Composição não é Edição de Partituras

- Ex: Musescore
  http://www.musescore.org/en

- Composição Assistida por Computador:
  - Escolha de estrutura musical, partes
    - p.ex. Concierto (3 movm: 'allegro-adagio-allegro')
  - Escolha de ritmos
  - Escolha de sons, timbres, notas e sua serialização (melodia) e verticalização (harmonia, acordes)
  - Edição, (re)arranjo, (re)organização, experimentação (audição)

Foundations of CAC

"We may view composer-program interaction along a trajectory leading from purely manual control to control exercised by some compositional algorithm (composing machine). The zone of greatest interest for composition theory is the middle zone of the trajectory, since it allows a great flexibility of approach. The powers of intuition and machine computation may be combined."

Jean-Claude Risset, Musique, un calcul secret ? (1977)
⇒ The musician must be able to communicate with the computer in order to control and organize the details and global aspects of his musical works, and eventually to build his own musical universe in it.

Foundations of CAC

the concept of Compositional Modeling

Study, simulation, explicitation of an object (concept, concrete object, phenomenon, situation, etc.)

"Modeling aims at gathering in a common coherent discourse a number of experiences and observations related by a means which is to determine during the modeling process itself.

"The objective is to define computer models which can be used in situations when a composer wishes to prepare complex and structured musical materials according to a given formalization or to a set of rules and constraints that he is able to describe formally."

Computer-Aided Composition system:
⇒ Allow to determine and create a musical object through compositional models

Fundations of CAC Objects / Processes duality


"Object and process are analogous. The sound object is only a process that can be contracted, the process is nothing more than a dilated sound object. [...] The process makes perceptible what the rapidity of the object hides from us: its internal dynamism."

⇒ Computer-Aided Composition environments must allow to devise, formulate, represent and execute the processes leading to the creation of musical structures

Programme – Symbolic Representation
of a musical object / process
of a compositional model

Depicts musical intentions

CAC Environments ⇔ Programming Languages

OpenMusic (IRCAM)

- a visual programming language based on CommonLisp/CLOS
- icon oriented, uses extensively drag&drop
- built-in visual control structures classes and libraries for music composition

OpenMusic:
- http://www.ircam.fr/openmusic
- http://sourceforge.net/projects/ircam-openmusic

Computer-Aided Composition

Formes
(Rodet, Courte, 1982-85)

PreForm / Esquisse
(Duthen, Byton, Baisnee, 1987)

Crime
(Assayag, Malherbe, 1985)

Boards
(Assayag, 1987-88)

Carla
(Courtot, 1993)

Patchwork
(Laurson, Duthen, Rueda, Assayag, Agon, 1995)

OpenMusic
(Agon, Assayag, 1998)

OpenMusic Spectral Music Revisited

From Désintégration by Tristan Mural

Desintegration (T. Murail)
Nyquist

- A language for sound synthesis and music composition
- Implemented in C and C++ and runs on Win32, OSX, and Linux.
- Nyquist combines a powerful functional programming style with efficient signal-processing primitives.

- Nyquist
  - http://sourceforge.net/projects/nyquist/

Bol Processor

- Produz música a partir de um conjunto de regras (a compositional grammar)
- ‘BP2 handles glossaries enabling it to communicate comprehensively with various brands of MIDI devices, among which General MIDI. It imports and exports data in MIDI files.’

- Links:
  - http://aune.lpl.univ-aix.fr/~belbernd/music/BolProcessorOverview/
  - http://bolprocessor.sourceforge.net/bp2intro.htm

Bol Processor – exemplo de gramática

// Composed by Thierry Montaudon - November 1997
-or.NotReich
-se.NotReich

RND
_mm(60.0000) _striated
gram#1[1] S --> _chan(1) _vel(50) _volumecont _volume(80) A' B' C'
--------
gram#2[1] A' --> A A A A A A A A
gram#2[4] A --> {1, C4 ,- _vel(40) - E#3 G3, A#5, - D5}
gram#2[5] B --> {A A , _vel(60) C2}
gram#2[6] B' --> {B, - F5}
gram#2[7] C --> {B, [_vel(55) - C5]}
gram#2[8] D --> {B, - {C4 F5 E#4]}
gram#2[9] E --> {D, D#4 F4 C5 G#3}

Music Creation by Novices: CODES !!!
[sbcm2009]

- Most of Computer Music (CM) environments/tools are oriented to musicians !!
- Music composition process assumes:
  - Musical Ideas
  - Musical Knowledge
    - theory, concepts, Skills in instrument playing
  - Music notations

- Our intention is to investigate novice-orientation!!
music creation by novices (?)

- Music creation process assumes:
  - NO ASSUMPTIONS AT ALL !!!

- Music creation as Design activity
  - Experimentation, trial&error

- Music creation as social activity
  - Web 2.0 – new user profile:
    a) browsers, b) producers, c) (creators)?

How we make it possible? CODES!

- Music creation as design activity > music prototyping
  - Cyclical and incremental refinement
  - Visual manipulation of existing icons representing 4 seconds mp3 sound patterns
  - Result: Music Prototype (MP), non linear music

- Music creation as social activity > cooperation
  - Not a solitary activity
  - Exchange of ideas, questions, answers, comments

prototypical issues

- Engaging novices in music experimentation
  - Formalism
  - Theory
  - Musical Idea

  ◦ Visual notation (icons = sound patterns)
  ◦ MPs built using sound patterns as ‘building blocks’
    - Direct manipulation metaphor
  ◦ Music Prototyping cyclic Process:
    - Cycles of edition, Listening

Software prototyping

- User requirements
- Prototype Design
  - Prototype (version i)
  - Evaluation
- Experimentation by user
- Redesign
  - i := i + 1
- OK? S
- END
Music prototyping

Musical (initial) ideas

Prototype Design

Prototype (version i)

Redesign

Evaluation

Experimentation by user

OK? S END

Cooperative issues

• To understand WHAT my partners are doing:
  • Awareness [IHC2006]
    • Version control preserving authoring - layers
    • Modification marks
    • Modification requests
  
• To understand WHY my partners are doing it
  • Music Prototyping Rationale

  
• Social network built by Explicit invitations
• Negotiation

Cooperation for non-technical design

<table>
<thead>
<tr>
<th>Collaboration for Technical Product Design</th>
<th>Collaboration for non-Technical Product Design</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Main Goal</strong></td>
<td>mutual understanding</td>
</tr>
<tr>
<td>according to a product (or requirements) model</td>
<td></td>
</tr>
<tr>
<td><strong>Group Topology</strong></td>
<td>Typically non-hierarchical, no formal leaders</td>
</tr>
<tr>
<td>Typically, hierarchical group with a leader</td>
<td></td>
</tr>
<tr>
<td><strong>Control</strong></td>
<td>Argumentation</td>
</tr>
<tr>
<td>Coordination</td>
<td></td>
</tr>
<tr>
<td><strong>Planning and Decisions</strong></td>
<td>Unsystmatic and opportunistic negotiation</td>
</tr>
<tr>
<td>Rigid, systematic plan definition,</td>
<td></td>
</tr>
<tr>
<td><strong>Roles and Tasks</strong></td>
<td>No fixed roles, flexible task allocation</td>
</tr>
<tr>
<td>Fixed roles, pre-defined task allocation</td>
<td></td>
</tr>
<tr>
<td><strong>Example</strong></td>
<td>arts, cooperative music prototyping (CMP)</td>
</tr>
<tr>
<td>manufacturing, construction, etc</td>
<td></td>
</tr>
</tbody>
</table>

final considerations

• Music creation by novices: fun and entertainment NOT (serious) music composition...
  
• In CODES, novices cooperate by means of:
  • explicit actions on a shared object space
  • explicit conversation
  • Interpretation of actions
  • argumentations and comments of other actors
  
• Novices “feel” like musicians
• BUT Musicians “feel” like novices as well by experimenting new ideas and changing opinions
creating and organizing my MPs

- a) new
- b) My
- c) versions
- d) contributions
- d', d") actions

editing my MPs

- prototypical
- cooperative

Cooperative editing level

sharing my MPs

- Search members
- Invite by e-mail
publishing my MPs

- Public MPs are available at CODES home page.
- Can be listened
- Can be rated

CAC - Links interessantes

- Arpege Music
  - You can write, play, record, print and publish your music with Pizzicato, a music notation software
  - http://www.arpegemusic.com/
- www.myspace.com/stephentravispope
- Computer Aided Composition Software (Free)

Audição

- Kraftwerk
  - Primórdios: Ruckzuck (Kraftwerk1, 1970)
  - Embrião da Música Eletrônica Dançante: Das Model (Die Mensch Maschine, 1978)