Slide 1

Gnome Digital Media / recipe4DVD presents:

Mac Music 101
"what you need to know to start making music"

Date: Wednesday, July 13, 2005
Presenter: Bruce Nazarian, MPSE - Gnome Digital Media

Recipe 4 DVD

Macworld Conference & Expo

1

Slide 2

About your host:

- I'm **Bruce Nazarian, the DVD Guy**, but here's a few things you may not know about my music roots:
- 25+ years as **Studio Musician, touring musician, award-winning recording engineer and record producer**
- Contributing Editor for **Mix Magazine**
- Featured guitar soloist on "**Air America**" film score
- Recorded first **"totally tapeless"** album in 1988 utilizing a **completely sequenced backing track**, and **completely digital non-linear audio** recordings - YEARS before Pro Tools!
- Author: ***Recording & Production Techniques for Musicians***
- Adjunct Professor of Music: **Wayne State University**
- Worked with artists from the Funkadelic to Frank Sinatra

Recipe 4 DVD

Macworld Conference & Expo

2

Slide 3

Welcome to Mac Music 101

- Glad you could make it, you will enjoy the time…
- Get ready to explore some new ideas
- Our Agenda:
  - **Music Jargon demystified**
  - **Build your System - Basic Configuration**
  - **Build your System - Software Tools**
  - **Music Basics - Structuring your Song!**
  - **Add-ons** to take you further
  - and a brief **Q & A**

Recipe 4 DVD

Macworld Conference & Expo

3

Slide 4

Music Jargon:

What'd they say?
What's it mean?

Recipe 4 DVD

Macworld Conference & Expo

4

Some Important Words:

Analog
Digital
Interface
MIDI
USB
Sequencer
Software Instrument
Sampled Instrument
Controller
Composition

Let's take a moment to be sure we all use these words with the same meaning. The following slides will define the musical context of each word.

"Analog"

In the case of MUSIC, this means using voltages on wires to represent the signal - [think of your old telephone as a typical analog device (not your cel phone!)]

Mac models have had Analog Audio Outputs since 1984. While Analog Audio Inputs disappeared from Macintosh models for a while, nowadays you can find Analog Audio Inputs have returned on many iBooks, Powerbooks, and Power Mac G4s and G5. (As shown at left, the little speaker with sound waves icon indicates Audio Out).

"Analog"

For Music generating, Analog usually means utilizing some kind of voltage-generating device to create the analog sound waves, and then to output them.

We have found in recent years that going DIGITAL offers far more flexibility, and power in music making.

"Digital"

In the case of MUSIC, this means using a series of numbers transmitted over wires or optical fiber to represent the audio signal - [you may have an S/PDIF connector on your home stereo - this is a consumer digital audio connector].

Some Mac models have had Digital Audio Outputs in recent years - nowadays you can find Optical Audio Outputs on Power Mac G5s. (As shown at left, the upper connectors are Optical Audio In and Out).

"Interface"

V. A way of connecting two things together - in the case of MUSIC, we're concerned with interfacing the Macintosh and external things like:

LIVE AUDIO SIGNALS - (microphones, guitars, etc.)

MIDI events - Note and controller events generated from a MIDI or USB device.

N. "An Interface" can be the equipment by which this is accomplished

9

"MIDI"

MUSICAL INSTRUMENT DIGITAL INTERFACE

A method of digitally transmitting notes and control information between synthesizers, controllers and sequencers. MIDI can be implemented in Keyboards, Sound Modules, Keyboard and other types of Controllers, and Sequencers. MIDI Interfaces are required to communicate between a Mac running a sequencer application, and external MIDI instruments.

10

"USB"

UNIVERSAL SERIAL BUS

An interface generally used for low-speed devices, like keyboards and mice, but also now used as an alternate interface method for Keyboard, Guitar and Audio inputs.

11

"Sequencer"

A program you run to record and playback musical events you create. These musical events can be live audio recordings, generated by playing a musical instrument or singing, MIDI events created by playing an external MIDI equipped musical instrument or controller, or USB events created by playing on an external USB musical or mixing controller.

12

"Software Instrument"

An instrument "definition" that recreates the sound of a specific musical instrument by using software programming within the computer, rather than a real physical musical instrument.

In Garageband, for example, Tracks in GREEN are Software Instruments that can generate the sound of a specific musical instrument without using loops or samples.

13

"Sampled Instrument"

A Sampled Instrument uses a series of digital "snapshots" or samples recorded from a real musical instrument that can be stored, organized and manipulated within the computer to recreate the sound of the specific musical instrument that has been sampled.

For Example, DRUM MACHINES generally use samples taken from various Drum Sets to simulate the sound of a drummer playing live. One of the earliest samplers, the MELLOTRON, used TAPE RECORDED SAMPLES!

14

"Loops"

Recording a long sample of an instrument being performed in real time creates "loops". Loops have both Tempo, and Pitch, two important musical concepts. They can also be repeated endlessly, hence the name "loop".

One of the earliest loops used commercially was a snippet from James Brown's "Funky Drummer" but you've heard many of them - Many hit records have been built upon the foundation of a loop sampled from a previous hit record - remember "Ice, Ice, Baby"? Ever hear David Bowie's "Under Pressure"?

15

"Real Instruments"

Apple uses Real Instruments to refer to the recording of a live performance of an instrument or voice being performed in real time.

16

"Controller"

A device to generate musical or control events to be recorded, or used in realtime. These events can be musical MIDI events created by playing a MIDI keyboard controller, or non-musical events created by playing on an external mixing controller. Mixing events can be used to control sequencer parameters like Volume, Pan, Effects, etc.

17

"Composition"

Using Macintosh music tools, you can freely integrate live recordings of Real Instruments (sometimes also called digital audio tracks) with sequenced (performed/ recorded) Software Instrument tracks using whatever sound libraries you may have available on your Mac - Orchestral, Rap, Sound Effects, Hip-Hop, Jazz, Rock, you name it - today, your Composition can be the sum of all of these fantastic sound-generating technologies, all of which can exist INSIDE your Macintosh!

18

Building your System
Basic Configuration

19

"Basic System"

You'll need a few simple things to get started:
- a Mac
- A Music-making application for your Mac
  (we'll cover those in a moment)
- Some kind of input to record - Audio or MIDI/USB
- Something to listen through - pref. External Speakers

and, oh yeah - an IDEA! :-)

20

The Basics - Ins and Outs

Built-in Audio Inputs

Built-in Audio Outputs

MIC LEVEL

SPEAKER LEVEL

USB

External Keyboard Controller
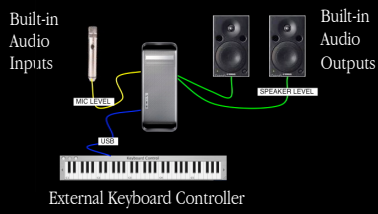
21

"Enhanced System"

Once you've got the basic down pat, you can add:
- an Interface for audio/MIDI (Firewire or USB)
- A more powerful Music application
- A better or larger MIDI/USB Controller
- Better quality Microphone(s), or more of them
- Better Quality Speakers
- Additional Sound Libraries for your Mac programs
- External synthesizers, or sound modules
- Maybe even an external mixer...

but you STILL need those IDEAs! :-)

22

Enhanced system layout

MIC

TO SPEAKERS

MAC AUDIO OUT

MIXER

MIDI

SYNTHESIZERS

USB
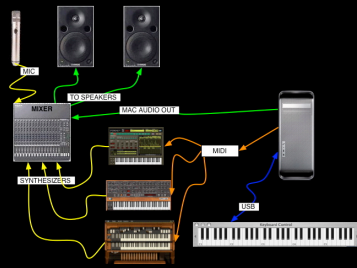
23

Building your System
Software Tools

24

"Getting Started"
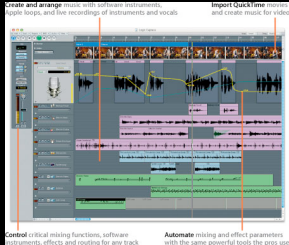
Begin is with GarageBand 2, part of iLife5
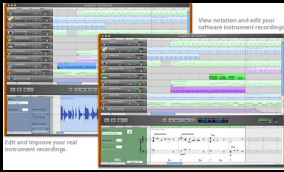
Begin your system with Garageband; mix Live Audio, Synth Sounds, Drums, effects, and lots more for only $79!

Recipe 4

25

"Intermediate" level

Step up to Logic Express - $299

Enhance your system with Logic Express - upload your Garageband Compositions and add more effects, more Live Audio, more Synth Sounds, Drums, MIDI and lots more!

Recipe 4

26

Logic "Pro" System - $999

Take your system all the way to the top with Logic Pro - Live Audio, Synth Sounds, Drums, MIDI - everything!

Recipe 4

27

Music Basics
Tempo, Meter, Key

Recipe 4

28

Tempo

Every GarageBand song has a defined tempo, to establish the speed of the song; this is set in the original song setup, and can be modified in the Master Track setup in Track Info - but each song can have only ONE tempo! This may make a bit difficult to do sophisticated musical functions like *accelerando* and *decelerando* (speeding up and slowing down) but pop music, in general is performed at a constant Tempo from start to finish.

Meter - "Time Signature"

Every GarageBand song has a defined Meter, also called Time Signature, to establish the number of beats per minute; this can also be modified in the Master Track setup in Track Info - but each song has only ONE Meter!

Meter is denoted by a fraction, like $4/4$ which means 4 beats per measure, each a quarter note, or $12/8$ meaning 12 beats per measure, each one an eighth note. The "feel" of the song can be greatly influenced by the Meter you select.

Key

Every GarageBand song has a defined Key, to establish the tonal home base, or modality of the song. Countless books havebeen written about the psychological effect of KEY on the MOOD of the song. Key is set in the original song setup, but can be modified in the Master Track setup in Track Info - **Each GarageBand song has only ONE Key**, so you may have to do some tricks to make something sound like it has modulated! (**Modulation** is music-speak for changing Keys during a song.)

Tools for Music:

Make your studio *rock!*

Recording Gizmos

Just like in a professional recording studio, great microphones, preamps, and speakers mean you can create a higher quality product, and hear more accurately while Mixing.
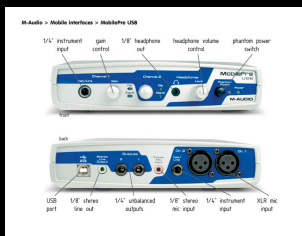
Recipe 4

http://www.m-audio.com

33

Audio Ins and Outs

M-Audio > Mobile interfaces > MobilePre USB

1/4" instrument input · gain control · 1/8" headphone out · headphone volume control · phantom power switch

USB port · 1/8" stereo line out · 1/4" unbalanced outputs · 1/8" stereo mic input · 1/4" instrument input · XLR mic input

MobilePre USB

Balanced mic preamps reduce noise, and transfer better fidelity into your recording device - this one runs off USB power, making your Powerbook Music studio completely road-worthy!

Recipe 4

http://www.m-audio.com

34

Great Mic＝Better Vocal

In particular, great microphones and clean mic preamps mean you can capture a performance with far superior fidelity, to help create a higher quality end product.

A great mic can make all the difference, and a large-capsule Condenser mic is acknowledged to be a great way to capture vocals.

$99 m-audio mic

Recipe 4

http://www.m-audio.com

35

Better Monitors

Accurate speakers mean you can hear more accurately while mixing, creating a superior final mix.

Recipe 4

http://www.m-audio.com

36

Performance Data In

A good keyboard will let you program parts easily, and
can also be used with MIDI modules, as well.
The M-Audio 49-key is connected and powered by USB,
so no need for a dedicated MIDI port or PSU.

37

Extra In/Out Channels?

Lots of I/O
can really
help separate
things if
you're using
an external
mixer or
MIDI stuff.

MOTU Traveler Firewire I/O - 22 ins, 20 outs! - RUNS ON BUSS POWER!

38

Need More Control?

... there's always *The Big Knob* controller - which adds
the Kitchen Sink in studio controls. Add Speaker
switching, talkback, input select, even LED metering!

39

Dare to dream big!

Larrabee North,
Control Room A
Los Angeles, CA
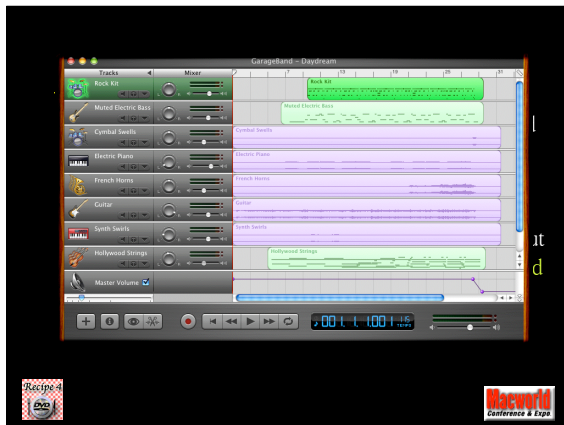
Acoustic Design:
Steven J. Klein

Photo:
Ed Colver

40

Slide 41

Mixing
and
Mastering

41

Slide 42

42

Slide 43
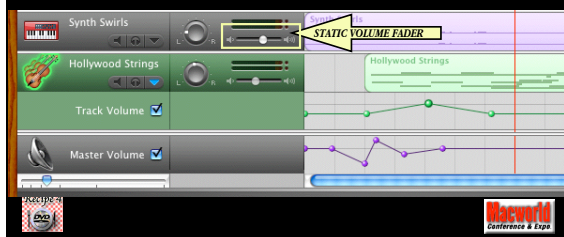
Level - static, or...?

You can set a fixed "static" volume for each track, and let
that intsrument maintain a set level witin the mix, or...
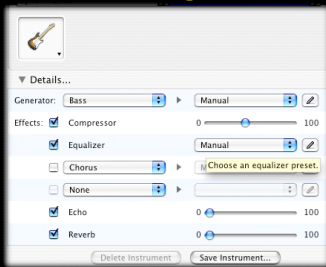

STATIC VOLUME FADER

43

Slide 44

Level - dynamic?

...you can open up the Track Volume automation control
and set dynamic volume "rides" or "moves" to level or
enhance. This is just like pro automated music mixing!

VOLUME REVEAL

TRACK AUTOMATION

MASTER AUTOMATION
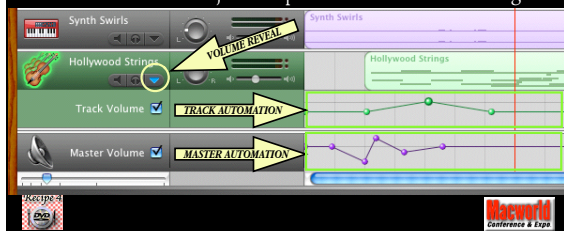
44

FX - a huge can of worms!
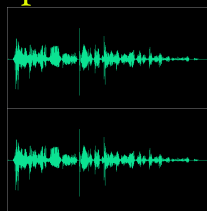

Tastefully used, effects can be great; but if overused, they can bury your song. Effects are programmed into each Instrument in the Track Info pane.
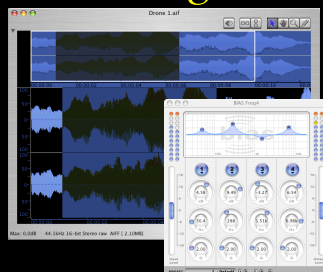
Export AIFF for Mastering

Don't forget you can submix your entire composition into a Stereo AIFF file, and use that as the basis of a new composition, or load it into your Mastering tools for the final "polishing"!

Mastering - final step

Mastering can dramatically shape the final sound of your creation: Eq-ing and Leveling of the entire mix is possible in tools like Bias Peak!

http://www.bias-inc.com

Mixes - Surround Sound

Surround Sound mixes (5.1 for your DVDs) can be created in tools like Bias DECK...

bias
sound creative

http://www.bias-inc.com

GarageBand Performance Tips

49

Speed make a difference

A 2.5 GHz G5 is better than a 1.5 GHz G5!
Repeat after me:
"Faster is better"
   "Faster is better"
      "Faster is better"

50

2 CPUs make a difference

I mean, do we really have to have a discussion about how
a dual processor system is inherently more powerful
than a single-processor G5?
Repeat after me:
"Dual is better"
   "Dual is better"
      "Dual is better"
         "Dual is better"
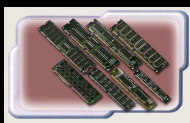   "Dual is better"

51

MAXimize RAM

Nothing can unclog the congestion of a marginal
machine like a giant helping of additonal RAM, so get
our your Credit Card and surf over to your favorite
RAM store.

Your Mac will love you for
buying it gifts, and your GarageBand
performance will benefit from the
extra notes and tracks you will be
able to add.

52

Minimize the screen size

Drawing all those cool tracks and events takes a bunch of horsepower, which might very well be wasted drawing pretty pix. Shrink the GarageBand screen as much as possible, and the CPU cycles you save can go for smoother playback, more voices etc.


53

Minimize voice count

Software instruments also use CPU cycles to play sounds, and the more voices (notes) you play from a track, the more CPU power you use up. If you know you have a track, like a bass line, where you only want to hear one or at most two voices, limit the voice count in Adv. Prefs.
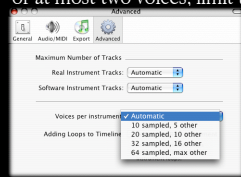
54

Watch the Playhead

The harder your Mac is working the more Red your Playhead will become - keep an eye on it, to warn you in case you're heading into the danger zone.
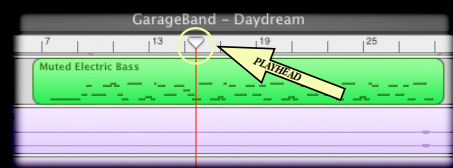
55

GarageBand Enhancement Add-Ons

56

Add-ons for Sounds

There are a TON of sounds, loops and effects that can be added to GarageBand - don't be boring... Add some!

Jam Pack 1   **Jam Pack 2**   **Jam Pack 3**   **Jam Pack 4**

57

Add-ons for Effects

There are a TON of sound effects that can be added into GarageBand or Soundtrack.. be adventurous!

Sound Effects   **Ambiences**   **"Found Sounds"**

58

Add-ons for Drums

Besides drum LOOPS, you can find lots of individual drum SOUNDS that allow you to create your OWN personal rhythms easily - many work as Audio Unit plugins for GarageBand

Double-Click To Install
iDrum Demo
The Drum Machine For Mac OS X
iDrum

iDrum for Mac OS X.
Free demo available
on download

http://www.glaresoft.com

59

Add-ons for more voices

Consider using "Rewire" technology to link Garage Band with Rewired applications like "Reason"

60

"Rewire" links programs

"Rewire" can link Garage Band playback with Rewired applications like "Reason"

61

"Rewire" demo w/ Reason

Your *Garage Band* Composition can control a *Reason* sequence in real time!

62

Join a GB Community!

Post your *Garage Band* Composition for the public to hear, and share tips and tricks with other GarageBand users online! Find tools, loops, chat, and more! *Google* to find them...

63

Study music online:

www.berklee.edu

64

Q&A

65

Thanks for coming!

enjoy making music
with
GarageBand!

FOR MORE INFO...

http://www.apple.com/garageband

66