

BREATH & HAMMER / THE TIES THAT BIND US
David Krakauer and Kathleen Tagg – Clarinet, Piano, Electronics
3 Options for Presenters: with or without Jesse Gilbert

OPTION 1: Screen Behind Artists, Projections on Random Shuffle on Screen

Basic Overview

- Artists onsite: David Krakauer and Kathleen Tagg only
- Single screen and single projector
- Krakauer and Tagg supply 3 video cameras and a POE box/controller
- **Strongly recommend** that artists additionally travel with their own tech person, though not imperative

The list of required personnel & equipment provided by the venue is:

- Required: lighting person, sound person. An adequate crew to help with setup, sound and lighting
- Sound system, screen, microphones, 4 Ethernet cables, one projector, speakers for surround sound set-up (spatialized sound for the interludes is optional)
 - Please provide a projector capable of projecting a sharp, full color image behind the players at a height to clear the top of the piano with the lid at full stick. Projector depends on the venue size but 5K projectors and upwards are always preferred. Projector must be fed via VGA or HDMI. Please let us know in advance so we can provide the appropriate dongle with our laptop. Please provide the cabling between the laptop and projector.

Artists will supply:

AUDIO: Computer, interface and all software to output the signals, but will need to be able to plug into the hall's speaker system.

VIDEO: Video cameras and tripods but need cabling, etc. as noted above.

OPTION 2: Single Scrim in Front of Artists

Basic Overview

- Artists onsite: David Krakauer, Kathleen Tagg, and Jesse Gilbert
- Single scrim and single, bright projector that can cover the entire width of the scrim

Artists will supply:

AUDIO: Computer, interface and all software to output the signals, but will need to be able to plug into the halls speaker system

VIDEO: Videographer will provide four Blackmagic Micro Studio 4K cameras and SDI video capture card, but venue must provide all mounting and cabling equipment, as noted below.

The list of required personnel & equipment provided by the venue is:

- Required: lighting person, sound person, and an adequate crew to help with setup, sound, projections and lighting
- Sound system, microphones and speakers for surround sound set-up as per rider.

- One DLP laser projector, minimum 30K lumens, with minimum 2000:1 contrast ratio. Projector should support a minimum of 1080p resolution, but UHD (3840 x 2160) would be preferred.
 - The resulting image will be cropped in software to produce a 3:1 image. The minimum target size of the image would be 12' high x 36' wide. Larger stages/skrims would require a larger image - therefore the projector brightness would need to increase as well.
 - Lens must be chosen that can produce appropriate image size and brightness given the projector position in the hall.
 - Projectors should be able to accept HDMI and/or SDI output. Venue will supply all cabling from artist PC to projector.
- Venue may need to provide a sound isolation box for the projector, depending on how close it is to the scrim and/or the audience (this would depend on the size of the space and the lenses available).
- Minimum 3' high platform artists can be placed on so that they are centered in the image.
- Venue must provide adequate 3G SDI cabling, mounts for all four cameras provided by videographer (typically ball heads placed on mic stands), and stage power and network connectivity for camera control. Specifically:
 - External SYNC system (60 fps) generator: this is for the cameras, SDI video capture card, and Datapath FX4 so that images are synchronized between projectors
 - 12 SDI cables compatible with the 3G standard: this provides three cables per camera for the following purposes:
 - 3G-SDI signal OUTPUT from camera to videographer's capture system at the video mix position
 - 3G-SDI signal INPUT from on-stage distribution box for camera adjustments (focus, iris, gamma, etc.)
 - BNC cable with SYNC signal
 - Five (5) total CAT5e cables: One (1) cable running from videographer's laptop to stage in order to send control signals to the cameras, Four (4) cables to run from PoE Ethernet switch **provided by videographer** to power cameras
 - Four (4) heavy base mic stands with video ball heads

Notes

- **IMPORTANT:** there must be a continuous black background behind the performers so that the projected image does not reflect off of the upstage wall. This is required for the projection design to work as intended.

OPTION 3: 16' x 9' Cube Enclosing Artists

Basic Overview

- Artists onsite: David Krakauer, Kathleen Tagg, and Jesse Gilbert
- Four projectors and a 16' x 9' cube built by the venue. The cube consists of fabric hung loosely from a single square made of PVC pipe flown above the stage, with all PVC pipes painted black in order to make the structure less present.

Artists will supply:

AUDIO: Computer, interface and all software to output the signals, but will need to be able to plug into the hall's speaker system

VIDEO: Videographer will provide four Blackmagic Micro Studio 4K cameras and SDI video capture card, but venue must provide all mounting and cabling equipment, as noted below.

The list of required personnel & equipment provided by the venue is:

- Required: lighting person, sound person, and an adequate crew to help with setup, sound, projections and lighting
- Sound system, microphones and speakers for surround sound set-up as per rider.
- Four identical laser projectors, minimum 10K lumens each, with minimum 2000:1 contrast ratio.
 - In this scenario, we'd need to work with 16x9 rather than 16x10 aspect ratio for each cube face, because the video signal splitters will generally expect that format.
- One Datapath FX4 video processor to split Jesse Gilbert's computer's output to the four projectors and cabling to connect the FX4 to the projectors.
- External video sync generator (60fps) so that images are synchronized. The sync feed will be fed to the Datapath FX4, artist's SDI capture card, and all four stage cameras.
- Venue must provide adequate 3G SDI cabling, mounts for all four cameras provided by videographer (typically ball heads placed on mic stands), and stage power and network connectivity for camera control. Specifically:
 - External SYNC system (60 fps) generator: this is for the cameras, SDI video capture card, and Datapath FX4 so that images are synchronized between projectors
 - 12 SDI cables compatible with the 3G standard: this provides three cables per camera for the following purposes:
 - 3G-SDI signal OUTPUT from camera to videographer's capture system at the video mix position
 - 3G-SDI signal INPUT from on-stage distribution box for camera adjustments (focus, iris, gamma, etc.)
 - BNC cable with SYNC signal
 - Five (5) total CAT5e cables: One (1) cable running from videographer's laptop to stage in order to send control signals to the cameras, Four (4) cables to run from PoE Ethernet switch **provided by videographer** to power cameras
 - Four (4) heavy base mic stands with video ball heads
- Cube PVC structure built out of 2 inch PVC pipe

Estimated Material Costs for Cube Construction

Pipes

2 x 20ft pipes for vertical supports, each cut into two 9ft pieces = \$80

8 x 20ft pipes for the horizontal, each cut into a single 16ft piece = \$320

8 x 2" 90 degree elbow joiner pieces for each corner of the cube = \$35

TOTAL pipe costs: ~\$500

Fabric

22 yards of voile fabric (>64 ft) to wrap the structure = \$150

Custom fabric modification from Rose Brand to sew a continuous strip of white industrial velcro (loop) onto the top/bottom seams, and to make it exactly 9' tall = \$500

2 rolls of black velcro (hook) to apply to the pvc (see [link](#) for more details) = ~\$60

TOTAL fabric costs: ~\$610

Total estimated material costs for cube construction: \$1110

Notes:

- All pipes must be painted black after assembling the cube so that they do not reflect light.
- Venue should ideally be able to provide support from above the structure at the mid-points of the horizontal pipes on the top of the cube to avoid sagging in the middle of the span.
- Projectors ideally should have a mounting cage and be flown above the stage/audience position to maximize sight lines.
- Lenses must be selected to produce an image that will completely fill a single face of the cube.
- Projectors must be identical and calibrated to achieve image uniformity across the entire structure.
- Projectors ideally would be centered on the cube faces to allow the light to pass through the structure to the other side.
- Venue may need to provide sound isolation boxes for each of the projectors, depending on how close they are to the structure and/or the audience (this would depend on the size of the space and the lenses available)