Glossary

Audio signal processing - the electronic manipulation of audio signals. Audio signals are electronic representations of sound waves.

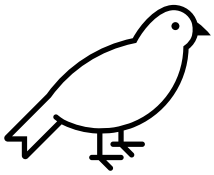
- **Delay** – an audio signal processing technique that records an input signal and then plays it back after a period of time.
- **Reverb** - an audio signal processing technique that makes a sound reverberate more than normal.

Birdsong - the musical vocalizations of a bird or birds, typically uttered by a male song-bird in characteristic bursts or phrases for territorial purposes.

Countertenor - the highest male adult singing voice (sometimes distinguished from the male alto voice by its strong, pure tone).

Electroacoustic music is a genre of music in which composers use technology to manipulate the timbres of acoustic sounds.

Goldfinch - a brightly colored finch with yellow feathers in the plumage. See American Goldfinch



Listen

Audio Effects

To perform *Goldfinch*, the singer needs to use two different microphones. Listen closely to hear what happens to the singer's voice as he sings into different microphones. Is he making all of the sounds by himself?

Dig Deeper

Change the sound of your voice

The performer of *Goldfinch* is using electronics (computer software) to change the way his voice sounds. Can you find ways to change your voice without using a microphone and computer? What happens if you sing into different objects? Does the room/space you're in change how your voice sounds?

Create and Make

Sing with the birds

The composer used lyrics that mimic the call of birdsongs. They are not actually the sounds that birds make. Instead, they are the words and sounds humans make to sing back to birds. Can you make your own song to sing to the birds?

Listen

Audio Effects

The composition uses both acoustic sounds (the singer's voice) and electronic sounds (audio signal processing, recorded sound). This is done using microphones and software. The microphones capture the acoustic soundwaves and turn them into digital signals that can then be manipulated by using a software. As you listen to this piece, try to discern when you are hearing only the singer's voice versus when you are hearing electronic sounds.

Here are some questions to help guide your listening:

- What is the first sound you hear?
- Does the first microphone change the singer's voice?
- What happens when he sings into the second microphone for the first time?
- What sounds are not made by the singer?
- What sounds are made by the singer but changed by the software?
- How many different effects are used on the singer's voice over the course of the piece?

Dig Deeper

Change the sound of your voice

Even if you don't have a microphone and computer, you can still change the sound of your voice! (If you do have a microphone and computer, try a software like GarageBand and see if you can make some of the same effects that you hear in *Goldfinch).*

Think of some materials that you could try singing through – aluminum foil, wax paper, printer paper, a paper bag, cardboard. How does each material change the sound of your voice?

Think of some objects you could sing into – a large bowl, a tin can, a flowerpot, a pillow, a fan. How does each object change the sound of your voice?

Think of some different rooms/space you could sing in – your bedroom, your bathroom, your bathtub, a gymnasium, outdoors in a field. How does each place change the sound of your voice?

Create and Make

Sing with the birds

First, you need to go outside and listen to some birds. Birds are most active between dawn and 11am, especially on nice days in the spring and summer. Listen for the different song each species has to communicate with each other. See if you can tell which birds make which sounds. Then, pick one to mimic. Are there words that you can use to mimic the sound? Make the sound a few times and see if you get a response!