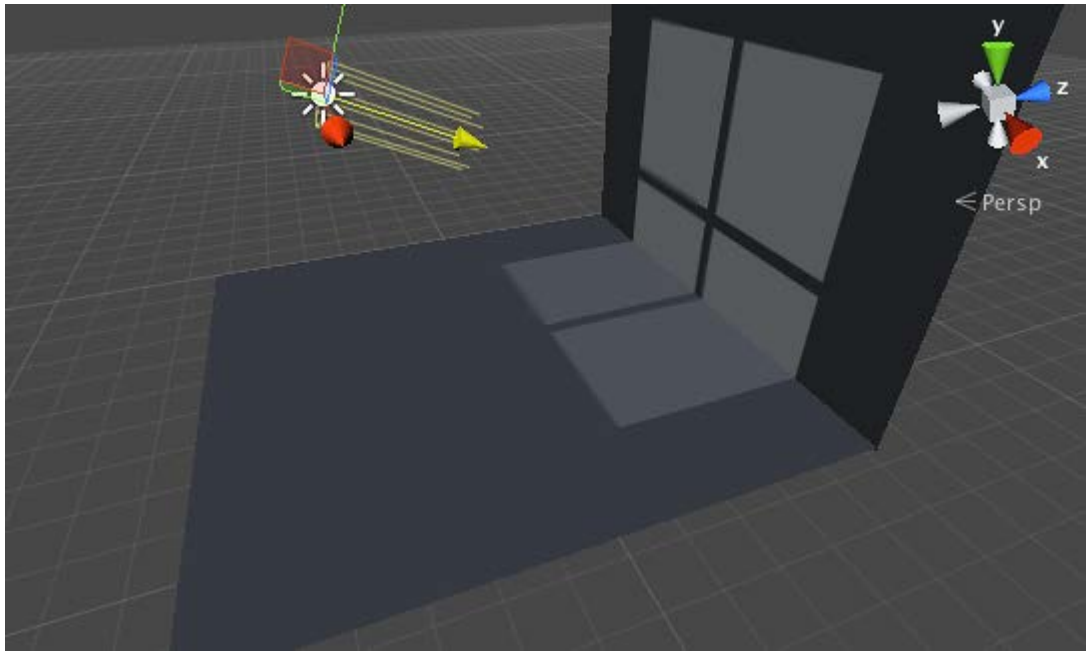
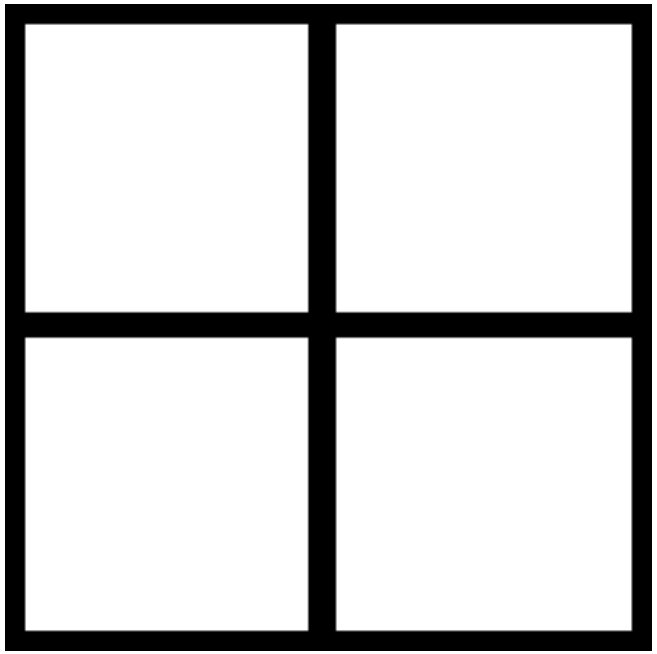
Light Cookies

Light Cookies

- A cookie is a texture that can be used to mask light
- Allows you to “paint” detail into your scene





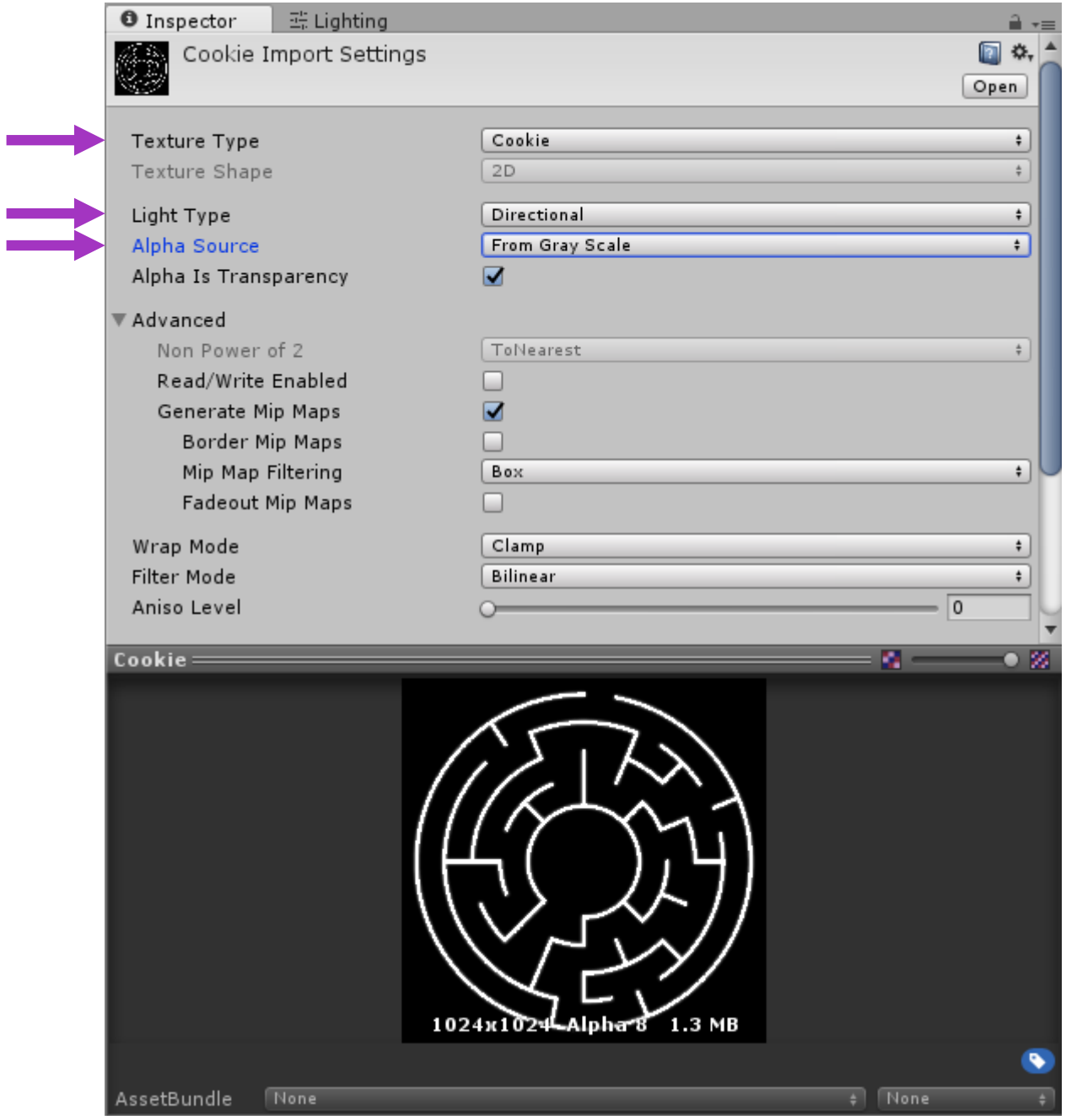
https://docs.unity3d.com/Manual/Cookies.html

Uses of Cookies

Cookies are often used to change the shape of a light so it matches a detail “painted” in the scene. For example, a dark tunnel may have striplights along the ceiling. If you use standard spot lights for illumination then the beams will have an unexpected round shape but you could use cookies to restrict the lights to a thin rectangle. A monitor screen may cast a green glow onto the face of the character using it but the glow should be restricted to a small box shape.

Note that a cookie need not be completely black and white but can also incorporate any grayscale level. This can be useful for simulating dust or dirt in the path of the light. For example, if a game scene takes place in a long abandoned house, you could add atmosphere by using “dirty” cookies with noise on the windows and other light sources. Similarly, car headlight glass usually contains ridges that create “caustic” patterns of slightly lighter and darker areas in the beam; another good use for a cookie.

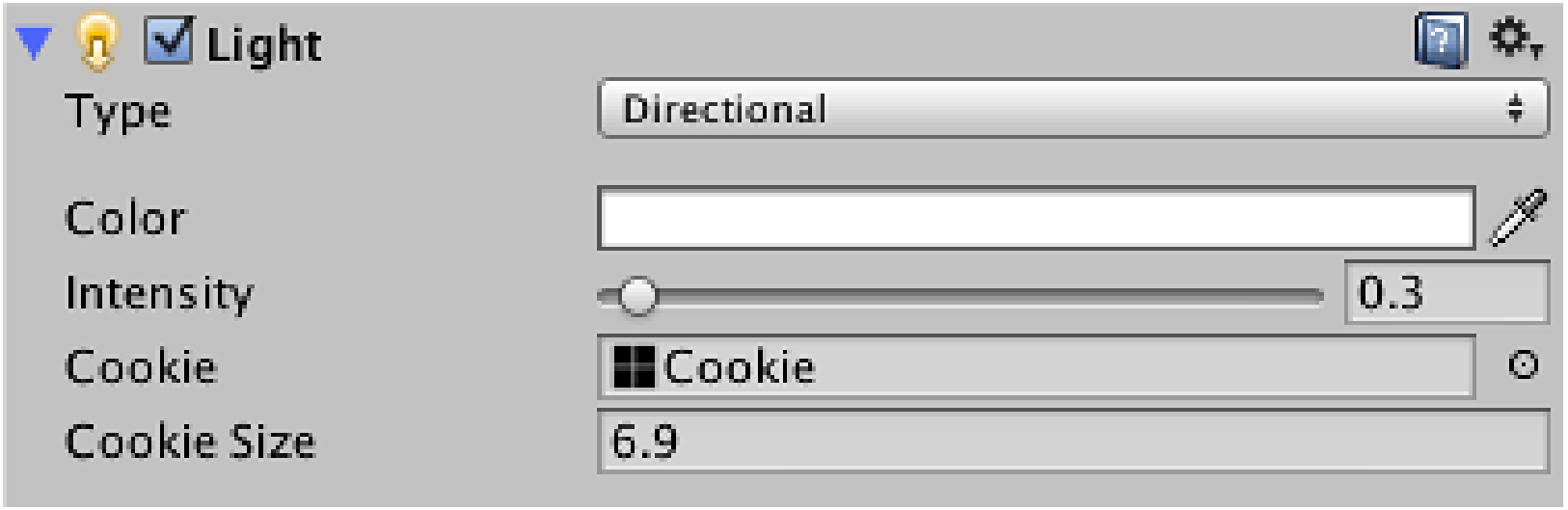
https://docs.unity3d.com/Manual/Cookies.html



Import options:

1. Use a grayscale image. Set “Alpha Source” to “From Gray Scale”
2. Use an image with alpha information. Set “Alpha Source” to “Input Texture Alpha”

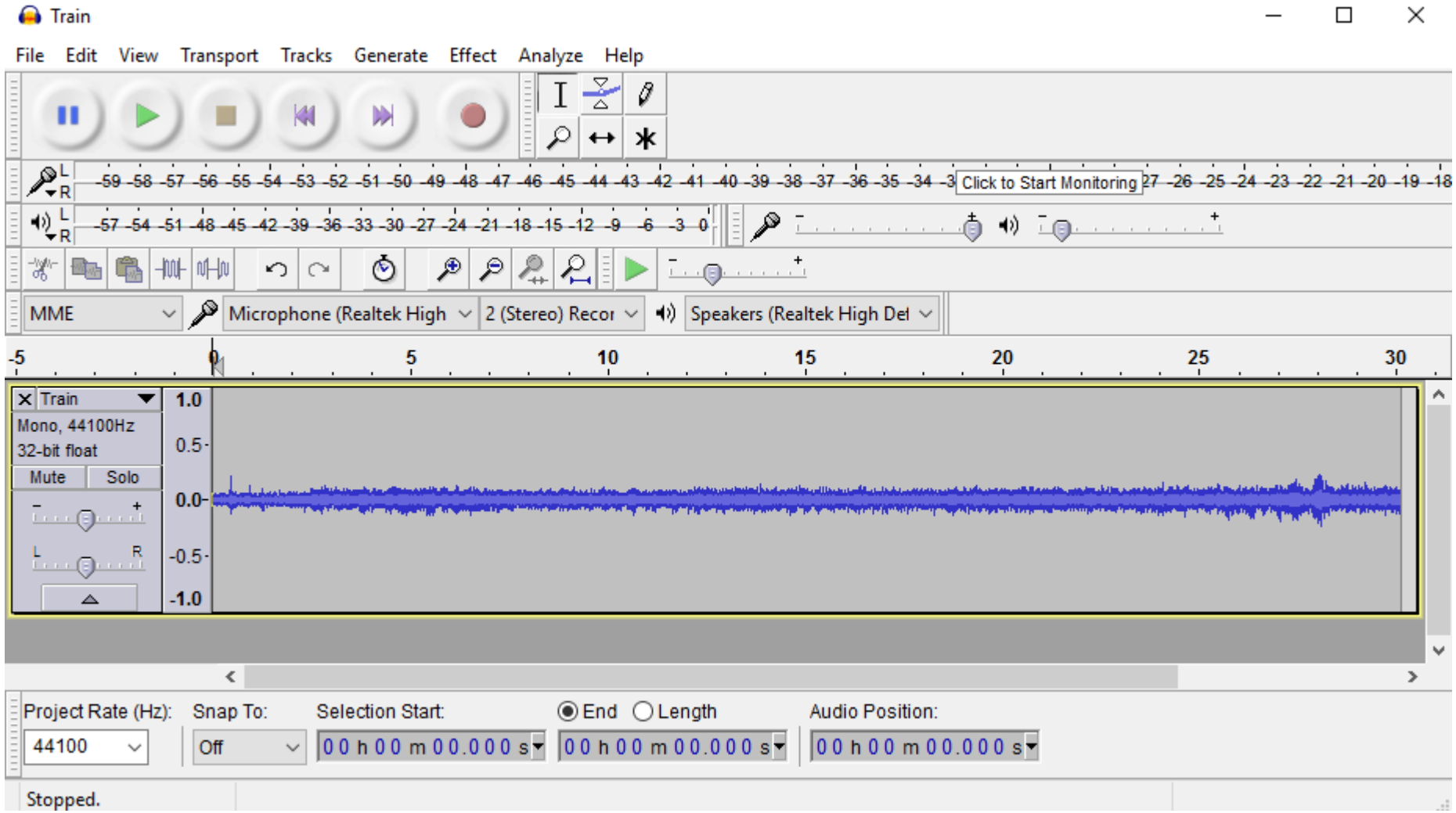
Applying the Cookie



Audio

Audio Resources

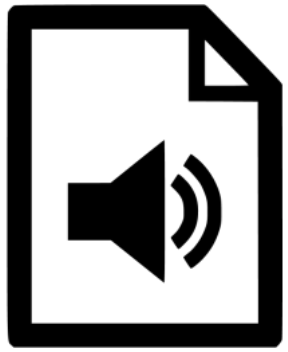
- Incompetech – music
- Freesound.org – sound effects, ambient sounds
- ChipTone – online app for making game sounds
- bfxr – online app for making game sounds
- Newgrounds Audio – music (not all is downloadable)
- Soundbible – sound effects
- Audacity – free audio editing software



http://www.audacityteam.org/

Audio in Unity

Audio in Unity

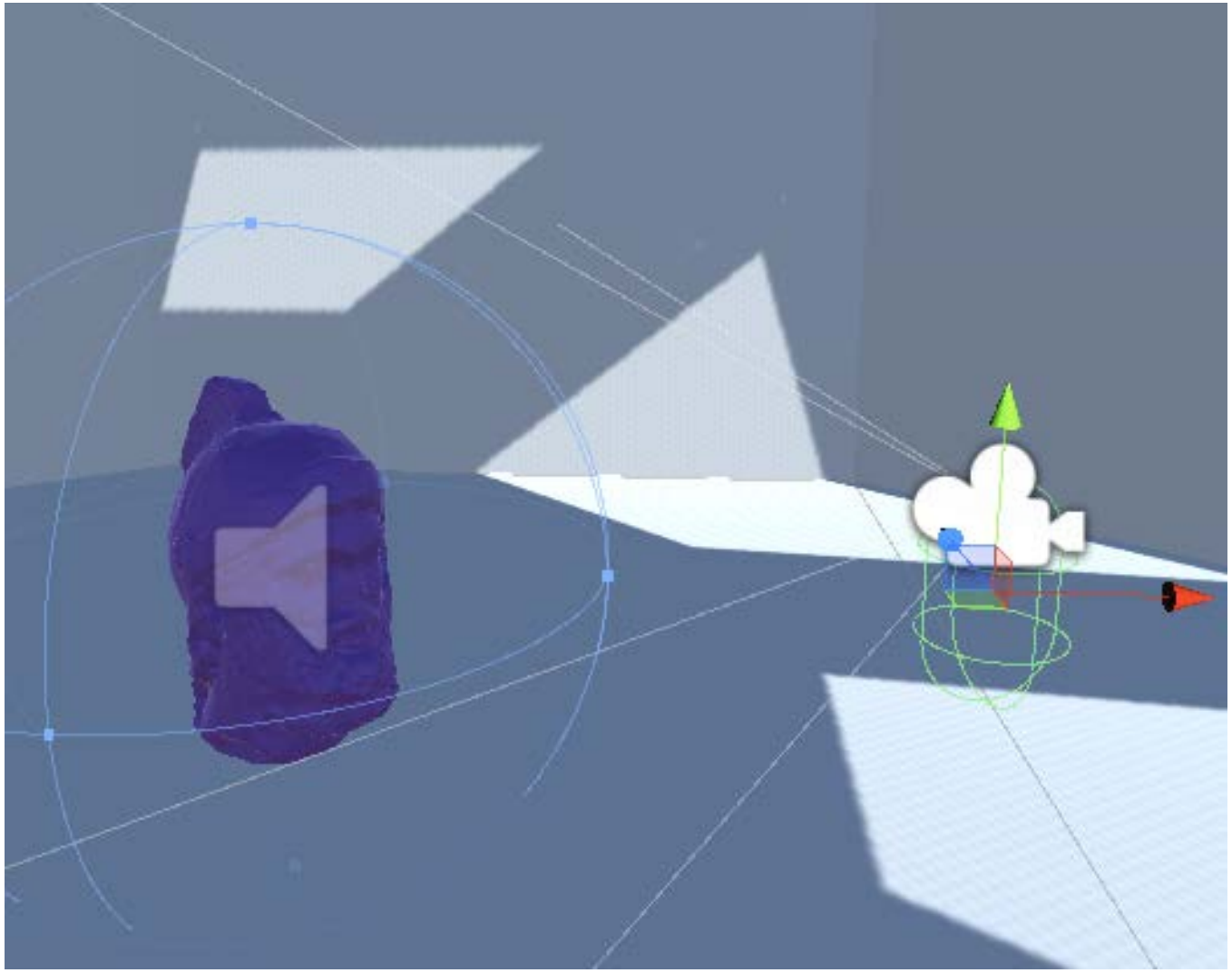


Audio Clip

Audio Listener

Audio Source

Object with Audio Source



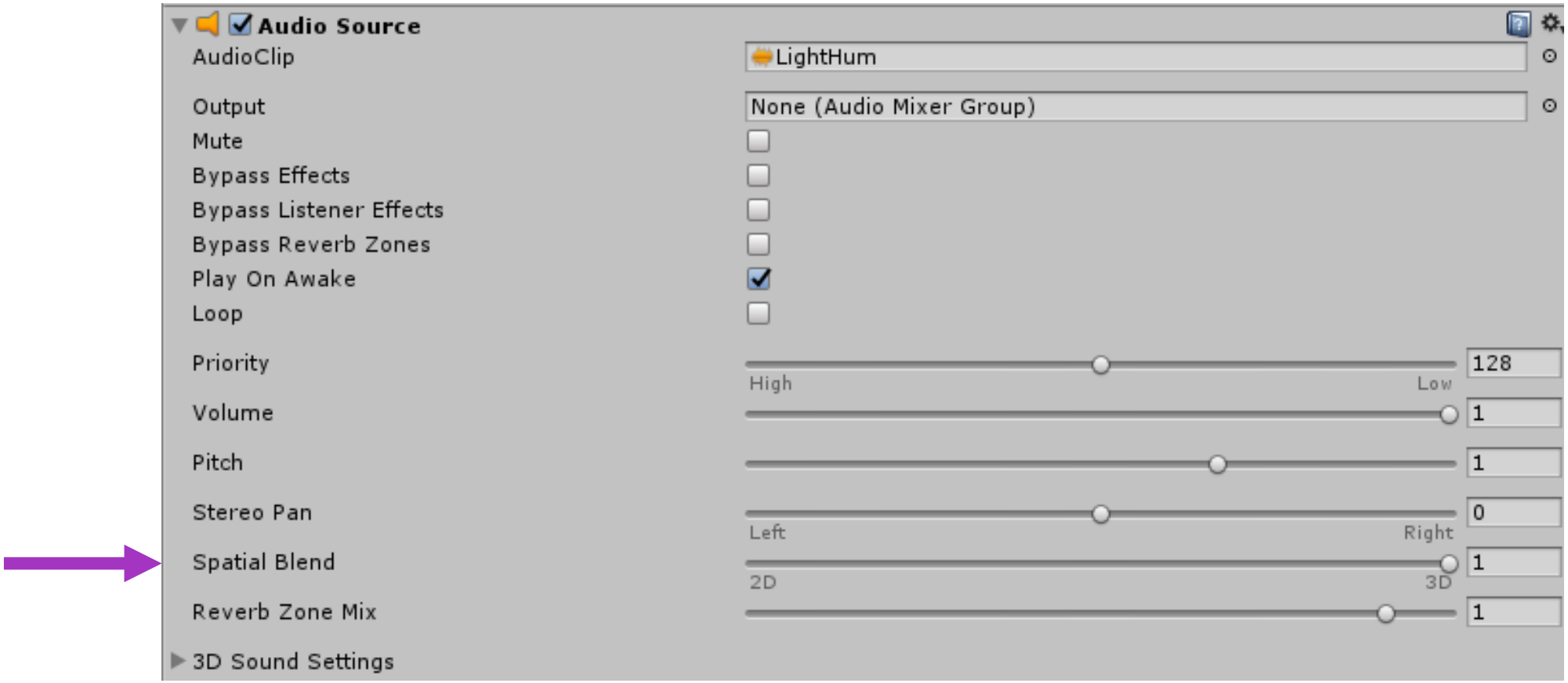
Camera with Audio Listener

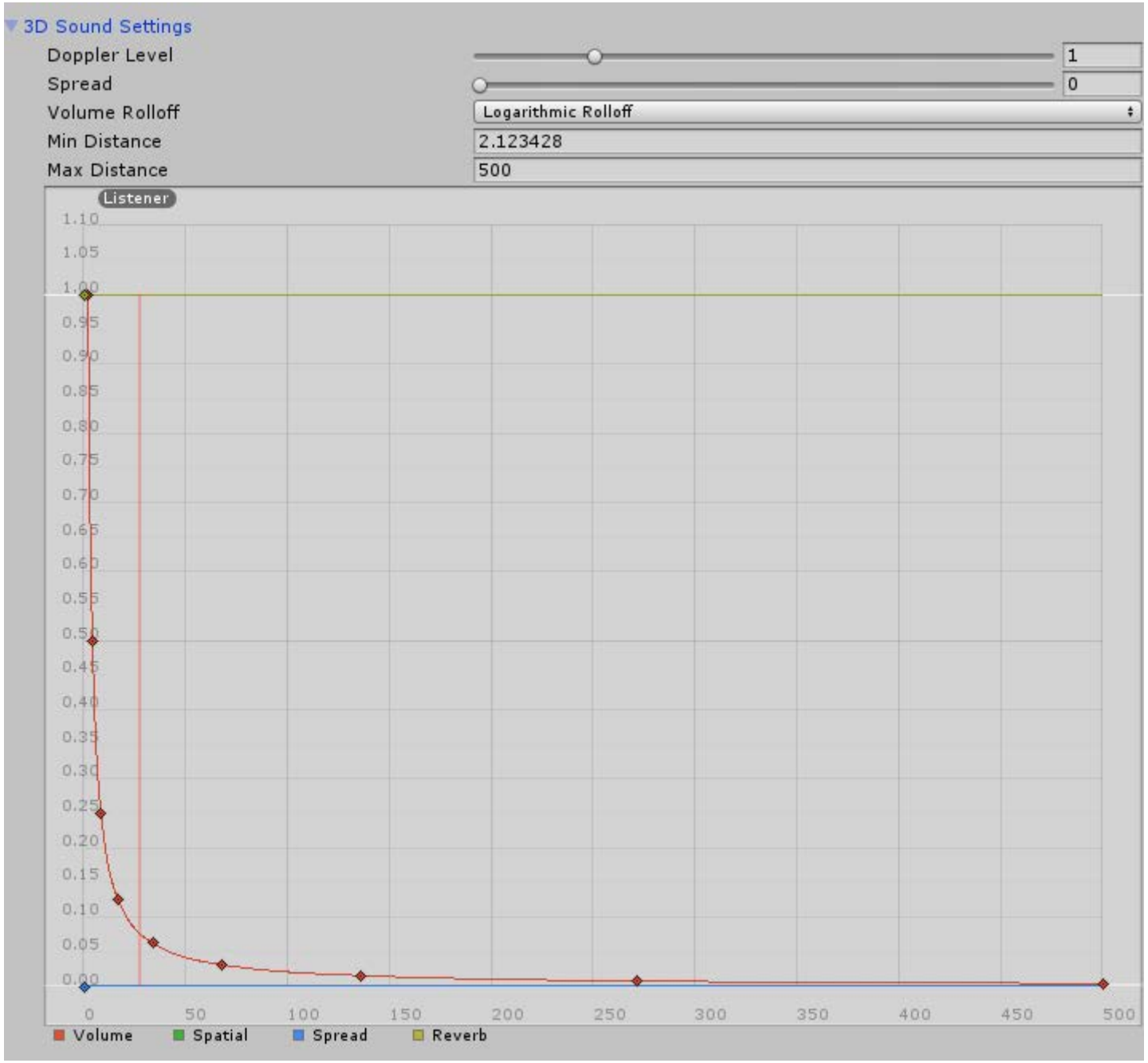
Supported Formats

Format	Extensions
MPEG layer 3	.mp3
Ogg Vorbis	.ogg
Microsoft Wave	.wav
Audio Interchange File Format	.aiff / .aif
Ultimate Soundtracker module	.mod
Impulse Tracker module	.it
Scream Tracker module	.s3m
FastTracker 2 module	.xm

Background 2D Sound Effect

3D Sound Effect




3D Sound Settings
Doppler Level
1
Spread
0
Volume Rolloff
Logarithmic Rolloff
Min Distance
2.123428
Max Distance
500
Listener
1.10
1.05
1.00
0.95
0.90
0.85
0.80
0.75
0.70
0.65
0.60
0.55
0.50
0.45
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
0
50
100
150
200
250
300
350
400
450
500
Volume
Spatial
Spread
Reverb

Creating Audio Sources

Audio Sources don't do anything without an assigned **Audio Clip**. The Clip is the actual sound file that will be played back. The Source is like a controller for starting and stopping playback of that clip, and modifying other audio properties.

To create a new Audio Source:

1. Import your audio files into your Unity Project. These are now Audio Clips.
2. Go to **GameObject->Create Empty** from the menubar.
3. With the new GameObject selected, select **Component->Audio->Audio Source**.
4. Assign the **Audio Clip** property of the Audio Source Component in the Inspector.

Note: If you want to create an **Audio Source** just for one **Audio Clip** that you have in the Assets folder then you can just drag that clip to the scene view - a GameObject with an **Audio Source** component will be created automatically for it. Dragging a clip onto on existing GameObject will attach the clip along with a new **Audio Source** if there isn't one already there. If the object does already have an **Audio Source** then the newly dragged clip will replace the one that the source currently uses.

Audio

Everything for Game Audio and Sound design in Unity

Audio Setup

1. Audio Listeners & Sources

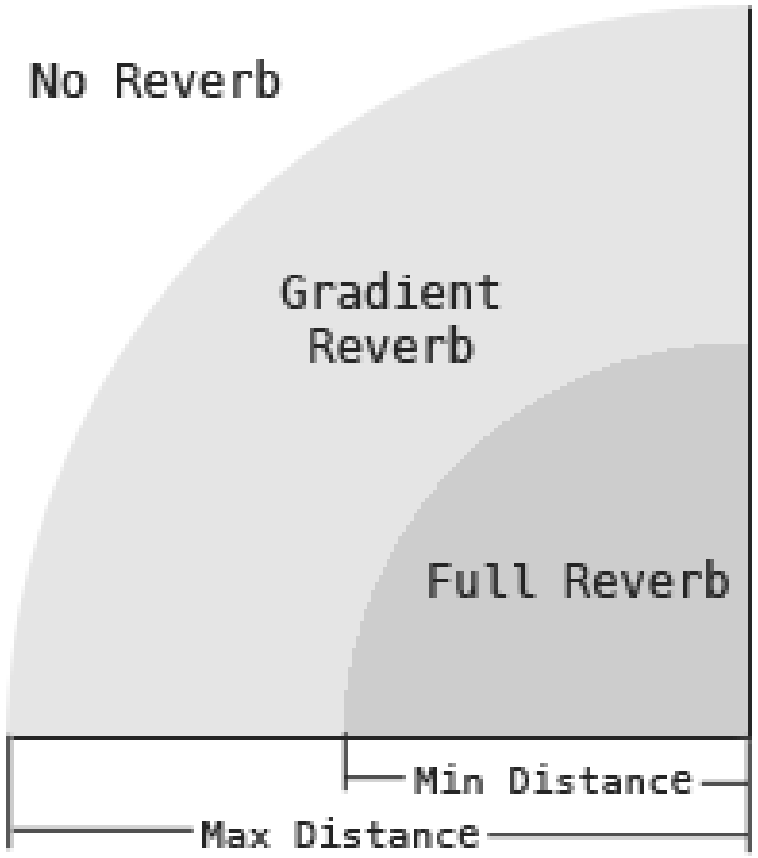
Audio Mixing

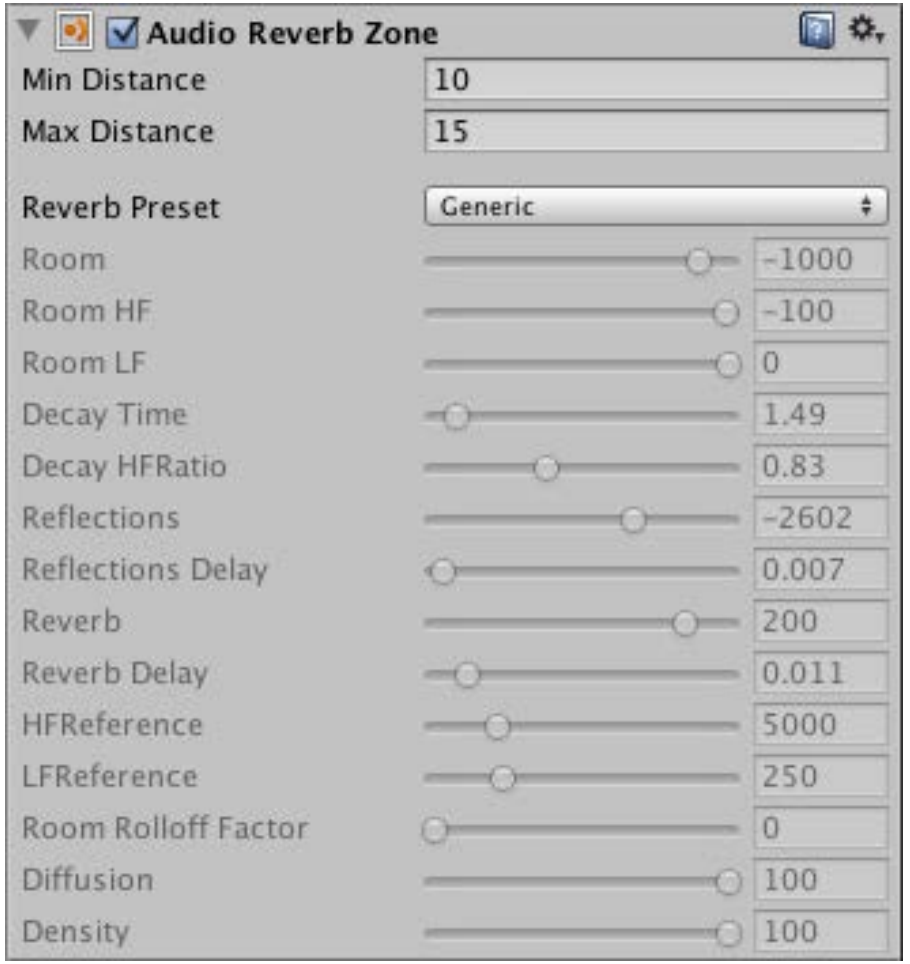
1. Audio Mixer and Audio Mixer Groups
2. Audio Effects
3. Send and Receive Audio Effects
4. Duck Volume Audio Effect
5. Audio Mixer Snapshots
6. Exposed AudioMixer Parameters

https://unity3d.com/learn/tutorials/topics/audio

Audio Effects

Reverb Zone

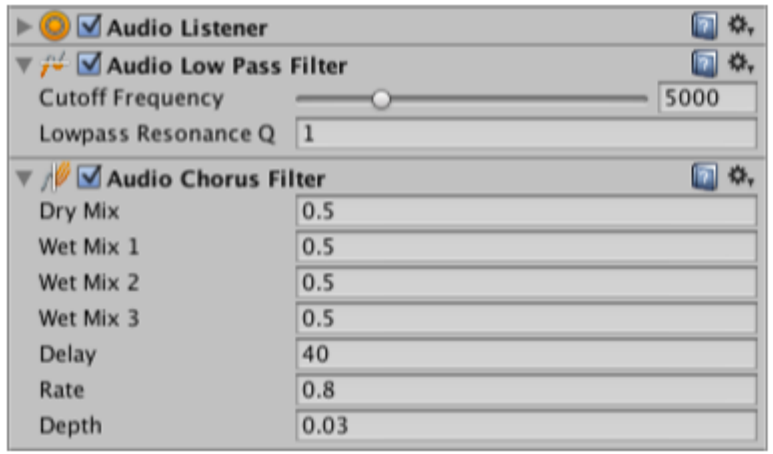

No Reverb
Gradient Reverb
Full Reverb
Min Distance
Max Distance


Audio Reverb Zone
Min Distance 10
Max Distance 15
Reverb Preset Generic
Room -1000
Room HF -100
Room LF 0
Decay Time 1.49
Decay HFRatio 0.83
Reflections -2602
Reflections Delay 0.007
Reverb 200
Reverb Delay 0.011
HFReference 5000
LFReference 250
Room Rolloff Factor 0
Diffusion 100
Density 100

Audio Filters

You can modify the output of Audio Source and Audio Listener components by applying **Audio Effects**. These can filter the frequency ranges of the sound or apply reverb and other effects.

The effects are applied by adding effect components to the object with the Audio Source or Audio Listener. The ordering of the components is important, since it reflects the order in which the effects will be applied to the source audio. For example, in the image below, an Audio Listener is modified first by an Audio Low Pass Filter and then an Audio Chorus Filter.

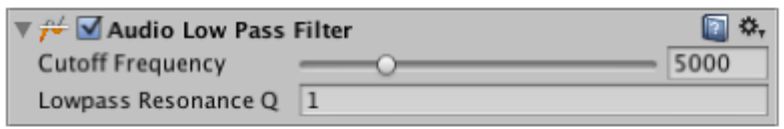


Audio Low Pass Filter

SWITCH TO SCRIPTING

The **Audio Low Pass Filter** passes low frequencies of an AudioSource or all sound reaching an AudioListener while removing frequencies higher than the **Cutoff Frequency**.

Properties



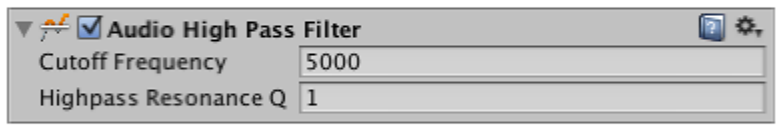
Property:	Function:
Cutoff Frequency	Lowpass cutoff frequency in Hertz (range 10.0 to 22000.0, default = 5000.0).
Lowpass Resonance Q	Lowpass resonance quality value (range 1.0 to 10.0, default = 1.0).

Audio High Pass Filter

SWITCH TO SCRIPTING

The **Audio High Pass Filter** passes high frequencies of an AudioSource and cuts off signals with frequencies lower than the **Cutoff Frequency**.

Properties



Property:	Function:
Cutoff Frequency	Highpass cutoff frequency in Hertz (range 10.0 to 22000.0, default = 5000.0).
Highpass Resonance Q	Highpass resonance quality value (range 1.0 to 10.0, default = 1.0).

Audio Distortion Filter

SWITCH TO SCRIPTING

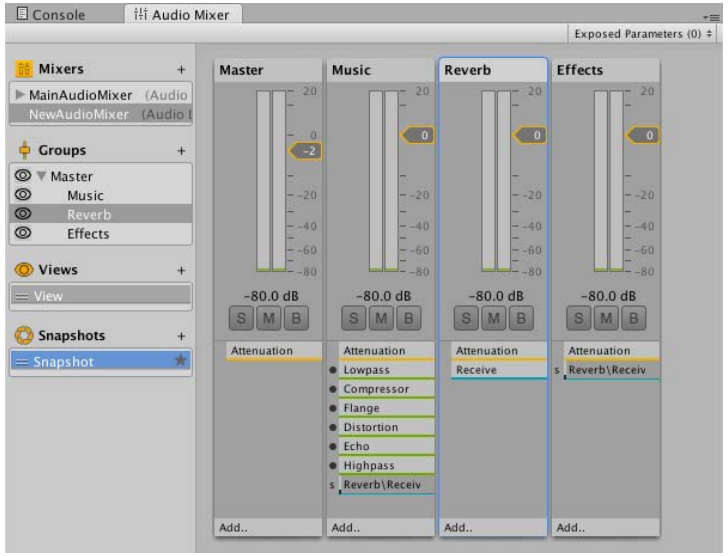
The **Audio Distortion Filter** distorts the sound from an AudioSource or sounds reaching the AudioListener.

Properties

Property:	Function:
Distortion	Distortion value. 0.0 to 1.0. Default = 0.5.

Filters and Effects

- For more filters: see filter manual
- Effects are a more powerful way to manipulate sound
  - Effects Manual
  - Audio Mixer tutorial



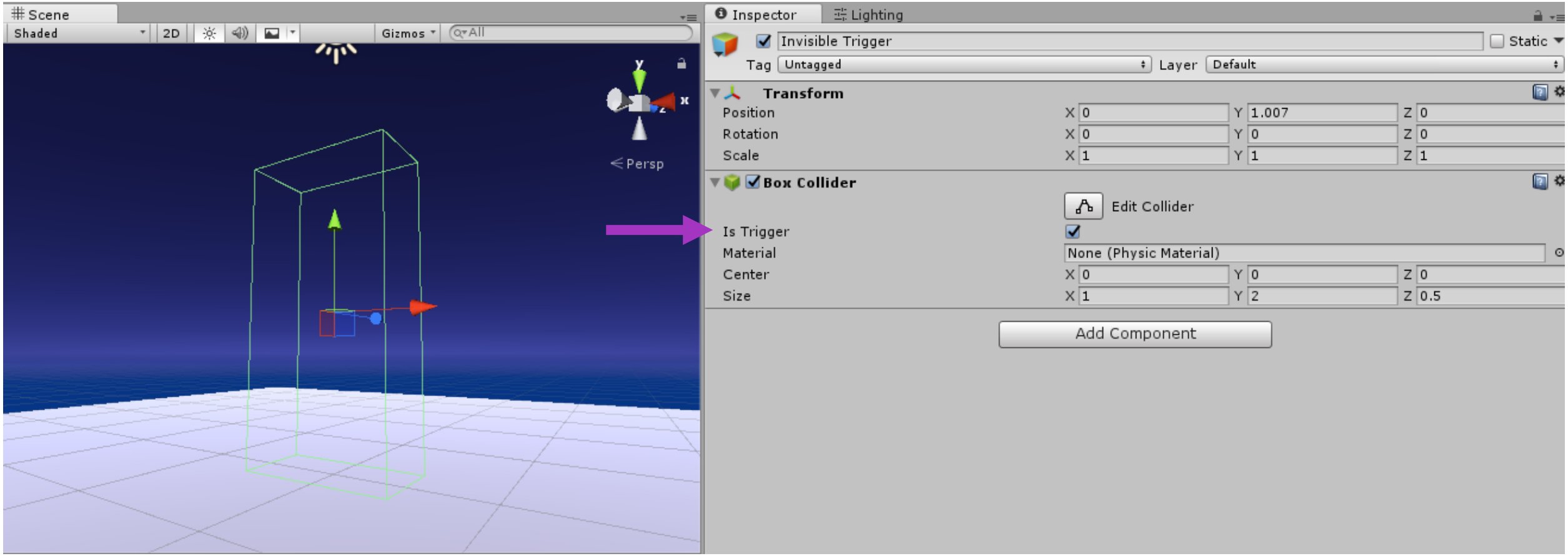
Triggers

Triggers

- Video tutorial
- Triggers are colliders that act as invisible detectors
- Triggers don’t physically collide with other objects
- If a rigidbody interacts with a trigger:
  - OnTriggerEnter
  - OnTriggerStay
  - OnTriggerExit

Triggers

- Any collider can be set to be a trigger



Picking Up Objects

Logical Operators

- &&
- ||
- !
- See Sebastian Lague's video

New Scripting Concepts

- Controlling whether Physics affects a Rigidbody
  - Rigidbody.isKinematic
- Switching an object's parent
  - Transform.parent