Introduction to Creating Flexible Sound Cues

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FLEXIBLE WORKFLOW

Why a focus on flexibility?

- Increased speed allows for more experimentation and creativity
- Reduces stress during technical rehearsals
- Allows faster response to notes in the room
- Avoids unnecessary iteration
- Reduces time spent revising content outside the theatre
- Makes cues easier to update, maintain, and remount

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The Goal of The Talk

To share concepts and workflow strategies that facilitate control, flexibility, and efficiency in sound design.

TALK ROADMAP

- Establish a set of baseline assumptions about a project.
- Technical Details for setting up a Directory/DAW.
- Showcase a framework for cue placement and development
- Learn a workflow to create and manage layers of sound.
- Explore controlling content loops and effects.
- Learn about developing music for flexible playback.

COMMON PRODUCTION ENVIRONMENT

We will focus today on methods specific to creating and implementing “rich” conceptual sound designs for straight plays.

We assume a common production environment, which includes:

- **DAW:** DAW software is used to author and modify audio content in some capacity.
- **QLab:** QLab is used for audio playback.
- **Mixing Console:** QLab channels are routed through a mixing console.
- **System:** A discrete multi-channel sound system is used. Ideally, the system is tuned for optimal transmission in the venue.

ORGANIZATION

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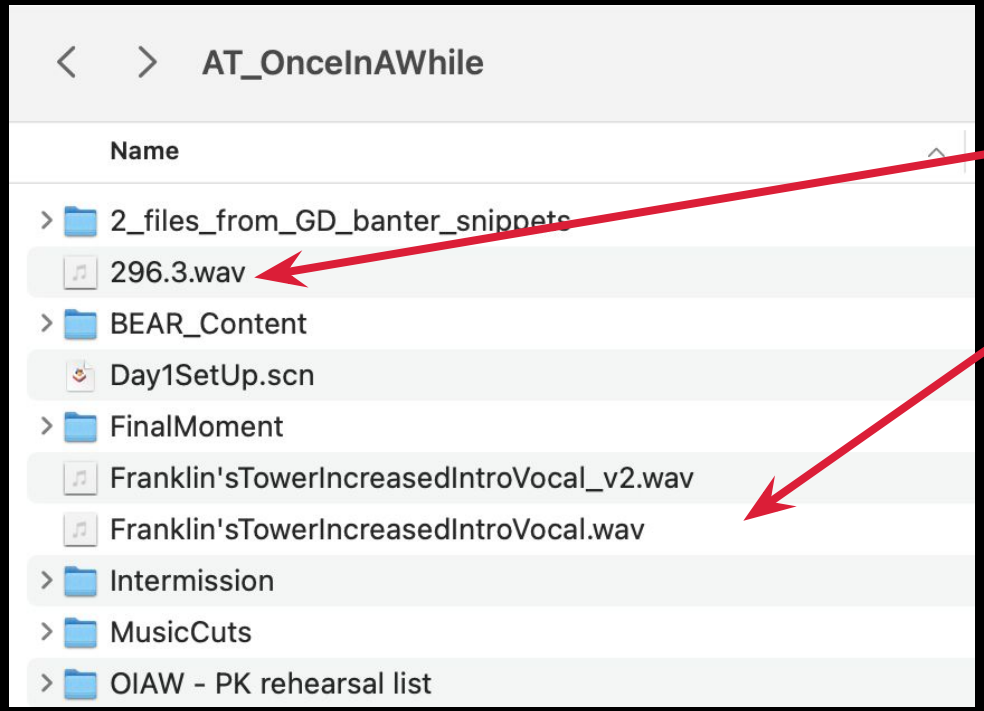
ORGANIZATION

It is important to develop purposeful organizational systems.

- **Project Directory Structure:** naming conventions, subdirectories
- **DAW Sessions:** naming conventions, groups, markers, tracks, etc.
- **Rendered Assets:** naming conventions
- **QLab Sessions:** naming conventions, groups, cue lists

DAW & FILE ORGANIZATION *aka the good stuff



Unclear naming

Top level audio

No separation between system, content, programming, and paperwork.

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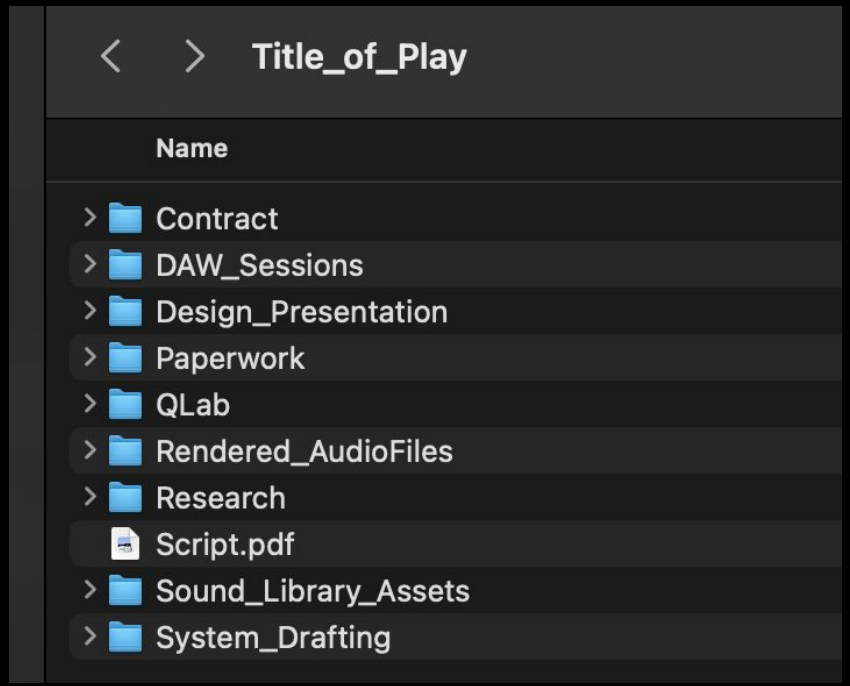
DAW & FILE ORGANIZATION



Clear separation between system, content, programming, and paperwork.

No top level audio, content or programming.

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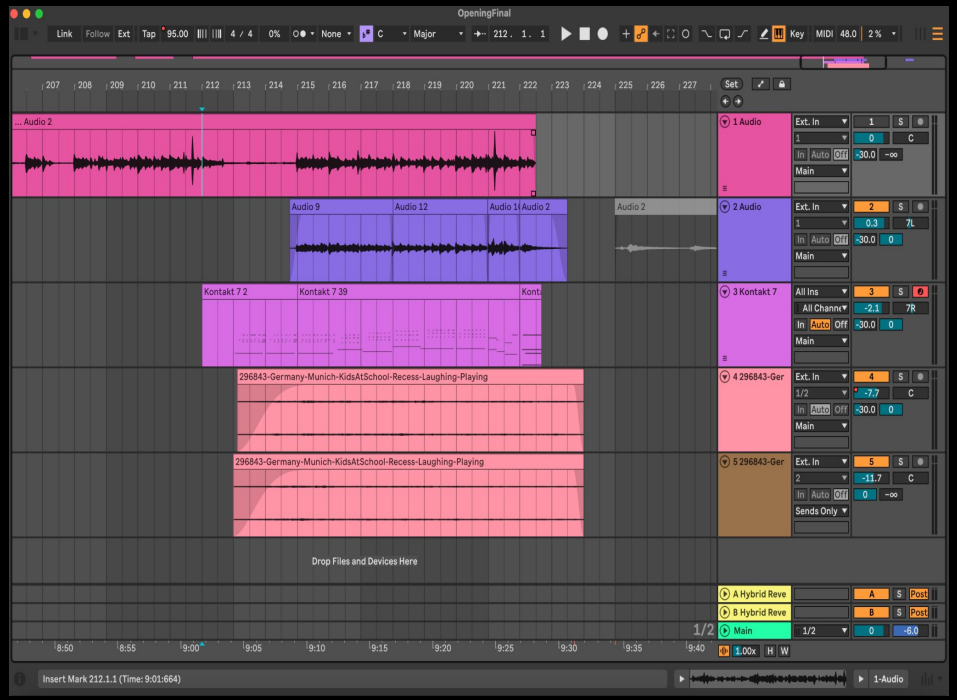
DAW & FILE ORGANIZATION



This is an example of poor DAW organization. The areas for improvement:

- Project Title
- Track Labels
- Clip File Naming
- Track Markers

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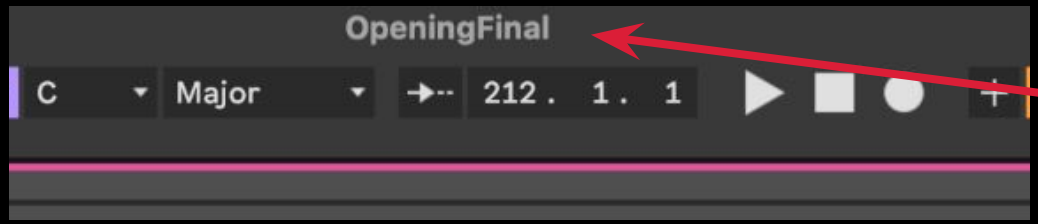
DAW & FILE ORGANIZATION

The project title should have a clear name, date, and show.



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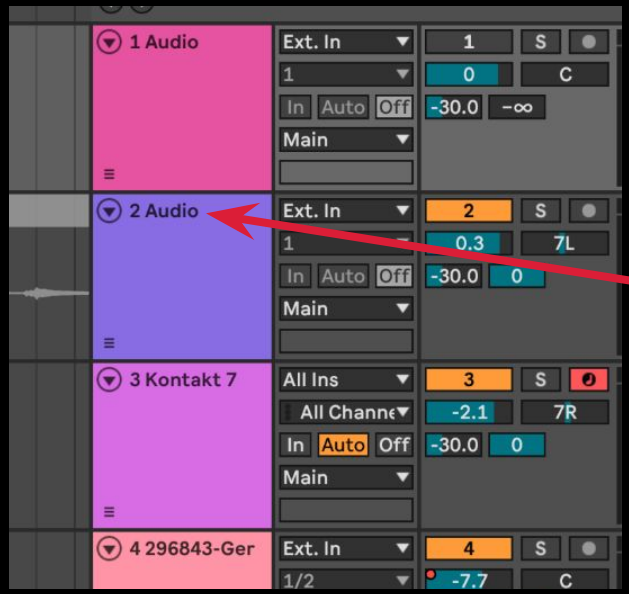
DAW & FILE ORGANIZATION



Tracks should have a clear title and sonic description.

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DAW & FILE ORGANIZATION

Edited version with a clear title and sonic description.

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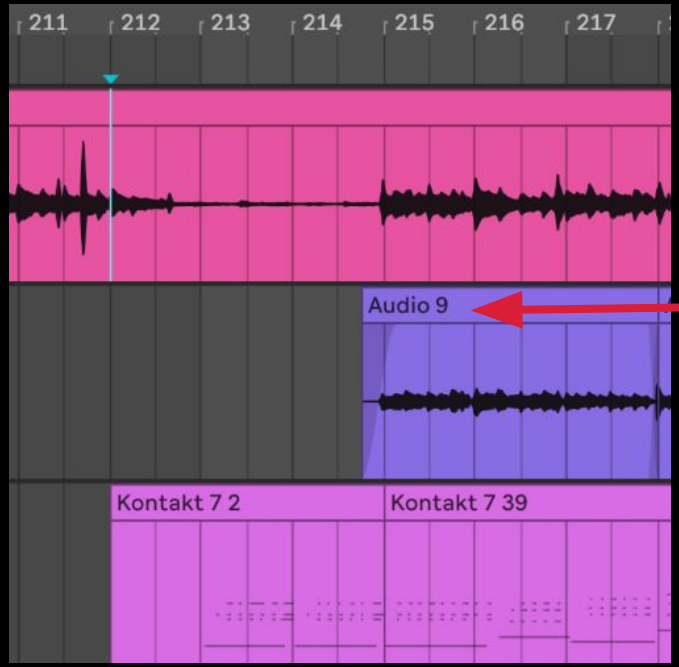
DAW & FILE ORGANIZATION



Audio & MIDI clips should be properly named.

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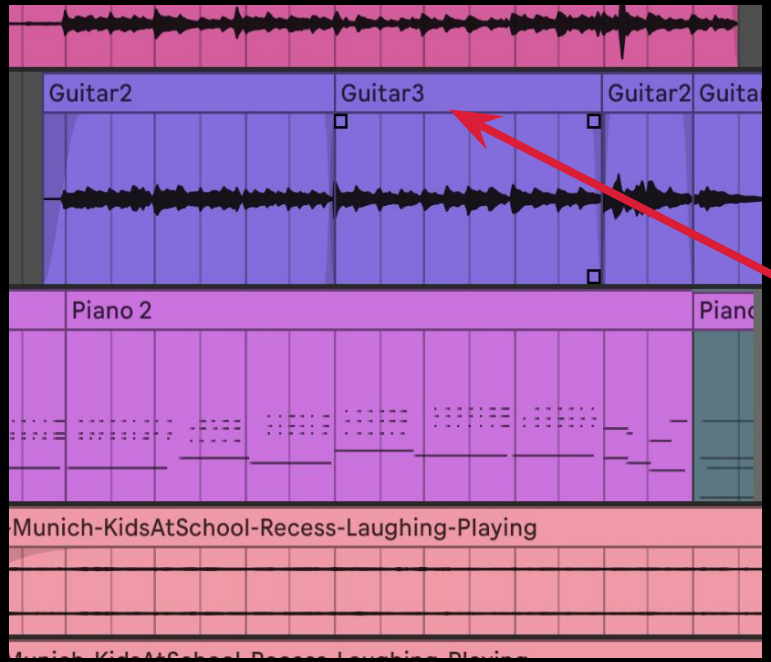
DAW & FILE ORGANIZATION



Edited version with properly named Audio & MIDI clips.

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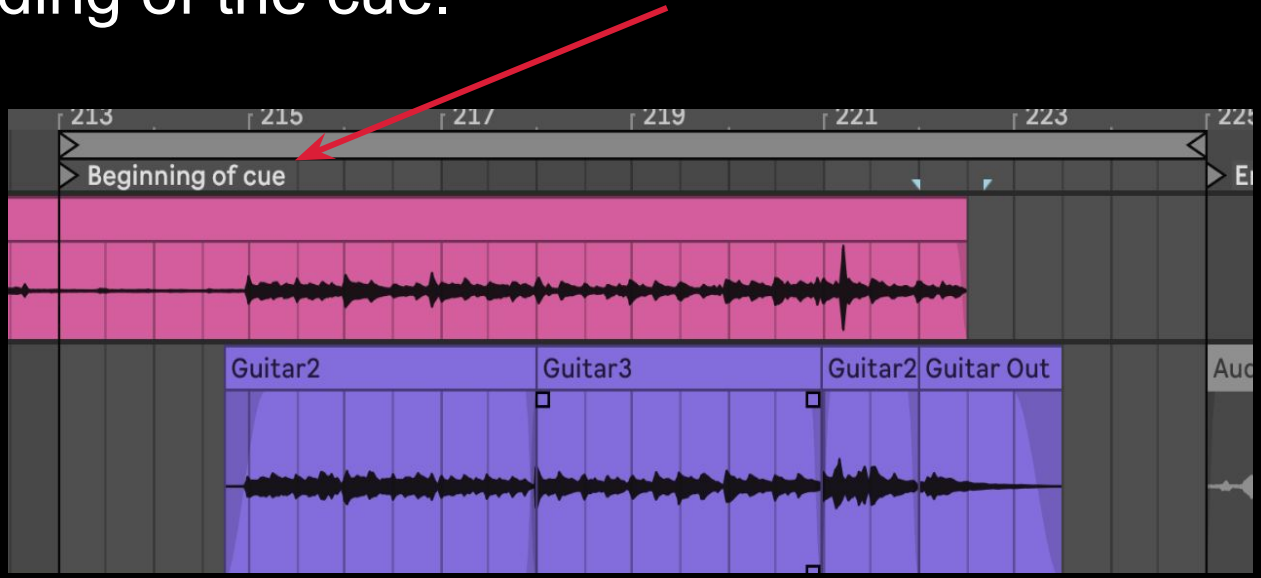
DAW & FILE ORGANIZATION

Locators have been added to the beginning and ending of the cue.



RENDERING CUE ASSETS

When rendering cue assets from a DAW, we have two main goals:

- Maintaining the structure and mix
- Maximizing flexibility for implementation and revisions

CUE STRUCTURES

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CUE STRUCTURES

When creating flexible cues, there is no one-size-fits all workflow.

The content, length, and how the cue develops determines the distinct approaches best suited to author it.

It is useful to have a framework to categorize cues and their structures.

CUE STRUCTURES

Definite Time:
Cues that take place over a specific duration.
Examples of these could be: doorbells, music stings, crashes, gunshots, etc.

Indefinite Time:
Cues that take place over a variable duration.
Examples of these could be: ambiences, musical underscoring, drones, etc.

CUE STRUCTURES

Vertical Development:
Changing the context of a cue by adding, removing, or altering layers of material. This includes introducing new sounds, muting elements, or changing the texture.

Horizontal Development:
Changing the context of a cue by shifting, replacing, or restructuring material in time. Horizontal development involves moving to different musical or sonic material, extending or shortening sections, or changing the pacing of the cue in ways that cannot be achieved simply by adding or removing layers.

CUE STRUCTURES

Definite + Vertical Development

Predictable length. The texture is developed through layering.

EX. Cannon is built with a variety of gunshot SFX stacked ontop of each other.

Definite + Horizontal Development

Predictable length. The material shift in time.

EX. A choreographed dance.

Indefinite + Vertical Development

Variable length with evolving layer based texture.

EX. Cave ambience that builds overtime. Drips, Water, Echos, etc.

Indefinite + Horizontal Development

Variable length with material shifting in time.

Ex. Dramatic underscoring that builds in melodic density and tempo under dialogue.

VERTICAL DEVELOPMENT

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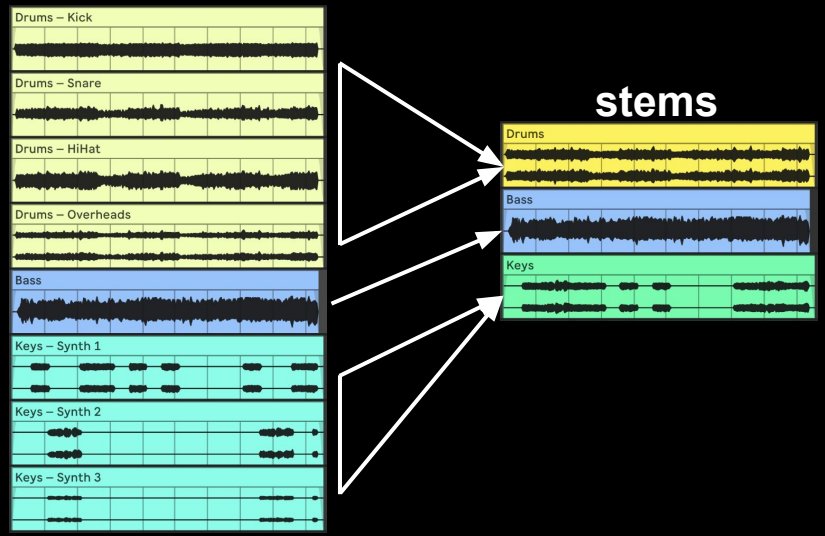
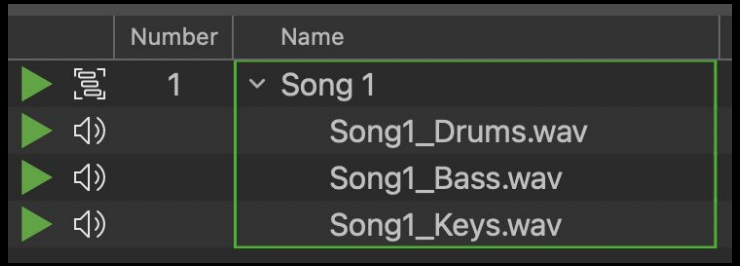
STEMS

DEFINITION: A stem is a rendered audio track representing an isolated component of a larger mix, allowing it to be independently balanced, processed, or spatialized.





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STEMS

DESIGN CONSIDERATIONS

- Balance
- Spatialization*
- Effects Treatments
- Composite Layering
- Temporal Positioning
- Textural Development
- Experimentation

SPATIALIZING STEMS

- Spatializing stems adds richness and dimensionality

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MANAGING STEM LEVELS

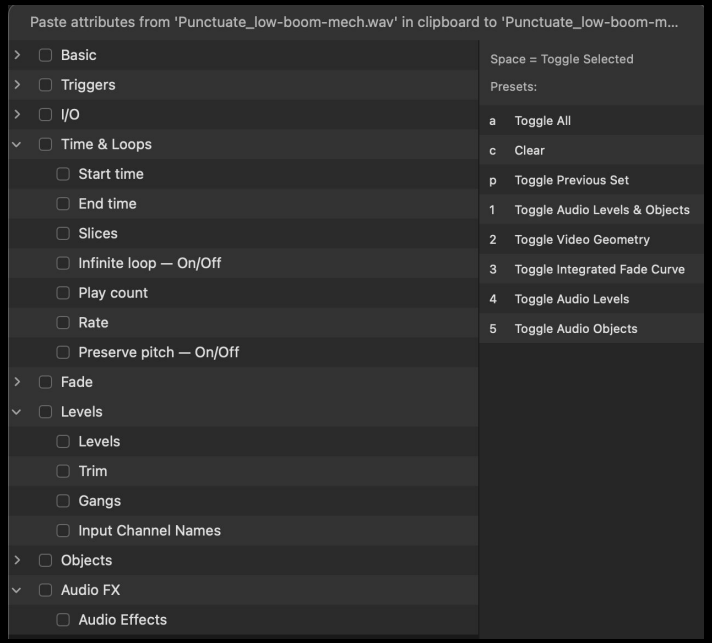
Employ strategies that allow for fast, global level adjustments.

Example:

- Place all stem audio cues in a subgroup
- Create fade cues for all stems (also place in a subgroup)
- Set consistent main level for all stem cues (e.g. -6dB)
- Adjust relative levels using trim
- Use script cues for batch level adjustments when needed

COPY & PASTE CUE PROPERTIES

Copy & paste cue properties is an extremely useful feature in QLab.



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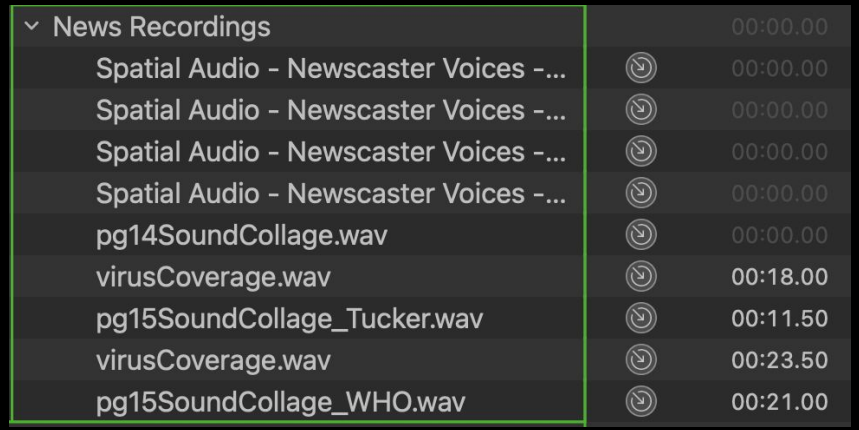
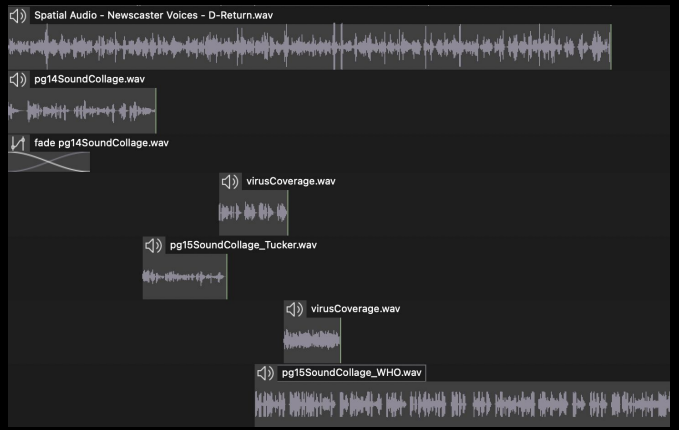
TEMPORAL POSITIONING

- This multi-layer approach does improve efficiency when adjusting the horizontal development of complex cues.
- Timing of audio files can be adjusted to taste in real-time in QLab using Timeline Mode in a group cue.





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RENDERING STEMS

CORE WORKFLOW

- Use grid snapping to align edits and ensure consistent timing
- Set render bounds (loop/selection) to define exact output length
- Rendered target tracks to be included in stem

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RENDERING STEMS

TECHNICAL CONSIDERATIONS

- Apply clear file naming and versioning for reliable revision workflow (rendered file + DAW session)
- Maintain proper gain staging (relative balance + headroom)
- Keep output levels consistent between DAW session versions
- Supports audio cue target replacement in QLab while preserving programmed levels

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EFFECTS TREATMENTS

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PRE-PROCESSED EFFECTS AS STEMS

Effects can be applied in the DAW, and rendered as stems.

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PRE-PROCESSED EFFECTS AS STEMS

To create a shared reverb or delay stem:

- Create an track with the reverb or delay effect. (This will be called a return)
- Set the effect to fully wet.
- Route content to the return as needed.

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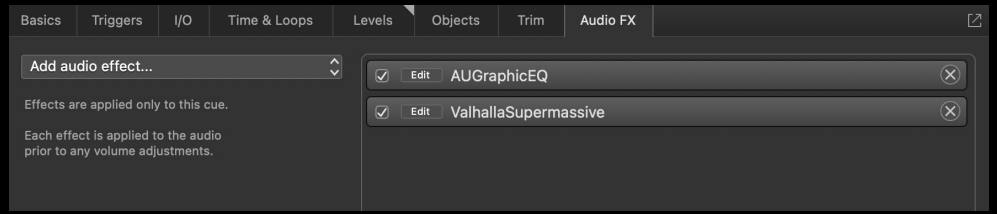
REAL-TIME FX PROCESSING: QLAB

Utilizing Audio Unit Plugin effects inside of QLab.



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REAL-TIME FX PROCESSING: QLAB

Pros:

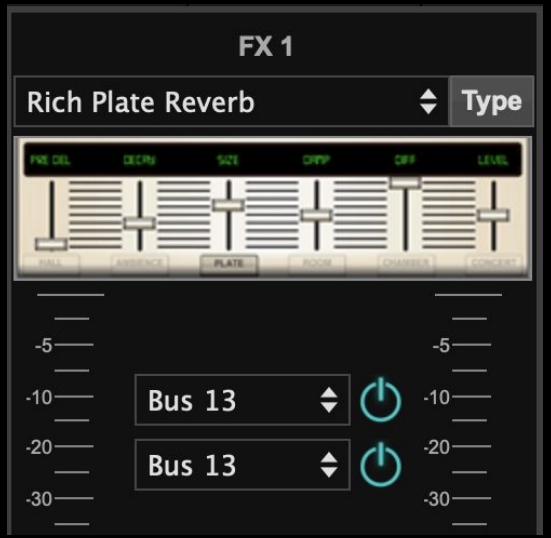
- Adjust parameters directly in playback software
- Independent FX application and control per stem
- Automate FX with fade cues
- Effects travel with the QLab session (not console)
- More time to refine during early design phase

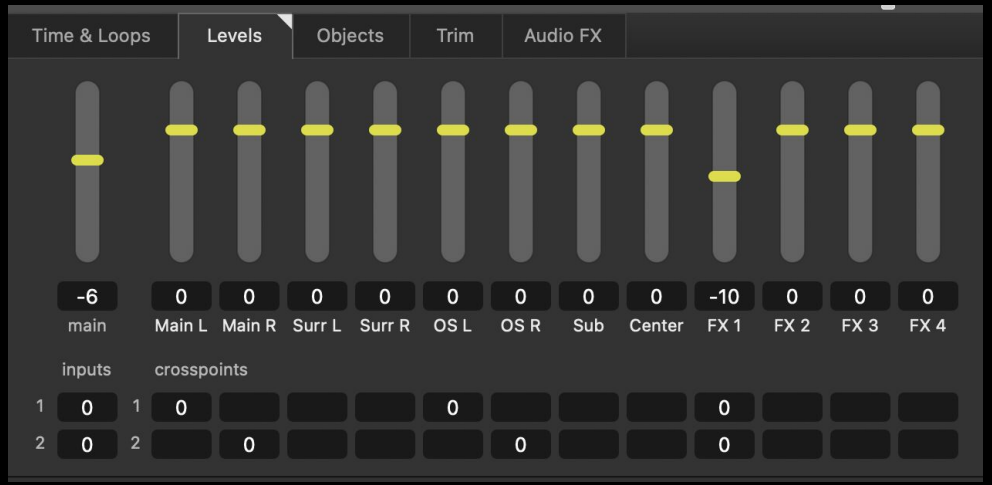
Cons:

- Higher CPU usage
- Greater risk of instability or crashes
- Added latency
- Less control available at the console during performance
- Cost for 3rd-party plugins on show computer

REAL-TIME FX PROCESSING: CONSOLE

Utilizing console and other outboard effects.





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REAL-TIME FX PROCESSING: CONSOLE

Pros:

- Lower CPU usage on playback computer
- Increased system stability
- Lower latency for real-time processing
- Direct control from the console during rehearsal and performance
- Better effect tail management

Cons:

- Less precise recall between rehearsals and venues
- Difficult to control effects per stem
- Limited portability between systems
- Added complexity to routing

INDEFINITE TIME CUES

INDEFINITE TIME CUES

When a cue must run for an unknown length of time, there are two practical approaches:

- Render more material than will be needed.
- Creating content that can loop.

LOOPS

Creating seamless loops in DAW

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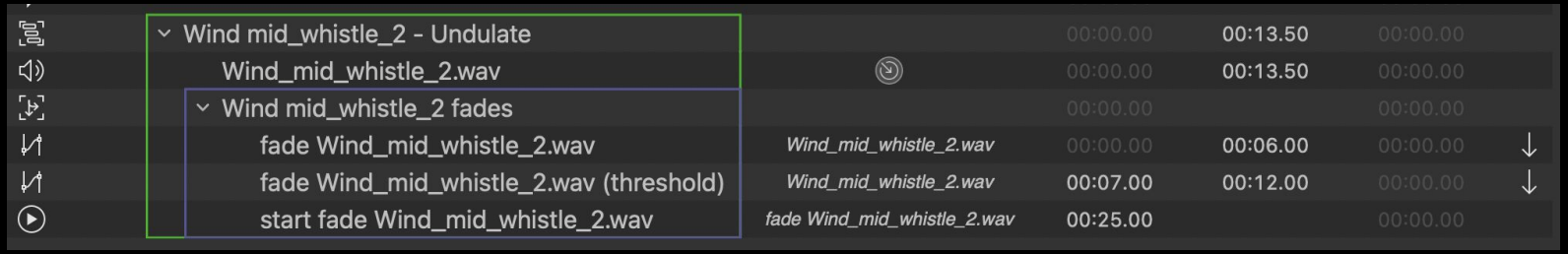
LOOPS

Looped triggering in group cue



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HOW DOES MUSIC FUNCTION?

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MUSIC CONSIDERATIONS

Music takes place in two categories:

- Choreographed - Definite Time
  Music that takes place over a specified period of time.

- Non-choreographed - Indefinite Time
  Music that takes place over an ambiguous amount of time.

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CHOREOGRAPHED

Choreographed music is approached similarly to definite time cues:

- **Stems:** Mix stems in the performance space
- **Control:** Fades and groups
- **Effects:** Stems, Computer Plugins, and Console/Outboard

CHOREOGRAPHED

Differences:

- Due to time complexity, construction is not done in the playback software
- Organization and ease of export becomes even more important
- Locators are used throughout the session to denote onstage action
- A robust file transfer method is required

NON-CHOREOGRAPHED

Non-choreographed music is approached similarly to definite time cues and choreographed music:

- Export stems
- Mix stems in the performance space
- Control the stems with groups and fades

Further Similarities

- Construction is not done in the playback software
- Organization and ease of export continue to be important
- Locators are used throughout the session to denote onstage action
- A robust file transfer method is required

NON-CHOREOGRAPHED

Differences:

- Music is written in series of loops (that hopefully don’t feel like loops).
- Delay and Reverb stems are no longer utilized.
- Vertical development utilizes muted audio, fades, and spot cues to create a sense of progression.
- Horizontal development uses covered transitions and devamps.

QUESTIONS?

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THANK YOU!

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Link to Slides & Demo Content:
https://stewartblackwood.com/usitt-talk-2026

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