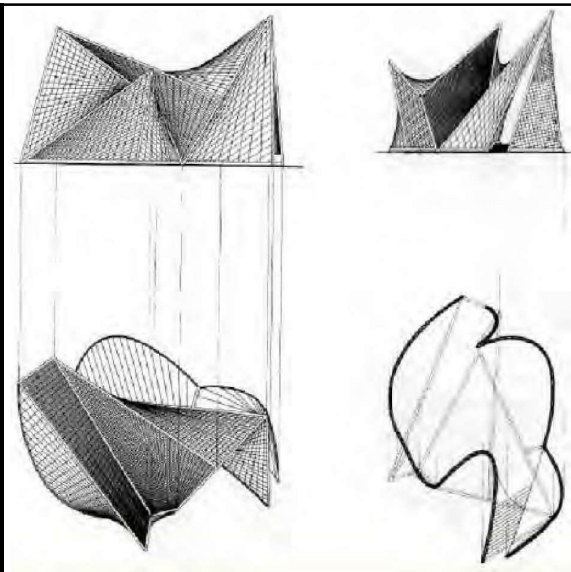
philips pavilion



-) "I will not make a pavilion for you but an Electronic Poem and a vessel containing the poem: light, color image, rhythm and sound joined together in an organic synthesis
-) interior shaped like the stomach of a cow
-) did not display Philips' products, but rather a showcase of technical capabilities and potential of Philips [illumination, electroacoustics, electronics, automatic control]
-) pavilion as a conditioning machine that generates an irresistible experience
-) an experience of continuously shifting play of projected pictures and colors
-) first two minutes, audience would enter through a curved walkway while being exposed to a short transitional piece of music
-) upon further inside the pavilion, audience would be shown a series of interior music, and lights for 8 minutes, it would also be accompanied by colored lights, images and films projected on the walls
-) after the conclusion of the piece, audience would exit, after being "digested" by the conditioning machine

philips
pavilion
le corbusier /
iannis xenakis

philips pavilion



) exterior design is a three-pronged tent, built with the use of ruled surfaces creating hyperbolic paraboloid similar to Xenakis' Metastaseis compositional diagram
) with the use of ruled surfaces, it enabled the minimal use of material for given surface and volume

philips pavilion
 le corbusier / iannis xenakis

philips pavilion



) constructed geometrically out of shell segments
) an efficient and simplifying the process of construction
) walls were constructed of rough slabs in sand moulds on the ground
) mounted in place by use of movable scaffolding supported on a double network of cables

) to resolve all the structural problems, Vreedenburg, and Duyster were consulted

philips pavilion
 le corbusier / iannis xenakis

philips pavilion



) calculations and scale models were tested, concluding that the skin should be constructed with a 5-centimeter-thick prestressed concrete shell

philips pavilion
le corbusier / iannis xenakis

philips pavilion



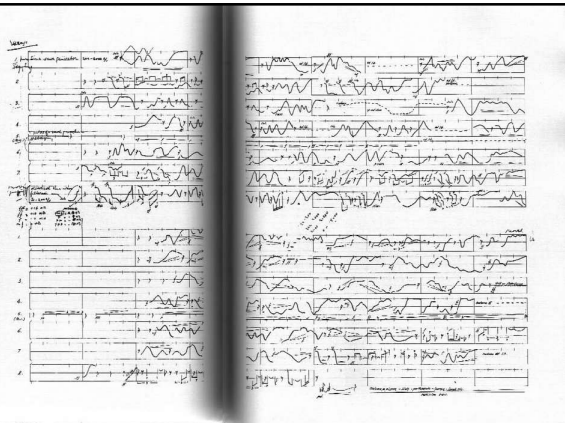
philips pavilion
le corbusier / iannis xenakis



) continuous shifting play of projected images and colors
) demonstrate science and technology as a novel form of expression using light and sound
) main theme was celebration of progress, and also criticism of atomic bomb, and concentration camps

philips pavilion
 le corbusier / iannis xenakis

le poeme electronique



) final scenario consists of 7 parts

1. Genesis	60"
2. Spirit and Matter	60"
3. From darkness to dawn	50"
4. Man-made gods	70"
5. How time moulds civilization	60"
6. Harmony	60"
7. To all mankind	120"
	480"

) Le Corbusier's building were included in the 7th part

- urban planning and skyscraper for Alger (1931)
- La Ville Radieuse (1935)
- Modulor (1950)
- Unite d'Habitations, Marseille (1952)
- Nantes (1953)
- Chandigarh (1955-1961)

philips pavilion
 le corbusier / iannis xenakis

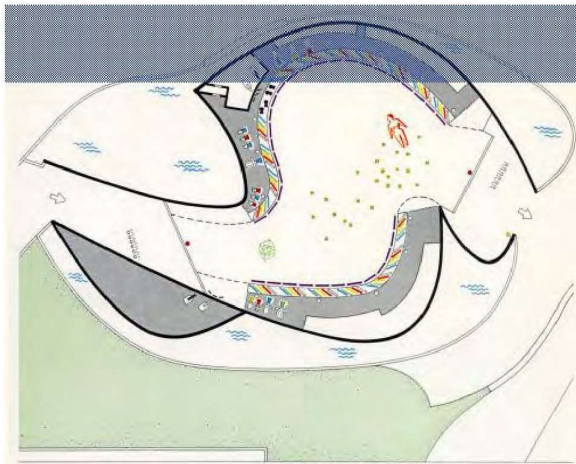
le poeme electronique



-) colored lights projected onto walls to accentuate the shape of interiors
-) a female figure, and an abstracted metal tube sculpture suspended in space
-) sculptures would shine red and blue when irradiated with UV lights
-) 2 large screens for projections of images and film
-) many images were taken from Malraux's 'Le Musée Imaginaire' which is a metaphor for complete knowledge, ideal work of art, and also a confrontation of metamorphoses

philips pavilion
le corbusier / iannis xenakis

le poeme electronique



- | | |
|---|---|
| <ul style="list-style-type: none"> ☐ - projecteur cinématographique des „trirons“. ☐ - projecteur cinématographique des „ambiances“. ☐ - appareil pour la projection fixe des „ambiances“. ☐ - appareil pour la projection fixe de images. ☐ - appareil pour la projection fixe d'un soleil. ☐ - appareil pour la projection fixe d'une lune. ☐ - projecteur pour la production de taches colorées. ☐ - lampe à rayons ultraviolets (pour les „volumes“). | <ul style="list-style-type: none"> ● - petite lampe à incandescence (toile). ☐ - Lampes „TL“M. blanches et colorées. ☐ - lampes à rayons ultraviolets (pour les dalles). ☐ - éclairage de secours (blanc). ☐ - éclairage de secours (rouge). ☐ - éclairage de secours en cas de panique. ☐ - miroirs pour les faisceaux des „trirons“. ☐ - lampes „TL“M jaunes dans le portail de sortie. |
|---|---|

philips pavilion
le corbusier / iannis xenakis

le poeme electronique

PROJET DE II
PROJET DE 02/03/57
12/50 4/16 4/24 1/20

schéma de 8 hauteurs

ce schéma de 8 hauteurs, rétrogradé dans l'ordre et rétrogradé dans l'ordre, rétrogradé dans l'ordre, rétrogradé dans l'ordre, rétrogradé dans l'ordre, rétrogradé dans l'ordre, rétrogradé dans l'ordre, rétrogradé dans l'ordre.

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01	Les portes de la	7,111	01	Les portes de la			
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07	Les portes de la	7,111	07	Les portes de la			
08	Les portes de la	7,111	08	Les portes de la			
09	Les portes de la	7,111	09	Les portes de la			
10	Les portes de la	7,111	10	Les portes de la			
11	Les portes de la	7,111	11	Les portes de la			
12	Les portes de la	7,111	12	Les portes de la			
13	Les portes de la	7,111	13	Les portes de la			
14	Les portes de la	7,111	14	Les portes de la			
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philips pavilion
le corbusier / iannis xenakis

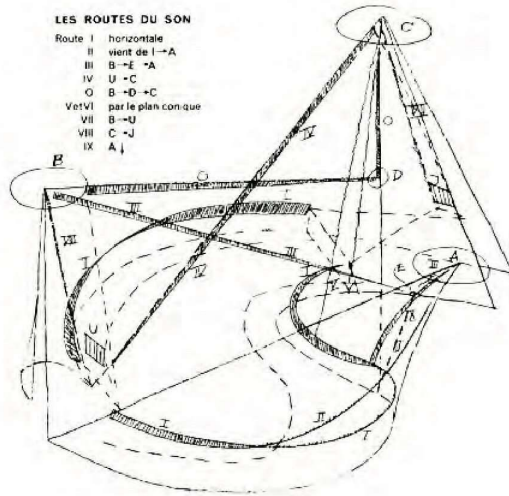
le poeme electronique

) use of electronic music to create stereophony and artificial reverberation
stereophony = illusion of motion of sounds

) new experiences from simultaneous perception of three sound patterns coming from or traveling in different directions
track 001 - original sounds
track 002 - reverberation
track 003 - stereophonic effects

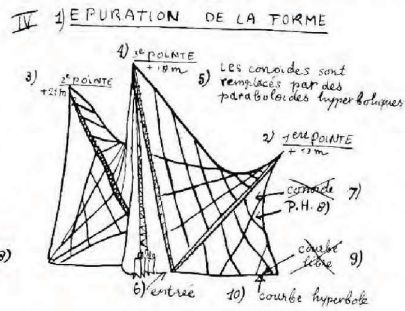
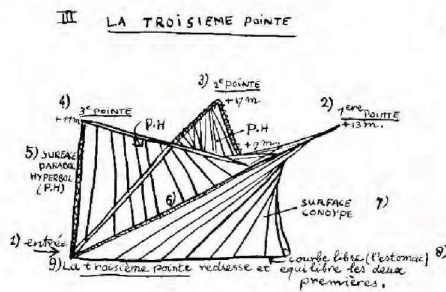
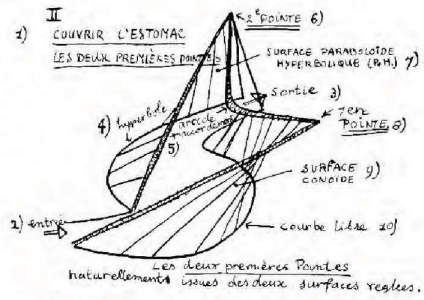
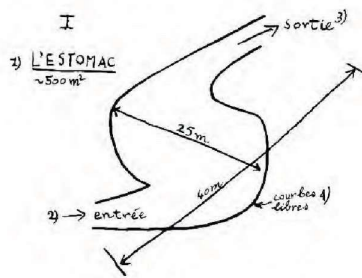
philips pavilion
le corbusier / iannis xenakis

le poeme electronique



philips pavilion
le corbusier / iannis xenakis

le poeme electronique



philips pavilion
le corbusier / iannis xenakis



philips
pavilion
le corbusier /
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pavilion
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