Sound Design for Next Gen.

Mike Johnson
Audio Post Production Manager - SCEA
GDC 2009

Next Gen. Audio

- Higher Sampling Rates
- Higher Memory Budgets
- More Simultaneous Voices
- Discrete Multi Channel Surround (5.1/7.1)
- Real Time DSP (EQ, Dynamics, Reverb, etc.)
- more... more... more.....

Next Gen. Sound Design

- SFX recording
- Foley
- Sampling
- Pitch Shifting
- Worldizing & Futzing

- Modulation & Doppler
- Reverb
- Granular Synthesis
- Cross Synthesis
- Morphing

Sound Field Recording

SFX Field Recording

- This is the get up out of your chair, grab a microphone, & portable recorder method.
- Provides you with wealth of original material to draw from unique to your title.
- Creates excitement and motivates the all members of the production team.
- Impresses Management!

SFX Field Recording

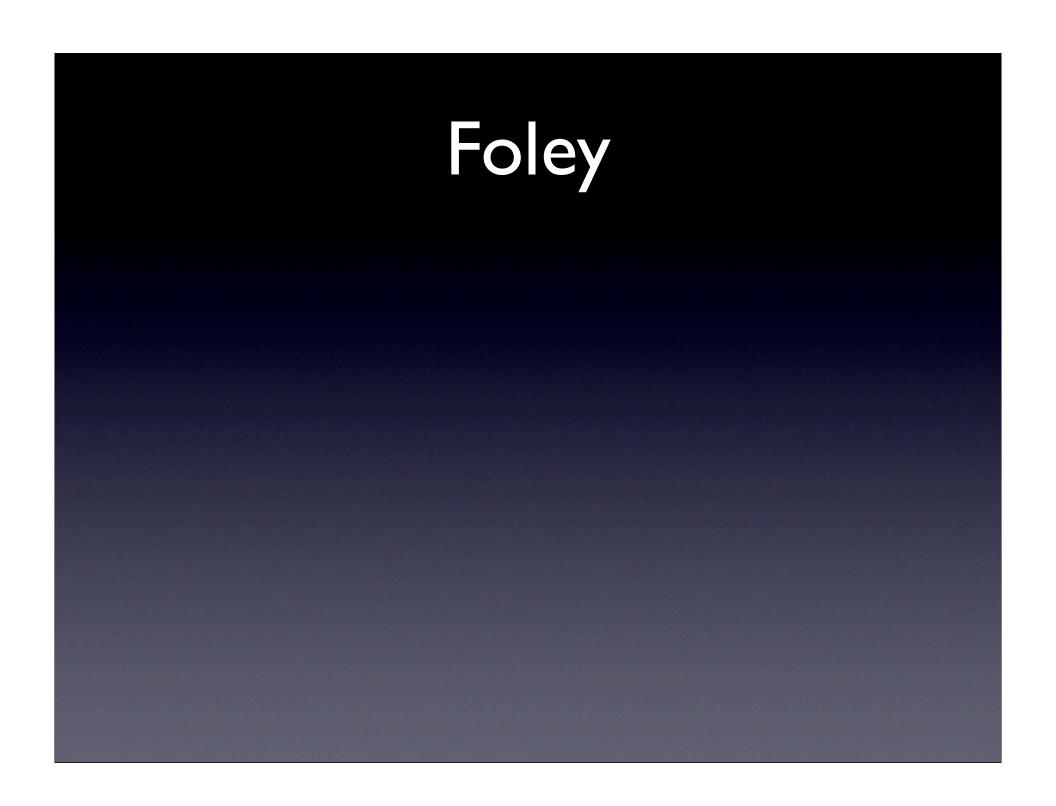
- Military bases
- Airports
- Harbors
- Sporting Events
- Oceans, lakes, rivers
- Zoos

- Power Plants
- Wrecking yards
- Pets
- Children
- Weather
- Everyday household objects

SFX Studio Recording

SFX Recording Examples

- F-22 Falcon @ Miramar Airshow
- ► F-18 Hornet @ USS Stennis
- Styrofoam rubbing
- ▶ Rubber cement fire
- Plastic soda can zip bys

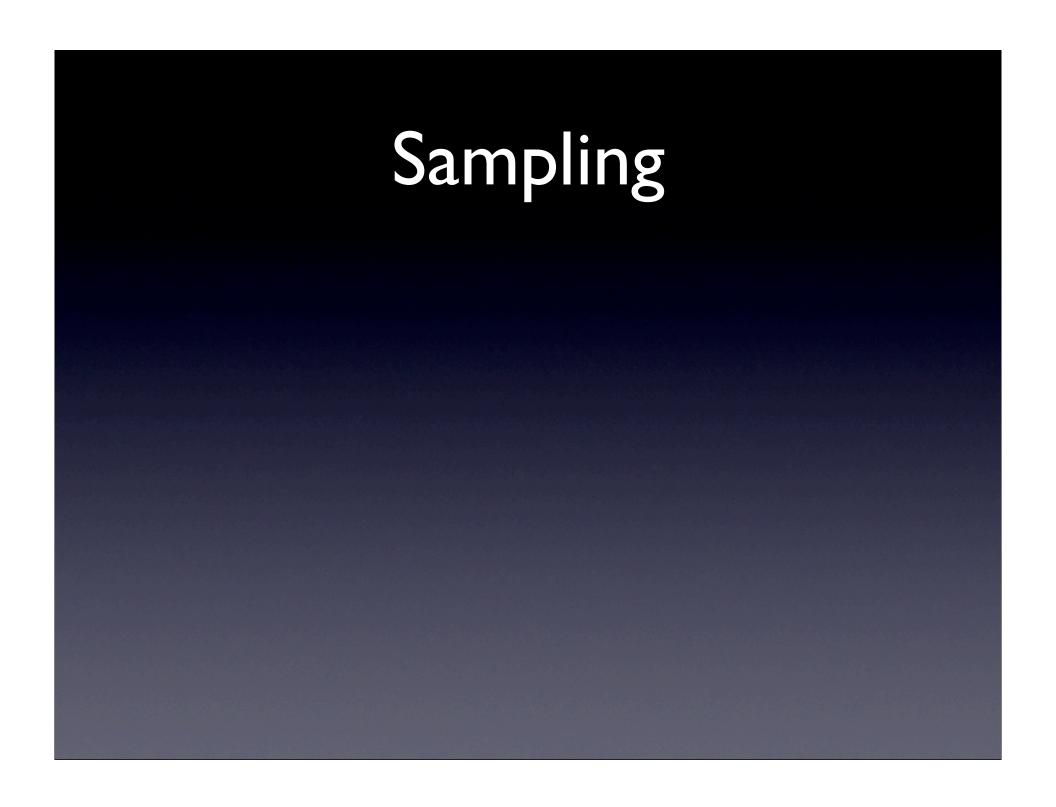


Foley Recordings

- Original sound recordings performed to picture by a Foley artist.
- Provides you with a wealth of original material to use on your title.
- "Wild" Foley not performed to picture.

Foley Sound Examples

- Boots
- Guns & Gear
- Wing Flaps
- Rock Impacts
- Chains



Sampling

- Sampling = Time Manipulation
- Speed Manipulation
- Looping
- Layering / Multi-samples
- Reverse it The Paul is dead effect
- Scrubbing Manipulating the playback head
- Reordering

Software Samplers

Sample Reordering

Sampling Examples

- Original Sound
- Munchkin & Monster Effect
- Looped Sound
- Reversed Sound
- Scrubbed Sound
- Reordered Sound



Pitch Shifting

- Traditional
- Excessive Pitch Changes (+/-)
- Importing at wrong sample rate
- Varispeeding
- Pitch Envelopes

Pitch Change - normal

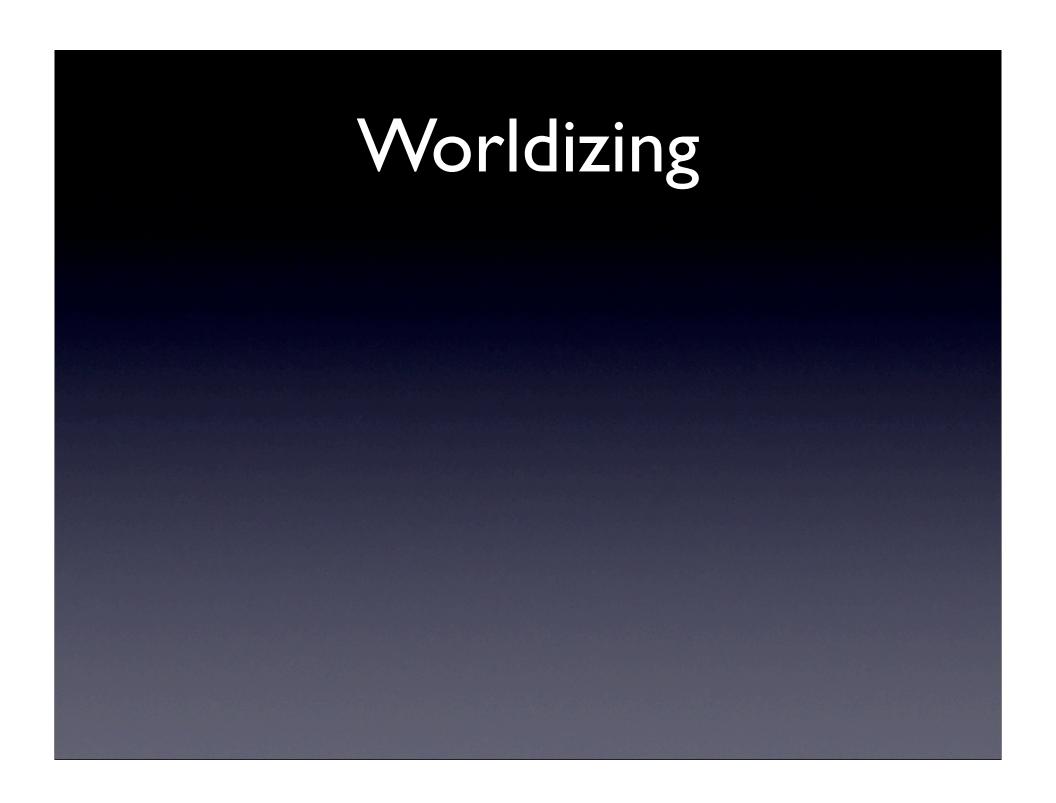
Pitch Envelopes

Extreme Pitch Change

Pitch Shift Examples

- dry source
- I Octave Down
- ▶ 4 Octaves Down
- Pitch Envelope
- Importing at wrong sample rate

Worldizing & Futzing



Worldizing

 A way to place a sound object into an environment by manipulating its source of origin.

Worldizing Techniques

- Play a recording thru a real PA, Radio, TV, amp, etc...& record it via a mic or line input.
- Place microphones next to speakers that color the sound.
- Broadcast sounds from unorthodox places to capture the effect of the environment.
 - mouth, parking garage, tubes, tunnels.

Futzing

- Also known as radio-izing.
- A technique used to simulate a broadcast.
- Often used to emulate various speakers.
- Radios, Telephones, PA's, TV's, etc...

Futzing & Worldizing Examples

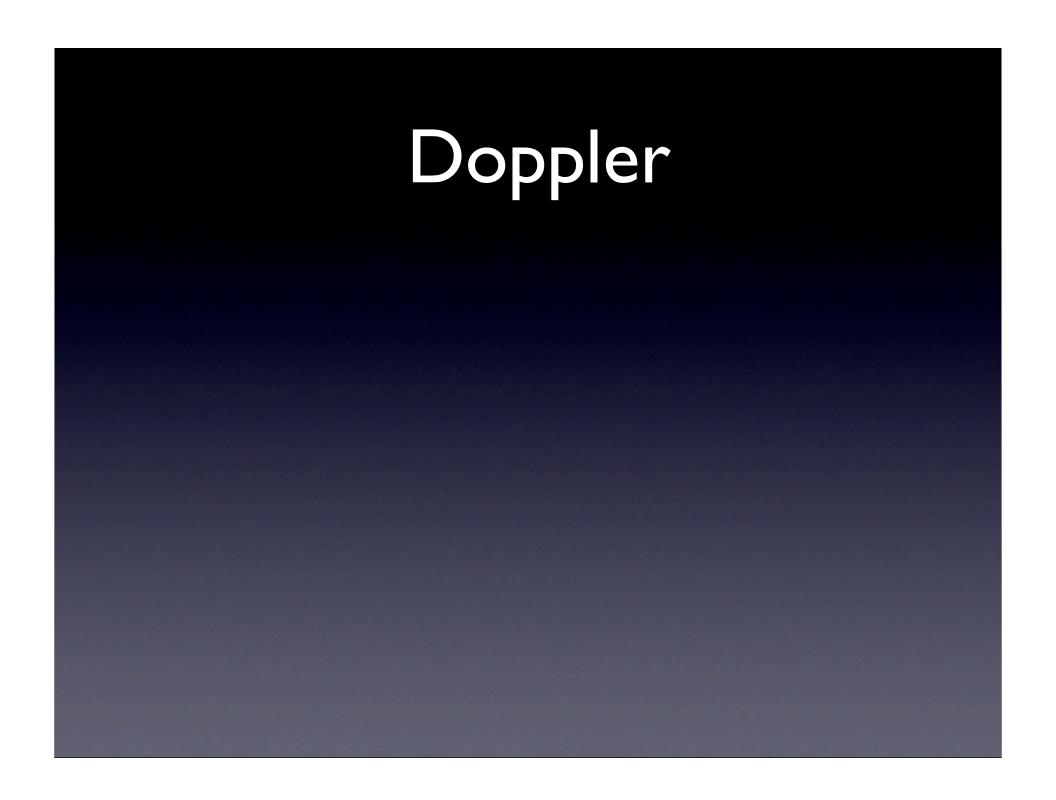
- dry source
- walkie talkie Futzing
- ▶ PA system Futzing
- bad digital transmission Futzing
- Metal Pipe Worldizing
- Freeway Overpass Worldizing

Modulation & Doppler

Modulation

- LFO's to Amplitude (VCA)
- LFO's to Filter (VCF)
- LFO's to Pitch (Oscillator or Sample)
- Delay Effects
- Gating/Ducking Effects
- Panning Effects

Modulation - Delays



Modulation Examples

- dry source
- Sound Toys Pure Pitch Modulation
- ▶ GRM Tools Delays (excessive)
- GRM Tools Pitch Accumulation
- Waves Doppler Bys
- ▶ GRM Tools Doppler Bys



Reverberation

- Reverb enhances the size of a sound
- Reverb conveys distance & occlusion
- Reverb creates mood
- Reverb can be used for sound design as well....

Reverb Techniques

- Traditional approach
- Excessive Reverb for Smearing Effect
- Reverse Reverb
- Use of unorthodox IR's for effect

REVERB - Normal

REVERB - IR Sample

Reverb Examples

- Dry source
- Reverse Reverb
- IO Second Reverb Tail
- ▶ 10 Second Reverb Tail x 2
- Audio soundfile (gunshot) used for IR
- Audio soundfile (bodyfall) used for IR

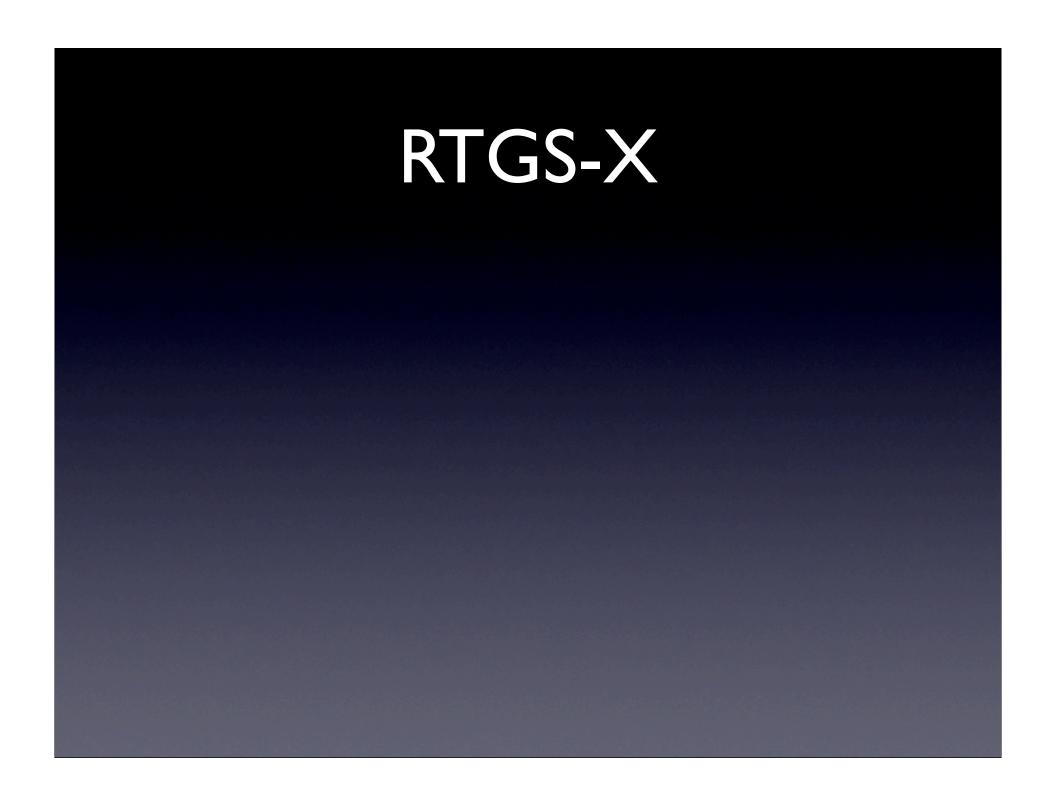
Granular Synthesis

Granular Synthesis

- The Audio equivalent of Wonka Vision
- The slicing, dicing & reordering of samples
- Randomly plays bits of audio from buffer
- Can have concurrent pitch & pan mod
- Instantly makes interesting sounds!

Granular Software

- RTGS X
- Metasynth UI Software
- Max/MSP Cycling 74
- KYMA Symbolic Sound
- Reaktor Native Instruments



Metasynth





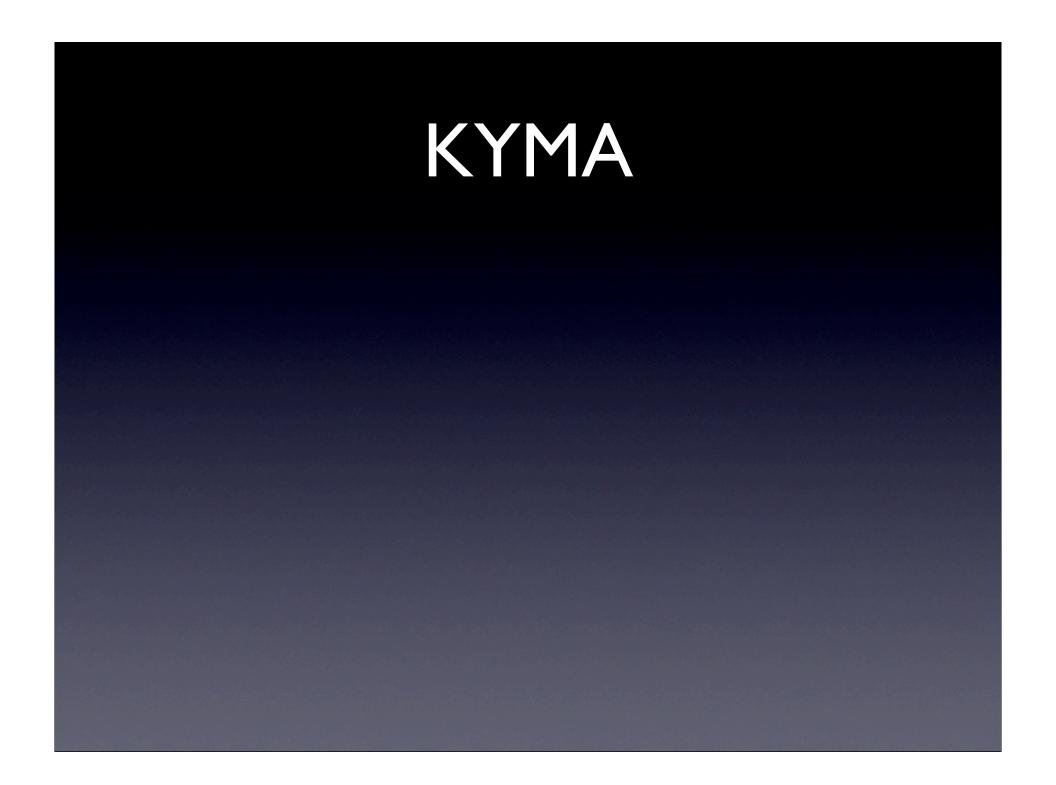
Granular Examples

- dry source
- Grain Scrub Max/MSP
- ▶ Grain Stutter Max/MSP
- Grain stretch Metasynth
- Grain bits Metasynth
- Echoid KYMA
- ▶ Time scrubbed crowd KYMA

Spectral Manipulation

- Frequency domain processing
- Sometimes requires analysis phase
- utilizes Fourier Transform
- Breaking down a sound into individual simple frequencies (sine waves).
- Once this is done, we can begin the fun.



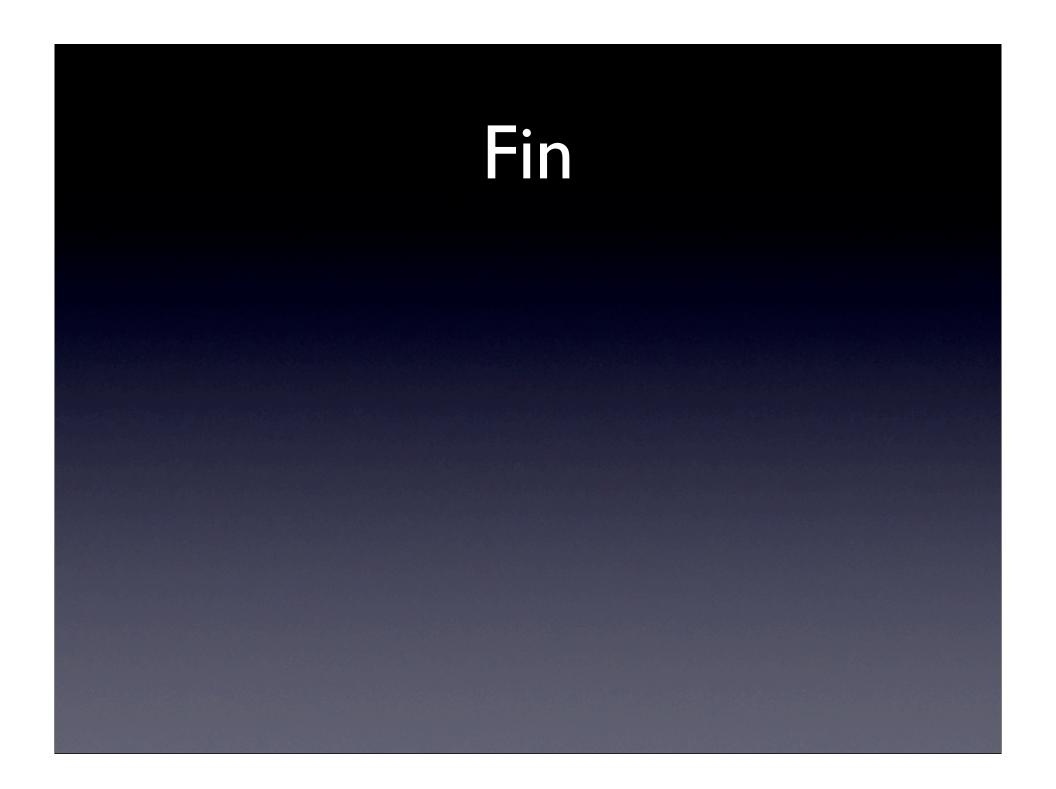


Spectral Warping Examples

- dry source
- Processed I- Freq Warp
- Processed 2 Contrast
- Cross Synthesis I KYMA
- Cross Synthesis II KYMA
- Morphing KYMA

In Summary....

- Try not to use stock SFX CD's!
- Go and record the SFX for yourself.
- Hire a Foley studio or make one.
- Use combinations of processing techniques.
- Misuse the applications you have.
- Don't get locked into using one application!
- Don't be afraid to experiment!!!!!!



Q&A

- michael_johnson@playstation.sony.com
- michael@ankf.com