

Chapter 8. Meeting 8, Recording: Musique Concrète and Electronic Music

8.1. Announcements

- Quiz next meeting, on Thursday
- Discussion workshop meeting on Thursday; bring laptops, have PD working, install Martingale, install Audacity
- No class next Tuesday (Monday schedule)

8.2. Listening: Ruttman

- Walter Ruttman, *Wochende* (1930)
- A sound-portrait of a weekend
- Sampling, montage, and the inspiration of film (La Motte-Haber 2002, p. 201)
- Employed sound on film audio recording; permitted editing and splicing like tape
- How are narrative and musical elements developed?

8.3. Predecessors of Concrete Music

- Respighi: includes pre-recorded sounds of birds in performance of *The Pines of Rome* (1924) (Holmes 2008, p. 43)
- 1930: *Grammophonmusik and Trickaufnahmen* Experiments of Hindemith and Toch (Holmes 2008, p. 43)
- 1939: *Cage Imaginary Landscape No. 1*: variable speed-turntables playing test records as a sound source (Holmes 2008, p. 45)

8.4. Listening: Schaeffer

- Pierre Schaeffer, *Quatre études de bruits, 3. Etude aux chemins de fer*, 1948
- One of five studies of noise

8.5. Musique Concrète: Schaeffer

- Trained as a radio engineer for Radiodiffusion-Télévision Française (RTF)
- Early work in a radio opera, combining non-musical sounds in a radio montage: 1944: *La Coquille à planètes*
- Employed ideas of “sound object” from Abraham Moles (Holmes 2008, p. 45)
- Goal of music made concretely, working directly with sounds, not music made abstractly, with symbols (scores)
- Any sound source could become musical

8.6. Musique Concrète: Original Techniques

- In the late 1940s Schaeffer employed radio equipment at RTF
- Recording directly to disc: no tape
- Playback and mixing from four turntables (Holmes 2008, p. 49)
- Microphones, audio filters, reverberation units
- Sound effects libraries for radio
- Lockgrooves as loops (Holmes 2008, p. 49)
- 1951: Schaeffer organizes studio with tape-based recorders, forms Groupe de Recherche de Musique Concrète, by 1958 becomes Groupe de Recherches Musicales (GRM)

8.7. Early Tape Music: Tools and Techniques

- Cutting, splicing, and mixing
- Creative cutting to mask, fade, and alter amplitudes (Holmes 2008, p. 126)
- Altering and reversing playback speed of tape [samplePlayer.pd]
 - With recording device
 - With a keyboard: the Phonogène à clavier (1952)



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- Filtering
- Amplitude envelopes, amplitude modulation, ring modulation
- Delays, loops, echos, feedback, and reverbs
 - With tape-based devices
 - With physical re-recording devices

8.8. The Click

- When a signal is forced to jump to zero, a high frequency click occurs

- Can happen when cutting between tape or digital audio
- A technical error more often than an aesthetic choice [signalWaveforms.pdf]

8.9. Listening: Schaeffer

- Pierre Schaeffer, *Etude aux objets*, 2. *Objets étendus*, 1959
- Extended, or wide, objects

8.10. Listening: Le Caine

- Hugh Le Caine, *Dripsody* (1955)
- Transformations of a single sound source as an organizing principle

8.11. The 1958 Brussels World's Fair

- Brussels Worlds Fair, Philips Pavilion, 1958
- Building “designed” by Le Corbusier (1887-1965) with Xenakis as assistant



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- Xenakis based his design on structures used in the composition of a musical work

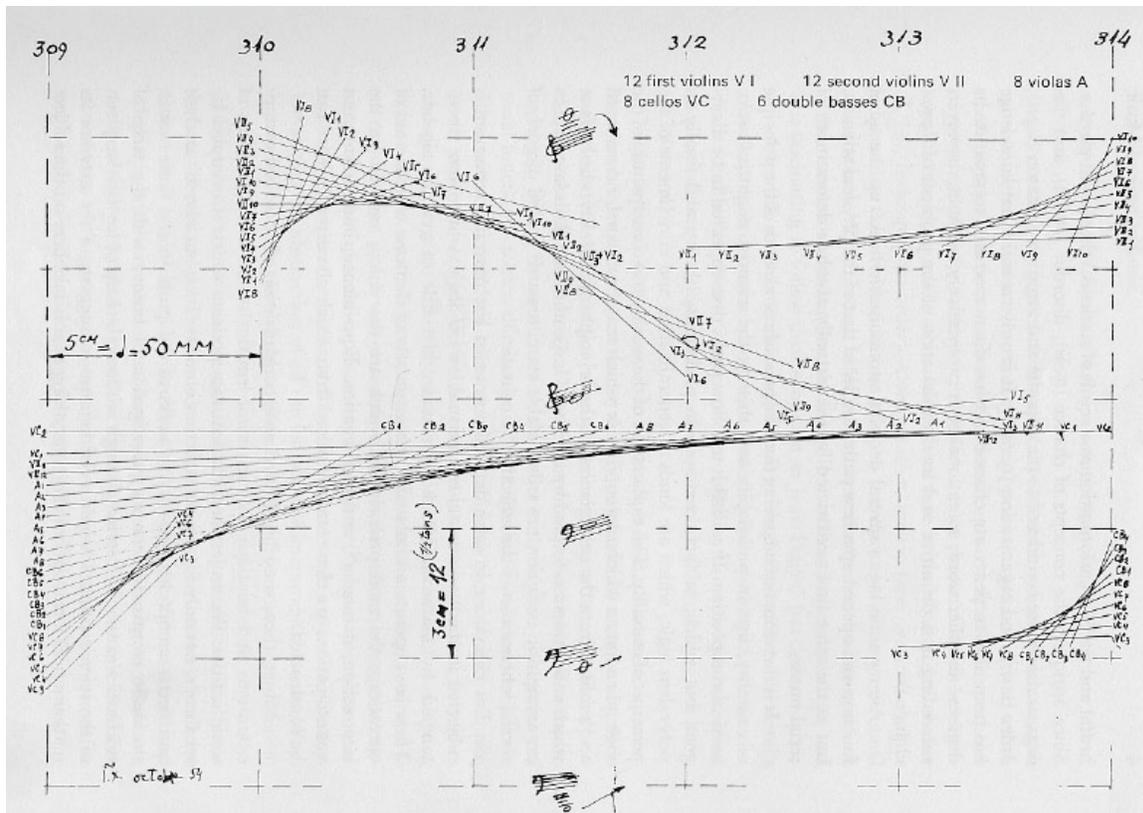


Fig. I-2. String Glissandi, Bars 309-14 of *Metastasis*

Source: Xenakis, I. *Formalized Music: Thought and Mathematics in Music*. Hillsdale, NY: Pendragon Press, 1992.

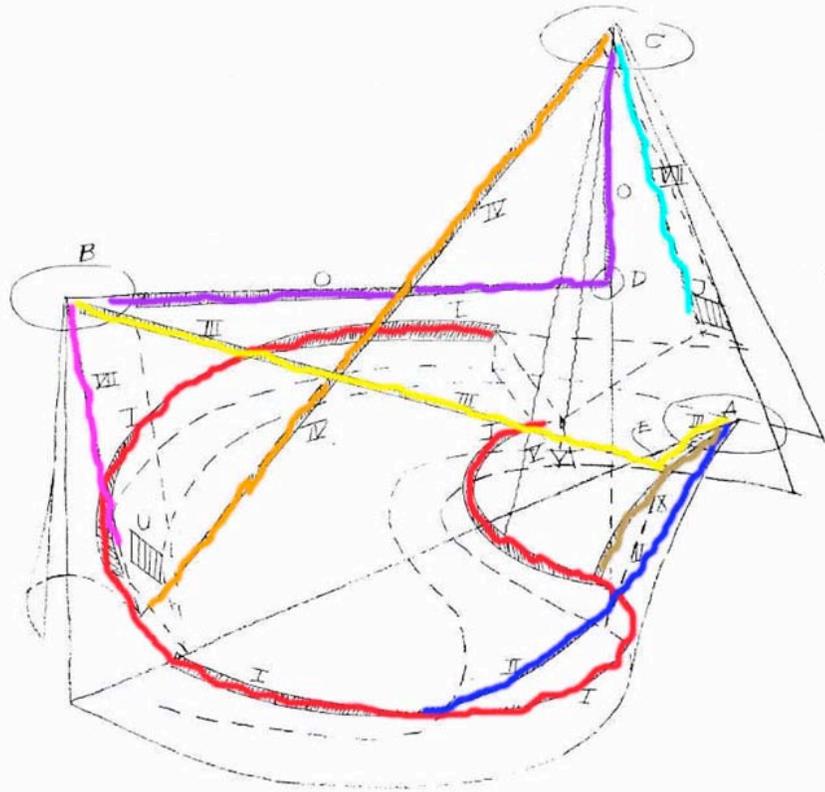
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Diagram of the "Sound Routes." Iannis Xenakis.
[Philips Technical Review]

- Route I horizontal
II I ▶ A
III B ▶ E ▶ A
IV U ▶ C
O B ▶ D ▶ C
VI along the warped surface
VII B ▶ U
VIII C ▶ J
IX A ▼



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- 500 people saw the 10 minute performance at a time; 2 million had seen it by the end of the Worlds Fair
- Varèse: Poem Electronique, 1958
- First electroacoustic work integrated with an audiovisual context (Lombardo et al. 2009, p. 24)
- Thematic organization (Lombardo et al. 2009, p. 24)

Table 1. Thematic Sections of *Poème Électronique*: Selection of Images from the Film and Sounds from the Music Soundtrack

Section	Film images	Sounds
<i>Genesis</i> 0''–60''	Le taureau [the bull], Le toréador [the bullfighter], Tête du jour de Michel-Ange [Head of the day of Michelangelo], Un film animé: un visage de femme s'éveillant, souriante puis ahurie [An animated film: a face of woman awakening, smiling, then dazed]	Bell, Wblock, Oscsweep, Ebtuplets, HisynSwell, GrainAb, Osc's, LoblipE-B, Metalshake
<i>Spirit and Matter</i> 61''–120''	Crane [Skull], Objets L.C. [Objects from Le Corbusier's collection], Les quatre savants [the four wise men], Tête de nègre Congo [Congoese head], Tête de fille Monebutu [Head of Monebutu girl], Courbet femme couchée [Courbet's woman lying down], Art Sumerien [Sumerian art], Squelette d'homme et dinosaurien [Skeleton of man and dinosaur], Les masques esquimaux [Eskimo masks]	Oscshake, 4hits, Shakes, Machinesweep, 3squeeks, 4bassoonnotes, Sigh, Bassoonsolo, Gulls
<i>From Darkness to Dawn</i> 121''–204''	Yeux de hibou [Eyes of owl], Tête de pintade [Head of guinea fowl], Les écrans sont blancs [White screens], Statue Dieu de la guerre [God of war statue], La main du squelette de Cro-magnon [Hand of Cro-magnon skeleton], Camp Ohreruf [Ohreruf Camp], Jouets d'enfants [Children's toys], Descente de croix de Giotto [Giotto's descent from the cross], Christ, Vierge et enfant [Virgin and child], La vierge de douleur [Virgin of pain]	Timpani, Tju-tja, Tjukketjuk, WhistleFinger, Oempang, pss-pss, Parabool, Tok-Tok, Reeds
<i>Man-Made Gods</i> 205''–240''	Île de Pâques [Easter Island], Tôto Angkor, Coquillages L.C. [Le Corbusier's shells], Bouddha [Buddha], Art Baga nègre [Black Baga art], Le signe de Mahomet [Muhammad's sign], Les mains de Bouddha [Buddha's hands]	Shakers, Slowblocks, 4notes, Vox_lowtrill, Uhh-gah, Wehweh, 4-blocks, Ooo
<i>How Time Molds Civilization</i> 241''–300''	Variations sur la tête et les outils de l'ingénieur atomique [Variations on the head and the tools of the atomic engineer], Variations sur la foule [Variations on crowd], Stratosphère	Longooo, Voxperc-hit, Percmusic, Vocal, Lowtamhit, Footsteps, Lf-beasts
<i>Harmony</i> 301''–360''	Télescope, Radar, Fusée et lune [Rocket and moon], Les L43 regardent [The L43s look], Les explosions nucléaires [The nuclear explosions], L'écheveau embrouillé [The tangled hank], Les treillis ordonnées de la tour Eiffel [The ordered wire grills of the Eiffel tower], Ballet des éléments mécaniques [Dance of mechanic elements], Visages [Faces]	Osc-cluster
<i>To All Mankind</i> 361''–480''	Laurel et Hardy, Galaxie [Galaxy], Eclipse solaire [Solar eclipse], Flammes solaires [Solar flames], Charlot, 2 amoureux sur un banc [2 in love on a bench], Noir [Black], Les bébés [Babies], Les 4 gratte-ciel Paris [The four Paris skyscrapers], New-York hirsute [Shaggy New York], Chandigarh, Nantilus Modulor, Le plan de Paris [The plan of Paris], Le plan dessiné au fusain extrait du film <i>Kast</i> [The plan drawn in charcoal, extracted from the film <i>Kast</i>], Jeu des 2 enfants [Game of 2 children], La main ouverte [The open hand], Femme seule [Solitary woman], Clochard [Tramp], Gosses [Kids], Le chemin dans la boue [The path into the mud], Le ballet des bébés [Dance of babies]	Lowperc, Loworgan, Drums, Highblocks, stereojet, Metalclang, Electricbell, Scrapes, Timbales, Organbursts, Highticks, Tonebend, Tone2jet

The descriptive names of the images and sounds are either original names from the scenario and the 30-second control score ("Tju-tja," "Tjukketjuk," etc.; see Figure 4) or guesses using a similar style ("Footsteps," "Uhh-gah," etc.). The sounds can be easily recognized in listening to the *Poème*.

Source: Lombardo, V., et al. "A Virtual-Reality Reconstruction of *Poème Électronique* Based on Philological Research" *Computer Music Journal* 33, no. 2 (Summer 2009): 24-47. Courtesy of MIT Press. Used with permission.

8.12. Cologne and Paris

- 1951: NWDR (Northwest German Broadcasting) organizes electronic music demonstration and lectures with Werner Meyer-Eppler, Herbert Eimert, and others
- Leads to formation of a studio (later WDR) under the direction of Eimert
- Post WWII tensions
- Musique Concrète as "fashionable and surrealistic" (Holmes 2008, p. 58)
- Serialism as an organizing principle for electronic music

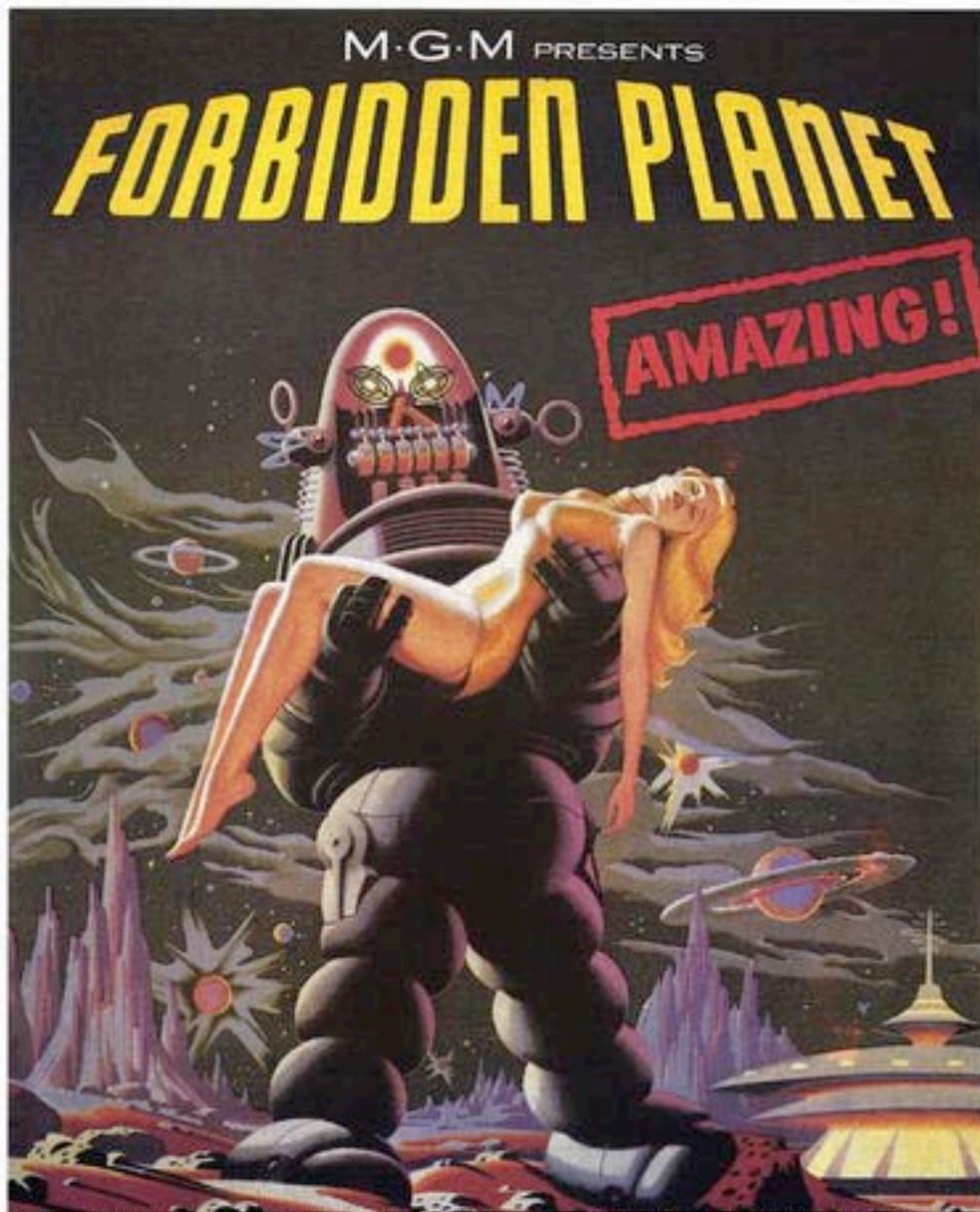
- Aesthetic position of order and control (sound sources, compositional methodology)
- Eimert, *Klangstudie II*

8.13. Listening: Stockhausen

- Stockhausen, *Studie I*
- Application of serial procedure to tape composition (Holmes 2008, p. 63)
- Stockhausen, *Gesang der Jünglinge*, (1955-56)
- Composed for 5-channels
- Integration of voice and electronics, with singer actually imitating pitches of electronic sound (Holmes 2008, p. 66)

8.14. Electronic Music in Cinema: Forbidden Planet

- Louis and Bebe Barron



STARRING WALTER PIDGEON · ANNE FRANCIS · LESLIE NIELSEN
WITH WARREN STEVENS AND INTRODUCING ROBBY, THE ROBOT
DIRECTED BY FRED McLEOD WILCOX · PRODUCED BY NICHOLAS MAYFACK
SCREEN PLAY BY CYRIL HUME
BASED ON A STORY BY IRVING BLOCK AND ALLERADLEY
PHOTOGRAPHER BY EASTMAN COLOR
IN CINEMASCOPE AND COLOR

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1956: “In the year 2257, a spaceship ventures to the planet Altair-IV, where an Earth colony had mysteriously vanished years earlier. There, Commander Adams and his crew meet colony survivors Dr. Morbius, his daughter Altaira, and their mechanized servant, Robby the Robot. But to their dismay they also come into contact with an invisible monster which attacks their spaceship! In order to survive the attack, the crew embarks on a mission more fascinating and complex than they could ever have imagined.”

- Clip viewed in class: Opening credits

- Clip viewed in class: Ship landing

- Clip viewed in class: Climatic scene

- Clip viewed in class: Interview with Bebe Barron

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21M.380 Music and Technology (Contemporary History and Aesthetics)
Fall 2009

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