Pallas of Vines Performance Manual

1.   General Controls

Note: in all cases below, "Alt" key refers to Left-Alt, except to make avatar move slowly which is Right-Alt.

Note: where "horizontal scrolling" is defined for particular objects, in most cases it is possible to hold "Alt" and use Vertical Scroll instead (since the average mouse does not have horizontal scrolling)

IMPORTANT !

Note that throughout the whole manual Windows users should substitute "Command" for "Tab"

Global

- Escape: toggle options menu
- Shift+E: toggle Edit Mode. Developers only. Only accessible when playing the game within the Unity Editor.
- Shift+H: Toggle Rehearsal Mode. Only accessible in Performance. When on, this allows all help text, as well as any File Browser functions
- Shift+B: Open File Browser (to load samples). Rehearsal Mode only
- Shift + R: Toggle recording (records Master output)
- Alt+Shift+R to Save recording (if one has been made). Rehearsal Mode only
- A gamepad can be used instead of a keyboard & mouse. It must be selected in the menu

Gamepad: Player 1 Controls

These controls are specific to the Playstation DS4 Controller

- for PC/Mac the "PS" button on playstation toggles gamepad on/off
- Left Stick to move avatar
  - Click in Left Stick to toggle 1st person mode
- Right Stick to move camera
  - R1: hold while moving right stick up/down to adjust camera distance
  - Click in Right Stick to move camera back to default position
- Hold R2 to move cursor. Any "cursor over" controls defined below will also require R2 to be held
- Right Stick up/down while cursor over a parameter: adjust a fader or dial
  - Alternatively: Cursor over a parameter, hold circle and move Left Stick up/down
- Cursor over + D-Pad Up + Circle: toggle objects on/off
- Square: toggle objects on/off when avatar is close (equivalent of QWERTY key E)
- X: pickup/drop object when avatar is close and facing it
- L1 Jump
- Option Key: toggles menu. Or if note-input is active is Octave Up
- Share Key: If note-input is active is Octave Down
- Cursor over avatar + triangle: add new avatar
  - D-Pad Left/Right: cycle through available avatars
  - Cursor over avatar + circle: select that avatar
- Cursor over + D-Pad down + circle to destroy any object type
- Cursor over + triangle: this is the gamepad version of "right mouse click" in most cases
- Cursor over + click touchpad on any note-compatible object to toggle note input on/off
  - While note input is active for any object, Left Stick will move the cursor and Right Stick will adjust parameters when cursor over
    - For this reason all avatar and camera controls are locked out until note input is toggled off
  - If note input is on for any object, the following controls are mapped to an octave of notes, in the given order, starting from C4
    - D-Pad Left
    - D-Pad Up
    - D-Pad Right

- D-Pad Down
- Square
- Triangle
- Circle
- X
- L1
- R1
- L2
- R2
- "Share" and "Options" buttons to shift Octave up/down
- It is possible to have note-input on multiple objects at once
- Double-click touchpad to toggle off any currently active note-input objects
- Object Creation:
  - As hotkeys are not possible via gamepad, there is an alternative menu system:
    - Cursor over current avatar and hold the circle button for 1 second to reveal the creation menu. Then cursor over the nodes and press the circle button to navigate through this menu

Gamepad: Player 2 for Local Multiplayer
This is for the specific context of Player 1 on QWERTY + mouse and Player 2 on Gamepad

- First, set a Player 2 avatar by Cursoring over a regular avatar (not the current active), holding "4" and clicking. This avatar is now in Player 2's control.

- Left stick to move avatar
- Square: switch objects on/off when avatar is close
- X: pickup/drop object
- Circle: when close to sound-source, become listener (does not start or stop sound)

- L1/R1 to cycle through targeting of nearby pole or dial when standing very close
    - then Right Analog Stick to move the targeted parameter up or down
- Triangle: create a new player 2 avatar just behind current player 2 position
- D-Pad Left/Right – cycle through available avatars to control
- Touchpad: when close to a note compatible object, this toggles MIDI note input

- Player 1 can connect a parameter to player 2's current avatar by pressing "4" when the cursor over a parameter

2. Hotkeys to Instantiate Objects During Performance

Note: For every kind of creatable object, you can optionally also hold Left-Control to create them at the cursor position instead of at the avatar position

IMPORTANT !
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Audio
- Shift+Alt+V: Sound Source [Rehearsal Mode only] – (if no sound has been selected, then opens file browser first to select a wav file)
- Shift+Z: Synth
- Shift+9: Synth LFO Module
- Shift+Z: Audio Input (Mic/Line)
- Shift+J: Loop recorder. This both starts and stops the recording. When stopped, a sound source containing the recording is immediately created (note that small fades are applied to the start and end of the sample to avoid clicks. However, this also means that recording something like a constant tone will have an audible "seam")
    - Alt+Shift+J: If a recording has previously been made (via Shift+J or Shift+R), it will be immediately instantiated as a new sound source. Cannot be used if a recording is in process
- Shift+U: Master Pulse
- Shift+Alt+N: Note Sequencer
- V: Node Sequence
    - Shift+V to auto-connect a new node to the last one that was created
- Shift+P: Master Pitch
- Shift+T: Sample Store [Rehearsal Mode only]
- Shift+K: Audio Bus

Audio Effects

- Alt+I: Lofi
- Alt+E: Delay
- Alt+R: Reverb
- Alt+F: Distortion
- Alt+O: LFO
- Alt+L: LPF
- Alt+H: HPF
- Alt+P: Peak Filter
- Alt+M: Compressor
- Alt+K: Phaser
- Alt+Q: Flanger

Avatars

- = or + : create Avatar

Parameter Control

- Shift+G: Individual Parameter > Control many parameters at once by connecting them to this single parameter
- Alt+Shift+U: Switch
- Shift+O: Master LFO
- Shift+N: Preset Store/Recall Object
- Shift+8: Multi-Parameter Panel (X/Y Panel)

Motion & Architecture

- Shift + Alt + / (forward slash): Anchor & Motion
- Shift+Alt+L: Orbit Object
- Shift+Y: Spinner
- Alt+Shift+K: Scaler

Narrative

- Alt+Shift+O: Narrative/Inventory Object [Edit Mode only]
- Shift+Alt+M: Conversation Object
- Alt+Shift+N: Network Message
- Alt+Shift+Y: Environmental Text Object

Visual

- Shift+I: Environmental Light Controller
- Shift+Command+I: Colour Change
- Alt+Shift+I: Localised Light-Source
- Shift+Command+V: Camera Filter
- Alt+Shift+P: Particle Emitter

3.   Instructions for Object Types

Anchor & Motion

Instantiation Hotkey: Shift + Alt + / (forward slash)

The Anchor is the non-moving object, the Motion is the moving object

- Cursor over <u>Motion</u> and hold mouse button to charge a force. Release mouse button to knock the Motion object with that force
  - Hold Command when doing so to apply that force in the reverse direction
- Cursor over <u>Anchor</u> + Shift + hold mouse button to magnetise the Motion back to the Anchor
  - Cursor over <u>Motion</u> + Shift + Command to magnetise the Motion to the current active avatar
- Cursor over <u>Anchor</u> + Shift + any of the following:
  - W + cursor scroll up/down to apply vertical forces
  - S + cursor scroll up/down to apply forward/backward forces
  - A/D + cursor scroll up/down to apply left/right forces
  - W/S + cursor scroll left/right (where available) to apply left/right forces
- Shift + hold mouse button on <u>Motion</u> to halt its movement
- Press F on either Anchor or Motion to toggle Freeze Mode. This will suspend the motion object until unfrozen or a new force is applied by either the cursor or an avatar
- Press the "Create New" button to create a new Motion partner. This will destroy the previous. This is useful for instances where the Motion object gets lost or stuck

Area Light

Instantiation Hotkey: Alt + Shift + I

- Shift+A/D to toggle between spherical light and spot light (cone-shaped)

- Command+drag from a Colour Changer to an area light to set the colour of the light
  - Mouse-over+Backslash to break a colour connect & keep the current colour
  - Mouse-over+Shift+Backslash to break the colour connection & reset light colour
- Drag a connection from a colour-change object to an area light, and the light-colour can be changed
- Alt+Click to destroy

Areas

- Depending on the performance space a developer has set up, a given area may have an Area Body which can control the volume and panning of all sounds in this area
- Where an area body is available, players can connect avatars in the usual way, and use the avatar's proximity and orientation to apply volume and panning to all sounds in that area
  - Note that this does not override any given sound's current volume and panning, but instead applies an additional layer of volume and panning. That is relative volume and panning between sound sources will remain consistent

Audio Buses
Instantiation Hotkey: Shift + K

- A station's listener is initially assigned as the av that created it

- For a station to be heard it must have a listener avatar assigned and in its field proximity, even if it is sending to another station
- Cursor over a bus and press "1" to assign current avatar as listener, or "2" or "3" to assign either OSC avatars as listeners

- Shift+click to toggle on/off. This will mute the station
- Click a Station's "Bypass Self" glyph to toggle bypassing. When bypassed, any connected Sound Sources will be heard exactly as their original Listener Avatar is hearing them
- Bypass individual sends from "Station head" glyphs on sound-sources (Shift+click to toggle)
- A station can be linked to another station, which can also be linked to another station, and so on to infinity. The effect of a station on their children will cascade, so a parent will affect its children and its children's children and so on
- Any sound source object, and stations themselves, have station-link glyphs which can be clicked to be readied, then a station can be clicked to assign the sound (or other station) to that station. The glyph will then always look in the direction of the station it is attached to
  - Alt+clicking the glyph will break that link. When a sound-source or station's link to a station is broken, it reverts back to emitting directly from itself
  - Shift+Clicking the glyph will toggle bypassing the link. Bypassing will also revert the sound source or station back to emitting directly from itself
  - Hold Command when clicking the station to create a non-listener-based connection. This connects all the readied sound sources without their own listener. This will also disconnect any listeners that are currently connected to those sound sources. You can still re-connect a listener to those individual sound sources at any time after, and this will not disconnect the sound-source-to-station connection
    - Note that if a sound source doesn't have a listener attached you will still need to Command+click the station to create a non-listener-based connection
- Alt+click to delete

Audio Effects (can be connected to any type of Sound Source)
See "Sound Sources" for details of how to connect effects to Sound Sources

- This is a family of objects comprised of the following:
  - Lofi
  - Delay
  - Reverb
  - Distortion
  - LFO
  - LPF
  - HPF
  - Peak Filter
  - Compressor
  - Phaser
  - Flanger
- Command+click to reset parameter positions
- Alt+click to delete

Avatars & Cursor

Instantiation Hotkey (for avatars): =

- W/A to move forward/back S/D to rotate left/right
  - Hold Right-Alt to move slower
  - in 1st person mode, S and D to sidestep, use mouse to look around
- [Gamepad] Left analog stick to move
  - in 1st person mode use right analog stick to look around
  - L1 to jump
  - "option" key to toggle menu
- Mouse to move cursor
- Cursor-over + Hold Command on any avatar, then move cursor to any point on the landscape and release Command. This will make avatar automatically run to that position
- Cursor-over + Hold Command + Hold Shift on any avatar, then continue to hold command and shift while moving the cursor, and the avatar will follow the cursor. Only works if avatar is not the current active

- [Currently Disabled] Alt+Space to toggle recording of looping path for current avatar
    - Avatar will follow that path immediately after recording is toggled off. If anything impedes the avatar's path, it will stop
- Q when avatar is close to pickup/put-down objects (works with most object types)
- Cursor over + Shift + Control to move objects with the cursor
- E when avatar is near a switchable object to toggle on/off
    - or [Gamepad] Square
- We can line draw from a sound source to an avatar to set it as a listener
    - and when doing so, it doesn't matter which avatar is active, we can set the listener to a non-active avatar
- Click an avatar to set it to the current active. This will select it for keyboard movement control and camera focus
- Space to jump
- Cursor over + right-click any avatar to enable text-input. Then can type any message. Press "Return" to confirm. Right click avatar again to cancel text-input.
- Avatars can have dials and faders assigned to them. Mouse over a dial/fader and press 1 to assign to main current avatar, or 2 or 3 to assign to the 1st and 2nd OSC avatars
    - Alternatively, Hold Command over a parameter to drag a line to an avatar
    - Press Command when mouse over that param to break the connection
- "[" and "]" to cycle through available avatars. You can only switch between avatars that are in the same area you are currently in
    - [Gamepad] Cursor over current active avatar + D-pad left & right to cycle to other avatars
- Hold Left Control and mouse scroll Vertically & Horizontally to move forward and backwards and rotate left and right
- [Gamepad] Triangle-drag from avatar to drag-drop new avatar at cursor pos
    - or triangle-click on avatar to create new avatar behind current one
- Alt+click an avatar to destroy

Camera

- Arrow keys to move camera
  - Up and Down to zoom
  - Alt+Up or Down to adjust camera height
  - Left and Right to rotate camera around current avatar (or pan left-right if camera is de-coupled with no-look-at)
    - Alt+Left/Right if de-coupled with no-look-at to rotate around Y axis
- [Gamepad] Right analog stick up/down left/right moves camera accordingly. Hold R1 and use up/down to adjust distance
  - Click right analog stick to reset to default position
- Vertical mouse scroll to zoom
- Horizontal mouse-scroll to shift camera horizontally
- Alt+mouse scroll to adjust camera height
- Hold "Command" for slower movement on all the above actions (applies to arrow keys and mouse scroll)
- Shift+C to reset height, zoom and rotation to defaults
- Alt+C to toggle decoupled camera position (doesn't follow avatar, but can still be zoomed and rotated as normal)
  - C while camera is decoupled to cycle through available camera-node positions within an area
    - Whether this is allowable depends on context, for example in most indoor sections the camera is locked to the node of the current room
- Alt+Shift+C to toggle look-at-active-avatar (applies to decoupled mode only)
  - If camera is not decoupled, this will decouple it, and set look-at-avatar to off
  - If camera is already decoupled this will toggle look-at-avatar
- C to toggle 1st person mode
  - [Gamepad] Click left analog stick
- Shift + 0: fade out. Intended for ending performances by fading to black. Does not fade audio, this should be done manually

- Built-In Camera Filters:

  These are to control the 3 permanently attached camera filters: Depth of Field, Vignette and Chromatic Aberration

  - Hold "Fullstop/Period" and mouse scroll up and down to change camera focal size
  - Apostrophe (') to toggle vignetting on/off (on by default) - turning off and on again resets the values
    - Hold "L" and mouse scroll up down to change vignette amount
    - Negative vignette value gives a white vignette instead of black
  - Hold colon and mouse scroll up down to change chromatic aberration amount
    - Shift+apostrophe (') to reset chromatic aberration and vignetting to defaults

Camera Filter

Instantiation Hotkey: Shift + Command + V

- Mouse-over+F to create filter-slots
  - Cursor over a filter-slot + Shift+A/D to cycle through available effect-types
    - If "Vintage Filter" is selected, hold Shift + W/S to cycle up/down through Vintage-filter types
  - Right-click a filter slot to toggle its available parameters
- Cursor over a slot and Alt+Click to destroy
- Shift+Click to toggle on/off
- Alt+Click to destroy

Colour Changer

Instantiation Hotkey: Shift + Command + I

- Click+drag (or hold Command while mouse over without dragging) to create a connection line. Release mouse or Command while over any other object in the scene to connect the colour changer.
- In almost all cases the colour-changer will change the colour of the solid objects it is connected to
    - However, connecting to an area-light allows the colour changer to set the colour of the light itself
- Backslash (\ ) when mouse over any object that a colour changer is connected to will remove the connection and retain the object's new colour
    - Shift+Backslash will remove the connection and reset to the previous colour (the colour before the last connection was made)
- Alt+Click to delete. By default, all connected objects will retain the new colour set by this object when it is deleted.
    - Alt+Shift+Click to delete and reset the colours of all connected objects

Connection Lines (routings between objects)

For any objects that have connections lines drawn between them, the following applies:

- Cursor over+X to "flash" all connection lines (makes them momentarily visible)
- Cursor over+Shift+X to toggle the visibility of all connected lines

Conversation Object

Instantiation Hotkey: Shift + Alt + M

Create actor nodes for each character in your conversation, connect them to avatars and type in text for each avatar for each step of the conversation

- F+mouse-over to create actor nodes
    - Drag from actor node to avatar to assign avatar as actor
- Right-click an actor node to toggle text input for that actor

- Shift+A/D while mouse-over main body to cycle through conversation steps
- Shift+click to play (trigger from start to finish) a conversation directly from a conversation object (e.g. so we can do it in rehearsal mode, etc)
- Shift+Tilde to always show conversation step number
    - Alt+Tilde to never show
    - Tilde to return to default behaviour (which is "show for 2 seconds when changed")
- Shift+click actor node to delete its text
- Shift+S while mouse over to save a conversation
    - Saving will only work in rehearsal mode (Shift+H to toggle)
- Alt+click an actor node to delete it
- Alt+click the main object to delete it

- Conversation Object: Player to NPC Conversations

This applies for stored "preset" conversations between player and NPCs

- Shift+Click an NPC to initiate a conversation with them
- Space to step through the conversation
- Backspace to exit at any time

- Conversation Object: Multiplayer Conversations and Single Player Monologues

- Each player can simply right-click on their avatar to begin typing text, then press Enter/Return to finish (and broadcast over the network if connected to a multiplayer game)
- Shift+Enter/Return allows you to input multi-line text

Environmental Light

Instantiation Hotkey: Shift + I

- Only one of these active at a time. Although any number can be placed into the scene, any time one is switched on it switches off the one that was previously active

Environmental Text

Instantiation Hotkey: Shift + Alt + Y

Fader Poles and Dials

The following rules apply to dials and faders as they appear on most object types. However fader poles can also be created individually:

Instantiation Hotkey: Shift + G

- Shift+cursor-over+vertical mouse scroll to scale the pole up and down
  - Hold alt to scale slower (in smaller increments)
- Or click and drag the pole to scale up and down
  - Hold Shift to scale slower
- Hold F+mouse-over to toggle MIDI mapping (see "Controls and Mapping > MIDI CC Mapping" for details)
- Press 1, 2 or 3 when mouse over a parameter pole, to link the height of the pole to the avatar's distance from it. The further away the avatar moves, the higher the value, the closer the avatar, the lower the value
  - Command while mouse over to break this link
- Command+mouse-over to begin drawing a line. This can be connected to anything by releasing command while mouse over the object. By default, for most objects, this will set the parameter's value to the distance from the parameter to the linked object. Some objects that have built in characteristics, such as rotation and scaling, can have those characteristics cycled through

- [Gamepad] Hold touchpad (as alternative to circle) to left-stick params up/down
  - This is needed so we can change synth params while playing it, without having to use any of the note-keys to engage dragging
  - However, we can use right-stick directly on params while R2 is held
- [Gamepad] Triangle to drag a line from Params to anything they can connect to (because there is no equiv to command-drag). Triangle click while cursor-over to break any current connection
  - Shift+A or D+mouse-over the other object to cycle through available behaviours to set the parameter to (e.g. rotation speed, scale-size, etc)
    - As an example, a rotating object might use its rotation-speed by default to set the parameter's value. You can then cycle through and choose between rotation-speed and object-distance
  - 3 exception cases of connection behaviour are as follows:
    - the auto-moving parameter of a Master LFO
    - a grouper pole
    - the amplitude pole of a sound source or synthesizer
    - connecting any other parameter to any of these three pole-types will match the parameter to that pole's value, and thus Shift+A/D is not relevant in these cases
- Scaling Dials:
  - Mouse-over+Shift+F to toggle scaling dials. These scale the minimum and maximum of any incoming values that are controlling the parameter, such as a grouper, LFO or amplitude pole
  - Click+drag up/down to move the dial
    - or Mouse-over+shift+vertical-scroll

Fields (on many different objects)

- When avatar close to parent object:
  - Shift+W or S - scale a field size up and down
  - Shift+Alt+ W or S to scale up and down slowly

- Shift+Command+W/S scale all fields at once (from anywhere, don't have to be near an object or mouse over)
- Alt+Shift+Command+W/S scale all fields at once slowly
- Shift+mouse scroll (when mouse over an object) to scale that object's field
- Gamepad: while holding cursor button, cursor over+right analog up/down to scale fields
- Shift+Command+mouse scroll to scale all fields at once
- Alt+Shift+Command+mouse scroll to scale all fields at once slowly

Mapping and Note Input

- Shift+Q when over any object that can receive note input (Pitch, Sound Source, Synth, Node and Note Sequencer) - this toggles QWERTY pitch input on. Note that you cannot move an avatar with the QWERTY keyboard when pitch input is active
  - Double-press Q to disable all QWERTY pitch inputs on all objects and resume avatar control
  - QWERTY keyboard keys T, Y, U, I, G, H, J, K, B, N, M, Comma correspond to the octave C, C#, D, D#, E, F, F#, G, G#, A, A#, B, C
  - Z & X change octave of any currently active QWERTY pitch input objects
    - Mouse over one of these objects changes just that object's octave
    - Mouse over none of these objects changes all currently active pitch objects
    - If shift is down, global will add and subtract from the current octave of each object (so relative differences in octave will be retained)
      - Otherwise it will set all to the same global octave

- MIDI Note Mapping
  - Press Escape, and in that menu select "MIDI and OSC Mapping". From the MIDI In list, select your MIDI note device. (Note that this method described below is specific to MIDI notes. See "MIDI CC Mapping" below for handling MIDI control data)

- WARNING! – make sure your MIDI In and MIDI Out selections are not set to the same device. This can cause crashes.
- Shift+F while mouse over a sample-sound-source, synth, node, or a pitch object to open it for MIDI note mapping
- Shift+Alt+F defines a single-note mapping (if you want to map different sounds to individual notes, for a trigger-pad for example). If a single note is mapped, all other notes are ignored for this object
  - The Alt modifier above does not apply to the note mapping of nodes in Node Sequences
- While holding the above (Shift+F or Shift+Alt+F), press a note on your MIDI device. A small white sphere will appear above the object to show it is now mapped
- Control+F while mouse over the object to toggle this mapping on and off

- MIDI CC Mapping
  - Press Escape, and in that menu select "MIDI and OSC Mapping". From the MIDI In list, select your MIDI CC device
  - Hold F while mouse over any parameter, and move a CC control on your MIDI device. The parameter is now mapped
  - Right click the parameter to toggle the mapping on and off

- Open Sound Control (OSC)

  - Mouse over any avatar (but not the current active), hold 2 or 3 and click to assign the avatar to that OSC Player 2 or 3
    - From the OSC control software (on smartphone, tablet, or desktop) players can select whether they are controlling player 1 or 2
    - Hold 1 and click an avatar to disable OSC control for that avatar
  - OSC avatars in the main world don't have rotation-based movement, and so their panning is not based on their head rotation, but on their left and right distance from a sound source (where left and right is relative to current camera view)

- Alt+2 or 3 will magnetize the corresponding OSC avatar towards the current main avatar. This is for multiplayer contexts, to retrieve OSC players that have gotten lost outside the view of the camera

  - Setting up and using the OSC application (smartphone, tablet, or desktop)
    - Tap "Connection" and input the IP address of the computer you're running the game on (if you don't know the address, press "Escape" while in the game, and the address is displayed in that menu)
    - Port should remain at 8000 unless it has been changed in the game
    - Tap "Player" and choose "Player 2" or "Player 3". "Text Player 1" simply allows you to input dialogue text (see below) targeted at the game's current avatar, but all other control of that avatar always remains local to the host computer
      - Selecting Player 2 or 3 will allow accelerometer movement of the corresponding avatar in the game world
    - Tap "Dialogue" for the dialogue entry screen. Tap the main area to input some dialogue, this will also freeze your character so you don't accidentally move them while inputting text. Tap "Repeat" to resend the last message
    - Tap "Play" for the default play screen. This shows the "pick up" and "put down" buttons used to carry objects in the game world

- OSC addresses
  - You can optionally use any other OSC device to control the game. On your device set the Port to 8000 and input the following addresses:
    - /on
    - /add (to create avs)
    - /dialogue (string for text-input, non-OSC current active avatar)
      - /dialogue1 (string for text-input, OSC Player 2)
      - /dialogue2 (string for text-input, OSC Player 3)
    - /pick_up (pickup nearby objects)
    - /put_down (put down objects)
    - OSC Player 2:

- /accel_x_1
- /accel_y_1
- OSC Player 3:
    - /accel_x_2
    - /accel_y_2

Master LFO

Instantiation Hotkey: Shift + O

- Shift+click to start/pause
- Click glyph on left to prepare to connect to another MasterLFO, then click another MasterLFO to link. The first MasterLFO's rate will now be LFO'd by the second MasterLFO
- Command+click to reset parameter positions
- Alt+click to delete

Master Pitch

Instantiation Hotkey: Shift + P

- Command+click to reset the pitch (resets to C4 for notes, and default play speed for samples)
- Click "Prepare LFO Connection" glyph prepare to connect to a MasterLFO, then click a MasterLFO to link. Pitch will then be LFO'd by the MasterLFO
- Click glyph on the right to set pitch to negative values. This only affects samples, causing them to play in reverse. Does not apply to a sound source's envelope mode (the sound source itself has an envelope-reverse toggle button next to its envelope toggle button)
- Cursor over + R to toggle turntable mode

- This quickly eases the pitch back to 1, after being changed in any way
- Click and drag the disc vertically to change play speed
- Click and hold disc with right mouse button for slow stop. Release again to return to normal speed
- Hold Shift while mouse over disc for quick stop. While Shift is held, vertical mouse scroll to fast-scratch
- Right click to toggle piano keys
  - Click piano keys to change pitch (the two other keys on left side for up and down octave)
    - Shift+click individual piano keys to toggle muting
  - Avatars can walk over keys to trigger them
- Alt+click to delete entire object

Master Pulse

Instantiation Hotkey: Shift + U

- Shift+Click to toggle on/off
  - or E when avatar is close to toggle on /off
- Cursor over+any number key 1-9 for immediate multipliers of current tempo value
  - 1 resets back to the parameter pole's normal value
  - Hold shift to divide by the number-key's value instead of multiplying (i.e. slow the tempo by that amount)
- Click glyph on left to prepare to connect to a MasterLFO, then click another MasterLFO to link. Pulse rate will then be LFO'd by the MasterLFO
- Shift+A/D + cursor over to switch between normal pulse and Loop Sync mode
  - can only connect to a sample player's Loop Sync glyph when in Loop Sync mode (via line-drag from the master pulse object)
  - "R" while mouse over (in Loop-Sync mode) to toggle reversing (so playhead moves backwards through the sample
- Alt+click to delete

Multi-Parameter Gesture Surface

Instantiation Hotkey: Shift + 8

- Click + drag node to control output of values on both X and Y axes. Connect parameters of other objects to the 2 output nodes of this object to share this object's X/Y parameters as the node is dragged around the panel
- Hold Command while cursor over panel and mouse-scroll to scale the object size up/down. This provides greater parameter range
- Alt+click to delete

Multiplayer: [Note that online multiplayer is not available in the current build]

Nesting Object

Instantiation Hotkey: Shift + Alt + Quote (')

This allows any number of objects to be grouped together, and moved via a single parent object while retaining their relative positions and rotations.

- Command + drag from any the nesting object to most other object types
  - Nested objects will be hidden immediately, and revealed again when un-nested
- Hold Alt while cursor over to reveal nodes for all currently nested objects. Click a node (while still holding Alt) to break the connection to the corresponding object
- Click the "Toggle Visibility" button to toggle visibility and tangibility of all nested objects
- Alt + Click to destroy (this will put back any nested objects)

Note Sequencer

Instantiation Hotkey: Shift + Alt + N

- Click record glyph to toggle looping note-recording. By default a note sequencer has an empty 3 second loop to record to. While recording this loop will continue to play and you can keep adding to it
  - this records MIDI or QWERTY notes, depending on what inputs are active
  - (see "Controls and Mapping" for various modes of note input)
- Shift+click record glyph to endless record. We can record a sequence of any length. Click again to stop recording, and the sequence will then play from the start and loop at its new length
  - Click record glyph anytime after this allows you to add to this new sequence without changing its length
  - Shift+click again if you want to record a sequence of a new length. This does not erase previous notes, but alters the loop-end point to wherever you stop recording
- Note-node-panels
  - Right click to toggle
  - Notes-nodes can be dragged horizontally (currently the "note on" and "note off" are dragged separately)
- Alt+Click record glyph to erase all recorded notes. You can also erase while recording
  - This resets the empty loop to its default start length
- Shift+Click (or Space when avatar is near) to toggle play from start
- Left-Control+Shift+Click (or Left-Control+Space when avatar is near) to toggle pause
- Save/Load note sequences from hard drive (Edit Mode only)
  - Shift+S while cursor over to save
  - Shift+L while cursor over to load (will only load .txt files)
- Alt+Click to delete

Orbits

Instantiation Hotkey: Shift + Alt + L

- Click and drag or command-drag to link to each other
- Any number of objects can be connected in to a single object
- Shift+Horizontal mouse-scroll while mouse-over the "connected-to" object (i.e. not the "connected-from" object) to sets it rotation speed
- Shift+click to toggle rotation on/off
- Shift+Control+Vertical mouse-scroll to change size of object
- Alt+Click to delete

Parameter Store/Recall

Instantiation Hotkey: Shift + N

- F while cursor over to create child-objects
    - Alt+click a child to destroy it
- Cursor over and hold Command to drag a line from any pole, dial or playhead to the main body of this object
- Shift+click a child to store the current values of all connected params (as described above) in that child
- Click (no shift) a child to retrieve all stored values for all connected params (if no values are stored, click is ignored)
    - Command-click a child. Same as above, but will interpolate (rather than snap) to all stored values
        - Right click a child object to toggle Interpolation-Speed dial. If a child's values are recalled via snapping (i.e. with Shift), this dial will have no effect

- Hold Alt while cursor over to reveal nodes for all connected parameters. Click a node (while still holding Alt) to break the connection to the corresponding parameter
- Alt + Click to Destroy

Player Sample Pool

Instantiation Hotkey: Shift + Alt + Semicolon

Allows users to import wave files from their own hard-drive. Previously saved sample pools can be reloaded and reused in new play sessions.

- Click "Save" or "Load" glyphs to save/load. At present there is only one save slot
- Clicking Save will replace any previously saved Sample Pool with the contents of the current Sample Pool
- Clicking Load will load the previously saved Sample Pool. This will create a node for each saved sample
- Toggle "Auto Load All New Samples" to place any newly created Sample Store (created via Shift+T) directly as a node in the pool instead of into the game space
- Click+drag from any Sample Store object and release over the Sample Pool object to add it to the pool
  - or Cursor over + Shift + S on a Sample Store to add it to the pool
- Nodes in the Sample Pool work exactly as Sample Store objects: Shift +Click or click+drag them to immediately create Sample Players loaded with the sample of any node
- Alt + Click to destroy

Node Sequence

Instantiation Hotkey: V

- Press and release "V" to create a single node
  - Shift+V to create a single node connected to the last node that was created
  - the first node in a sequence (once a second one is connected) will show a glyph so it can be connected to a master pulse
- Hold V and move avatar to create a continuous linked line of nodes behind the avatar
  - or Control+V + move-cursor to create a connected line of nodes behind the cursor
- How Node Sequences work:
  - first one of them must be triggered by a master pulse (first one will be shown by the appearance of a yellow glyph when any second node is joined)
  - by default this First Node is also the site where any sound triggered in that sequence will be played (so the sound-source's own field is ignored while connected)
  - any subsequent one immediately becomes next in the sequence of the pulse they are joined to when in proximity
  - they are all controlled by the original triggering master-pulse's tempo, so the sequence's tempo can be change while it is in motion
- Cursor over a First Node and press 1, 2, or 3 to assign either main avatar (1) or OSC avatar 1 or 2 (if they currently exist) as the listener of this sequence
- Cursor over+Hold Command from a node and draw a line to any sound source
  - That node will now trigger the sound source
  - Any number of different nodes can trigger the same sound source, or any number of different sound sources
    - Warning: do not attempt to trigger one sound source from separate sequences, as both of their First-Node's will try to assign themselves as listeners
  - Cursor over a sound source + Alt + N breaks all the node connections

- Shift+S+mouse-over any node to toggle as a loop-end point. It will re-start the sequence whenever it is triggered. If a loop-start point has also been created, it will loop back to that point in the sequence
- Cursor over + Shift + W any node to toggle as a loop-start point
- Cursor over + Shift + D to toggle back-and-forth looping
- Cursor over + Shift + A to toggle instant reversing of the sequence direction
- Right click the First Node to restart the sequence
- Click the first node in a sequence to replace that avatar as listener with the currently selected one
- Alt+X while over a node to toggle muting. This simply stops the node from triggering any sounds, it does not stop any sounds that were already playing
    - Alt+Shift+X while over a node to toggle muting this and all other connected nodes
- Tilde(~) while mouse over to show its current MIDI note (default is C4) [Rehearsal Mode only]
- Alt+click to delete (also deletes all nodes connected after this node)
- Hold Alt+N and cursor over to quickly delete many (cursor over each one that you want to delete)

Sample Store
Instantiation Hotkey: Shift + T (will always open the file browser for you to select a sound to load)
or Alt + Shift + T (will only open the file browser if no file was previously loaded. Otherwise will load the previously selected sound)

Creatable in Rehearsal Mode Only, but any number may be pre-placed by Developer in a Performance Mode scene

- **To replace a Sample Player's sample:** Click and drag a sample store to grab its sample, then release over a sample player (while it is off) to replace the sample player's sample
- **To create a new sample player anywhere:** Click and drag to retrieve the sample, keep it held at the cursor position, and drop it anywhere on the scene to create a new sound source there
- Shift+Click a sample store box to create a sound source containing that sample (same as clicking its right-side child object). You can do this as often as you wish
- Shift+S while cursor over to add its current sample to the sample pool (note this does not automatically save the sample pool)
- Tilde(~) while mouse over to have the current avatar read the name of the sample
- Alt+click to delete

Scaler (as in size)
Instantiation Hotkey: Shift + Alt + K

- Shift+vertical-scroll to change the oscillation rate
- Command+vertical-scroll to change the max-size
- Alt+Command+vertical-scroll to change the min-size

Sound Sources: General to All 3 Types Below (Sample Player, Synth and Mic/Line)

- E to play/stop a sound source when avatar is close to it (always replaces listener with current avatar)
    - or Shift+click to play/stop (retains its current listener. If it has no listener, assigns the currently selected avatar)

- Click to instantly assign the currently selected avatar as listener without restarting the sound
- Cursor over + Shift + click on a sound source plays the sound source and changes the listener to the current avatar. If a sound is on, this will also turn it off, but in that case is no different from shift-click
  - Shift + Command + click a sound source turns it on and off without changing listener. This is by design, because we often want to turn a sound on and off, but leave its listener unchanged
- Cursor over + L to toggle listener locking (if not locked, listener will always switch to current avatar. If locked, listeners remain the same unless manually re-assigned by player). Note that listeners are locked by default
- Cursor over + 1, 2, or 3 to assign either main avatar (1) or OSC avatar 1 or 2 (if they currently exist) as the listener of this sound
- Command drag from a Pulse object and release over a sound source to connect the pulse. This will also create a disconnect glyph that can be clicked to disconnect the pulse.
- Click "Envelope Mode" to toggle envelope mode on and off. This requires a pulse to trigger or, for a Sample Player can be triggered manually (see below)
- Click or Drag from "Connect to FX Slot" glyph to an effect
- or Click or Drag from an existing FX slot cube to an effect to link (or to replace an effect by linking to a new one). Can click multiple slots to ready them and click an effect to link all to it
  - Dragging from a single slot to an effect also makes this connection
  - Dragging from the "Connect to FX Slot" glyph to an effect creates a new FX slot connected to this effect
  - Shift+click on a slot to toggle bypassing an effect (bypass is automatically switched off when a new effect is placed on a slot)
  - Alt+click a slot to break a connection (remove the effect)
- Alt+N when mouse over a sound source to remove all of its connections to any nodes it is connected to (see "Nodes" for details of how to connect nodes to sound sources)
- Alt+X while mouse over a sound source to toggle muting. A line above a sound source is visible when it is muted
- To loop record one specific channel:

- Cursor over any type of sound source and press "O" to toggle loop-record on off. This will display a red symbol above the sound
- If a different sound-source was previously selected for loop recording, this will replace it
- Press Shift+J to toggle loop-recording
    - Toggling Loop-Recording off will create a new Sample Player containing the loop that was just recorded
    - Shift+Alt+J when a loop is <u>not recording</u> will create a new Sample Player containing the last recorded loop (if none has been recorded, this is ignored)
- If no specific channel has been selected with "O", loop recording will record the total output of the master channel as normal
- Alt+click to delete entire object

Sound Source: Sample Players
Instantiation Hotkey: Shift + Alt + V (only if a sample has been previously stored from File Browser, Sample Store or Sample Pool Node)

- Shift+L when mouse over to toggle looping. Samples will loop by default (unless created from a Sample Store object that has specified non-looping). When connected to a node, looping is disabled by default
- Shift+E while mouse over playhead area to make it follow current active avatar. Shift+E again to toggle avatar following off
    - Shift+Q at any time will make the current avatar drop any playhead connections (i.e. all relevant playheads will stop following that avatar)
- Click "Reverse" to reverse the playback of the sample (if sound is connected to a pitch object this reverse button is relative to that pitch object's value. E.g. if both values are negative, resulting pitch will be positive). If in Envelope mode, this reverses the contents of each envelope only (not the whole sample)
- Click "Envelope Mode" to toggle envelope mode on and off. This requires a pulse to trigger or can be triggered manually (see below)

- in Env mode, press Return/Enter while avatar is near a sound source, or if the cursor is over the main body or the waveform of the sound source. This allows for manual triggering of the envelope. You can thus create your own manual non-pulse granular rhythms by continually pressing return
- Hold Shift+Enter while mouse over main body (or mouse over playhead pole or waveform) to gate the pulse-triggering of an envelope.
- Right-click a sound source to show/hide waveform
  - Shift+mouse scroll horizontal when over a waveform to scroll playhead
  - Click+drag in waveform area to move playhead
  - Shift+ left/right arrows while cursor over waveform to scroll playhead pos left and right
  - Right-click on waveform to jump playhead to cursor position
  - There is also a parameter pole that corresponds to the waveform playhead position. This can be used for MIDI mapping and avatar connections, or if you do not wish to make the waveform itself visible
  - Shift+L when over either the playhead pole or waveform to toggle gated playback (requires an incoming pulse). This means that any incoming pulse triggering envelopes will be ignored unless Shift +Return is being held while cursor over the playhead pole or waveform. This allows the stream of envelopes to be gated
- Command+drag from a Pulse object that is in Loop-Sync mode and release over a sample player. Loop-Sync mode moves the playhead, but it does not trigger the sample. Connect a pulse or node to the sound source in the regular way to trigger envelopes at the playhead position. In this way we can also synchronise the looping of multiple sample players by connecting them to the same Loop-Sync pulse
  - Click the loop-sync glyph (created if/when such a connection has been made) to remove the connection
- Shift+D while mouse over a sample sound source to duplicate it (just the sample it contains, not any of its other settings or connections)
- Tilde(~) while mouse over to show the sample name followed by its current pitch (this is relative pitch, where the default is C4)
  - (see "Controls and Mapping" for various modes of pitch input)

Sound Sources: LFO Effect Parameters

- Click the link boxes either side of FX slots to ready that parameter to connect to a master LFO. Then click a master LFO to create the connection
  - Shift+click the link box to toggle LFO on
  - Alt+click a link box to disconnect from the Master LFO

Sound Source: Synth
Instantiation Hotkey: Shift + Z

A synth is a specific kind of sound source that uses synthesis instead of samples. Except where samples are mentioned, all the above information applies to synth sound sources also.

- Shift+2 while mouse over to toggle AM. AM is always on, but this determines whether the parameters are visible or not. To turn AM off, simply turn both parameters all the way down
- Shift+1 while mouse over to toggle FM params. As above, FM is always on, turn depth parameter down to make it inactive
- Shift+L while mouse over to toggle pitch-glide (monophonic mode only). This creates a smooth glissando between notes. This also toggles a parameter for adjusting the time it takes to travel from one note to the next
- Shift+A or D while mouse over to cycle through different waveforms on a synth sound source. Their names will appear above the current av
  - Shift + Alt + A or D while mouse over to cycle through AM waveforms
  - Left-Control + A or D while mouse over to cycle through FM waveforms
- "Forward Slash" while mouse over to toggle between drum-synth mode and tone-synth mode. Switching on will automatically switch on the volume envelope as well as the drum-frequency envelope. While in drum-synth mode you cannot switch either of these off

- Synth-drums can be triggered by any kind of pulse or by MIDI or QWERTY note input. Note that note input only triggers the drum, the pitch of the note doesn't affect pitch of the drum in any way
- A synth can be driven by a pulse object. The pulse will drive its internal arpeggiator. This arpeggiator needs notes to be held (via a MIDI device or QWERTY keys) in order to play anything. If no notes are held at any given moment, the pulse will have no effect.
    - Cursor Over + P will toggle note lock on the arpeggiator. This locks all currently-held notes, as well as any new notes that are subsequently input
        - Note that P locking with QWERTY note input can be unreliable due to the limitations of QWERTY keyboards – some key combinations will result in the pressing of the P key not being registered. See below for recommended alternative
    - Alternatively the arpeggiator can lock/release via a MIDI sustain pedal (however, if notes were previously locked via the P key, releasing the MIDI pedal wont release those

- Note that a synth that is pulsed via a Node Sequence works differently, as the node holds its own last note and so will keep triggering it until changed or muted

Sound Source: Synth: Synth LFO Modules
Instantiation Hotkey: Shift + 9

These are simple oscillators that can be connected to various synth parameters, such as AM & FM rate and depth, to modulate them at audio-rate.

- Cursor over an AM or FM parameter (dial or otherwise) or the parameters of another Synth LFO object and hold "command" to drag a line from that parameter to the body of the LFO module. Release the command key over the LFO Module to make this connection

- This will lock out manual control of that parameter, and you can now use the LFO Module's settings to control it directly
- Any number of synth parameters (even from different Synth Sound Sources) can be simultaneously connected to an LFO Module in this way
- To break the synth parameter's connection to the LFO Module, cursor over the parameter dial and press and release the Command key
- Cursor-over + Shift+A/D to cycle through different waveform types
- Alt+Click to delete

Sound Source: Microphone/Line Input

Instantiation Hotkey: Shift + M

This allows you to use a single mic or line input from your device to route audio into the game. Most of the basic controls are as described above in "Sound Sources".

Spinner

Instantiation Hotkey: Shift + Y

- Avatars can stand on these to be spun around. Objects can also be placed on them
- Shift+click to toggle on (or Space if close enough)
- Shift+Horizontal-Mouse-Scroll to increase/decrease spin rate
  - The parameter in the centre is braking-speed. By default it is zero, so the spinner will never slow down. Increase braking speed for greater deceleration
- Command+Vertical-Mouse-Scroll to resize
- Parameter pole is centre is "braking strength"
  - by default it is 0, meaning that the spinner will never slow down
  - the higher you set it, more rapidly the spin-speed will decrease

- It is possible to connect any parameter of any object to a spinner's main platform
    - This maps the parameter to the spinner's speed, meaning that you can use spin to increase and decrease a parameter's value
- Alt+Click to destroy

Switches

Instantiation Hotkey: Shift + Alt + U

Switches can be set up to respond to different inputs such as proximity, space, or mouse-click

- Click a switch to toggle on/off (if in click mode)
- or E when avatar is close
- or, if the switch is in proximity mode, move the current avatar in and out of proximity to toggle
    - Command+Click to re-trigger (only applies to some objects such as Sound Sources and Note Sequencers, where it restarts their loop. For example, it would not make sense to re-trigger a light)
- Cursor over + Shift+A/S/D – toggle the switch modes – A for click, S for E-button toggle, D for proximity (can have multiple modes on at once)
- Shift+Click a switch to assign current avatar as proximity controller
- Hold Command to draw a line from another object (i.e. anything switchable such as a pulse, light, sound source, etc) then release it over a switch to connect
- Cursor over + Hold Alt to display nodes for all current connections
    - While holding Alt, click any node to destroy that connection
- Alt + Click to Destroy