

# Building Tools For Musicians

1. Introduction,  
Musicians & Their Friends, Tasks & Tools

# Introduction

- Thanks
  - Brief personal history
  - Programmer, not musician
  - Music critic, not musician
- Focus on technology not composition
- Focus on aesthetics of software, not music

# Practicalities

- 15 two-hour seminars
- 60 hours in class/studio
- 120 hours “outside” work expected
  - Early seminars will be lectures
- Later seminars will feature presentations and more discussion

# Projects

- Student evaluations will be based on projects
- Proposals due by 11/11/2008
- Various possibilities:
  - Papers
  - Software
  - Design work
  - Combinations
- If you participate in both seminars you can opt to do a single combined (larger) project

# Papers

- All student projects will include a short paper (4-5 pages) to be presented during a seminar
- Projects without other components (no software, design work, etc. etc.) should include longer paper (around 10 pages).
- Projects with other components be accepted (and evaluated) on the basis of scope, novelty, depth, aesthetics and wizardry.
- Feel free to consider group projects that combine the strengths of 2-4 people

# Formats & Platforms

- All projects & papers should be submitted as PDF files and/or web-viewable content.
- Projects can be targetted at any platform you want (iPhone, Windows, Android, Linux, your washing machine, OS X, a bag of wooden beads) but *they must be evaluable by me with significant ease*
- You will get most help from me if you use Linux
- You will get a bit less help from me on OS X
- You will get no help from me for Windows
- If you target another platform, you can help me.

# One More Thing

- *I speak too fast*
- Don't waste time apologizing on my behalf
- Hold up an object or send me a message on IRC or throw food ... but do something
- Its OK to be confused by **jargon** but not by a guy with a wierd accent who talks too fast
  - *Alles Klar?*

# On With The Show...

- We are here to think about tool building
- Specifically software tools for musicians
  - *And their friends!*
- We are going to examine assumptions, technologies, mistakes, successes, potentials, and anything else we come across
- Hopefully, we'll do some tool building as well as talking & thinking about it



# The Next 15+ Weeks

- \* the significance of GUI elements (knobs, faders, menus, numerical displays, grabbable objects, windows)
  - \* tradeoffs between hardware and (graphical) software interfaces
    - \* how hiding functionality can help or hinder musicians
  - \* task emphasis: why is Live not ProTools (or vice versa)? how does SooperLooper differ from Live?
- \* presentation differences: how do different DAWs offer time stretching and pitch modification to the user?
  - \* plugins, standalone applications or participants?
- \* contrasting toolboxes (Max/MSP, Pure Data), languages (SuperCollider, CSound) and ready-made tools
  - \* are small tools useful?
  - \* how do the tools (for example, trackers) shape the music?

# Musicians, eh?

- Before we can talk about tools, we need to understand tasks
- Before we can understand tasks, we need to understand “roles”

# Categories of Users

- Home studio users making finished pieces
  - Home studio users practicing
    - “A Room” studios
    - B & C Room studios
    - Broadcast studios
- Scientific audio research (e.g. psycho-acoustics)
  - Experimental/Electro-acoustic music
- *This says **nothing** about the huge variation in musical style and production techniques of different kinds of music*

# Roles

- Composer
  - Performer
  - Conductor
  - Engineer
- *My usage is related to but not identical to the traditional meanings of these words*
  - **Non-exclusive roles!**

# Composer Role

- Determines some organization of sound in time
  - Does not play a role in realizing it
    - Choosing notes, timbres
  - Choosing rhythm, harmony, melody (or lack thereof)
    - Distributes work to other role-players
      - Re-uses ideas

# Performer Role

- (*Ultimately*) Generates acoustic pressure waves
  - May use material from a Composer, or may improvise
  - May interact with vibrating objects or may use electronic mechanisms
  - Direct involvement of the body in producing sound

# Conductor Role

- Organizes the activity of Performers
- May or may not have skill as Performer or Composer
  - No direct participation in sound making
- Responsible for overall form of a performed work, not its details
  - Performers may not be human

# Engineer Role

- Responsible for recording sound
- Responsible for electronic contributions to performance acoustics
- Responsible for playback or manipulation of pre-recorded or live sounds
- Responsible for configuration of equipment used by Performers, Conductors



# Real Life Roles

many, many people

Performer

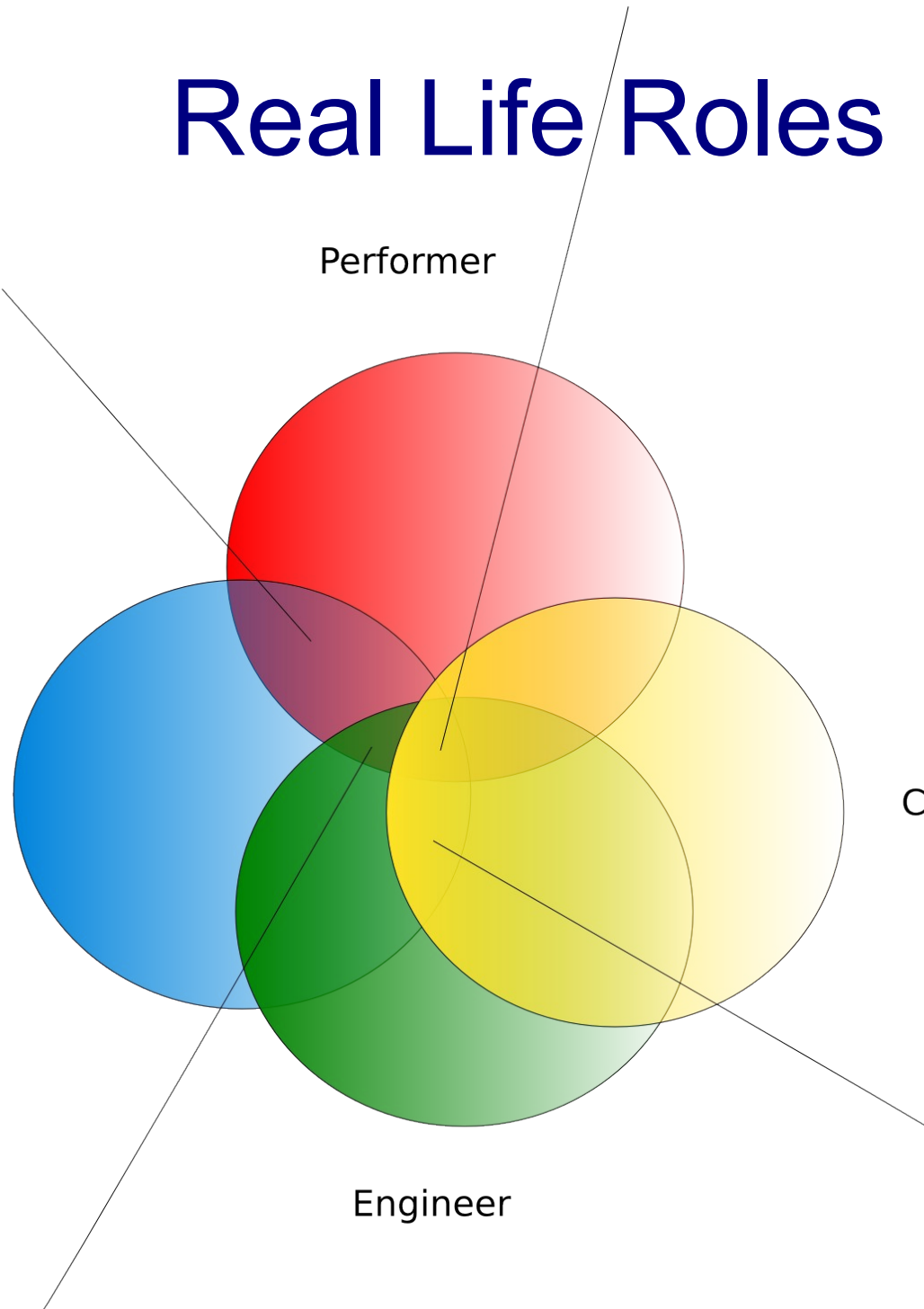
Composer

Conductor

most techno artists

Engineer

"very technical musicians"



Eno

# And Your Point Is?

- These different roles have different needs
- This creates a wide range of possibilities for tools to assist people creating music
- Tools that work extremely well for one task may be fundamentally unsuited to others
  - Is this obvious?

# Creativity vs. Creation

- Some music is made on demand, to order (e.g. TV/advertising soundtracks)
  - Some music is made as a way to express a “deep” human creativity
    - These two tasks differ in significant ways
- Uniqueness, self-identification and meaning are not generally important for on-demand creation

# Tools

- A tool is an aid in carrying out some task
- Traditionally, tools mediate between us and the physical world
  - Examples: shovels, levers, lenses
- Traditional tools redefine the interface between the user and the world
- e.g. *when you use a shovel, you apply force to a lever with a sharp flat end, instead of digging in the dirt*

# Tools II

- But ... tools also compensate for a lack of:
  - Expertise
  - Time / Patience
  - Money

# Categories of Tools

- Unskilled users like “All in one”
  - eg. Home music systems, point-and-shoot cameras, audio interfaces with mic preamps & digital/analog converters built-in
- An attractive feature is a kind of “automation”
  - Automation is often about FORGETTING
  - Skilled users often want single task tools

# Woodworking

- Tools for: cutting, shaping, surfacing, joining
- Nobody expects to be able to use a jointer, or router or table saw or planer without a learning process
- Skilled users value very specific tools that do a single task well, but that are part of a *toolchain*
- This is even true of very modern woodworking equipment controlled by computers

# Tools in Music (BC)

- Performance: bows, mallets, rosin, music stands, tuners
  - Composition: paper, ink
- Dissemination: printing press



# Tools In Software

- In computers, for most of us, there is no physical world to interact with
  - The concept of a tool still applies
    - Computer tools: assembler, then compilers, editors, “Integrated Development Environment”, scripting languages
    - These tools help programmers
      - Other tools for other tasks ...

# Musical Tools

- Recorders
- Sequencers/Editors
- Notation (composition/editing)
  - Sound synthesis
  - Sound transformation (FX)
    - Control systems
      - Tuning
      - Spatialization
    - Signal transfer (local, networked)
- Libraries (indexing, tagging, identification)
  - (physical) Instrument design
    - ???

So....

**Is there actually anything to discuss?**

Native Instruments, Ableton, Digidesign,  
Steinberg, Cycling 74, and others give us tools.

We (or someone) use them.

Right?

# Of course!

- Systems of production
  - Systems of control
    - New ideas
    - New tasks
  - Old forgotten tasks
- How the tools shape us and our music
  - How we can shape the tools

# Next Week

The Software Development Process:  
*Technology, Economics, Sociology*

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*(web will have slides, notes, reading material for the following week, and more)*