

# Sounds, symbols & cyborgs

some observations on music, computers, viruses and DNA

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# Listening to music is to receive a message

*For twenty-five centuries, Western knowledge has tried to **look** upon the world. It has failed to understand that the world is not for the beholding. It is for hearing. It is not legible, but audible.*

*Listening to music is to receive a message.*

**Jacques Attali in *NOISE: The political economy of music***

# Layers of music

- **Not linear & progressive but *cumulative & accretive***
- **Each stage mediated by a new technology**  
(Inspired by Attali's stages but with some disagreements!)
  - **The Age of the Spiritual**
    - » music as part of ritual in sacred societies
  - **The Age of the Specialist**
    - » mediated (to some extent) by printed music
    - » music as a fulltime profession
  - \* **The Age of the Sound Object (dominant now)**
    - » mediated by recording technology (and automata)
    - » sampling, musique concrete, EA music
  - + **The Age of the Symbolic (and the virtual)**
    - » mediated by the computer software
    - » *process* of creation is valued, not just the end *object*
  - **The Age of the Self-Modifying Cyborg**
    - » mediated by genetic engineering & bioengineering
    - » incorporating technology into the body
    - » DNA reflects upon & modifies itself

# The Spiritual

- **Tools: voices, instruments**
- **Stockpiling points: part time musicians**
- **Distribution: local**

## **Still exists in our own society as:**

- the “Chant” CD, Dick Einhorn’s Joan of Arc, wedding music
- **Cults of Ecstasy**
  - » **acid trance, other variants of house & techno**
  - » **inducing endogenous brain chemicals**

# The Specialist

- **Tools: voices, instruments**
- **Stockpiling points: printed scores**
- **Distribution: live performances in special locations**
  - **Concert halls**

# Musicians as Gladiators

- Romanticized composers, rock stars
- Exalted, yet used up, consumed by us
- Requisite self-destructive lifestyle
- Sacrificed for the masses? vicarious sublimated violence?
- What I learned in my black dress (and red socks) as a symphony orchestra performer

- **Art education**

- Learning reverence for the masters
  - » i.e. learning that only gods hear the muse?
- Instead of learning to create & to listen to what is being created by our peers

# The Age of Recording

- **Tools: recorders (wire, tape, wax, hard disks, piano rolls...)**
- **Stockpiling points: CDs, tapes**
- **Distribution: broadcast, physical CDs**

# The Sound Object

- **Epiphany: watching Max Schubel (Opus One Records) correct a wrong note by splicing it**
- **The recording is its own object**
  - detached from the original source
  - can be manipulated as an independent object--source of the sound doesn't have to be a musical instrument; it can be an electronic oscillator, it can be noise, it can be “drawing” on film
- **Nothing can match the pleasure of constructing & manipulating sounds so concretely, so directly, by hand**
- **Privatization of music**
  - Composer can make music alone in a studio
  - Listener can experience tape music alone at home
- **A new art form (as film is to theatre)**

# Memory is leverage

- **DNA, culture, history, language, technology, IIR filters, stored computer programs**
- **The indexical inscription of sound into material or magnetic flux patterns turns *temporal patterns into spatial patterns***

# The sampling aesthetic

- **Pierre Schaeffer's revolutionary sound object ~1930**
- **Today pervades nearly all musical styles**
  - samples
  - “producing” an album from independent tracks
  - disk tracks & remixes
  - DJs combining CDs as sound objects
  - Composer/engineer
  - Acousmatic diffusion
- **Juxtaposition of samples of**
  - different styles
  - different times
  - different cultures (“world music”)
- **Purely acoustic music imitates sampling**
  - harmonically static (like repeating an originally tonal sample out of context)

# Nothing ever disappears...

- **Endless accumulation**
  - Old television shows still showing on one of the 500 channels
  - The entire history of Western music is still available to us
  - Old rock music still kicking around
    - » Retro, Encomia, Tributes, Quotation, Imitation
- **Juxtaposition of cultures**
  - Big Macs in Indonesia
  - Hollywood entertainment as a “video object”
    - » virtual memories of New York
    - » sightseeing the 90210 zip code
- **Sound artifacts**
  - like metal artifacts in the Natural History Museum

# *Computer music*

- **More than an indexical inscription--an encoding into symbols called numbers**
- **Software: the difference between an appliance & a partner, mind-leverager, a mental playground, brain mirror, & addictive intellectual slot machine**
  - **Stored programs, symbolic manipulation**
  - **Complex mappings from external data or gestures**
  - **Blurring old boundaries between the sound, the score, the instrument, the composer**
  - **“intelligent” instruments**
  - **algorithmic composition**
  - **data-driven sound**

# The Age of Composition

**in 1977, Attali predicted a future age of composition:**

*to create one's own code and work,*

*to make free and revocable interlinks another's code*

*to compose one's life*

*to hear the noises of others in exchange for one's own*

- **presages a free, decentralized society & political economy**

## **Composition extends beyond sounds**

- to composing software
- to composing a company
- to composing inter-relationships among people
- **Compose yourself!**

I maintain that the computer is the tool of the composition age

- (Attali grouped computer in with appliances, said instrument-building would be the tool)

# The age of composition

- **Tools: computer software (symbol-manipulation languages)**
- **Stockpiling points: disks**
- **Distribution: the network**

**Computer demands composition from us**

**It does nothing by itself**

**Software creates a virtual machine**

**Reconfigurable in form & function**

# Evidence the composition age is beginning

- Products that are tools for creation
  - » CAMCorders, Photoshop, Sequencers, languages
- The return of analog synths
- Extreme fragmentation of styles & identity subgenres
  - » Extrapolate to algorithmically generated music for each individual?
- CD-ROM, Enhanced CD new relationship to the audience
  - » private & interactive music
- World Wide Web (not broadcast, not point-to-point)
  - » self publishing of sounds, images, texts on the web
- In US, large company layoffs resulting in lots of small companies
- Home studios
- CD-R, self published CDs
  - » CMC, E-Music, cooperative distribution
- NoTAM (not so much a *place* as a *network*)
- Software at FTP archives
- Direct distribution of software
  - » on web or CD-ROM
  - » international user groups on the Internet providing support
- Plugins, OpenDoc, OLE

# Continuous composition

- **Composition (process) is a lifelong exploration & refinement & elaboration**
- **Compositions (objects) are just progress reports**
  - necessary for careers
  - useful points of reflection & reevaluation
- **Software is also continuously evolving**
  - “Releases” are necessary & force alignment of documentation & systematic bug fixing

# Education for the Symbolic age

- **Composition, not “music appreciation”**
- **Theorem proving, not mechanized application of memorized theorems**
- **Research (not “re-enactments”)**
- **Perfect computer music student entering school**
  - **First wave, everything was new & only a few hardy experimenters**
  - **Second wave, button-pushers, not willing to program**
  - **Current wave, raised on analog synth sound design, object-oriented sequencers, digital audio workstations, wave editors**

# Dystopia

- **Computers are expensive**
- **Networks require infrastructure from phone companies, cable companies**
- **Someone has to build the computer**
- **Someone makes the chips for the computer**
  - Toxic byproducts of chip manufacturing
- **Trains still move the grain to the cities**
- **People still have to eat, they still get sick, they still have to keep warm**
- **This is just a small elaboration built upon the existing base**
- **Do people really want to create things?**
  - Stores are full of playback devices, but very few recording devices, fewer synthesizing devices, and even fewer programming and composing tools

# Self-modifying Cyborg (the future)

- **Tools: DNA & leveraging prostheses**
- **Stockpiling Points: our genes, our bodies**
- **Distribution: brains directly connected into networks**
- **Genetic engineering is the real revolution**
  - bigger than agriculture, bigger than industrial, bigger than computers
- **DNA reflecting upon itself & modifying itself**
  - Fully sequenced DNA is the ultimate Sound Object(!)
- **The Virtual age will have just been practice for what is to come...**

# Music in the Hyper-brain

- **One continuous composition**
- **Contributed to and elaborated upon by all**
- **No need for progress reports, finished compositions**
- **Joy in the *process*, not the end object**
- **But there will still be need for human equivalent of viruses, moving around bits of DNA (i.e. information) from cell to cell**

# Conclusions

- **Computer is not just a tool for music, it is changing music & it is creating new art forms (just as tape music was a new kind of music, just as film became an art form distinct from live theatre)**
- **You have a hand in shaping this new art form**