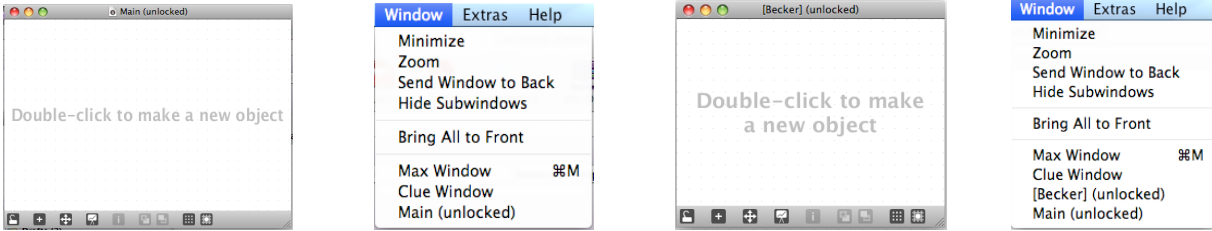



Composition: Electronic Media II
Spring 2011
Sub-patches in Max

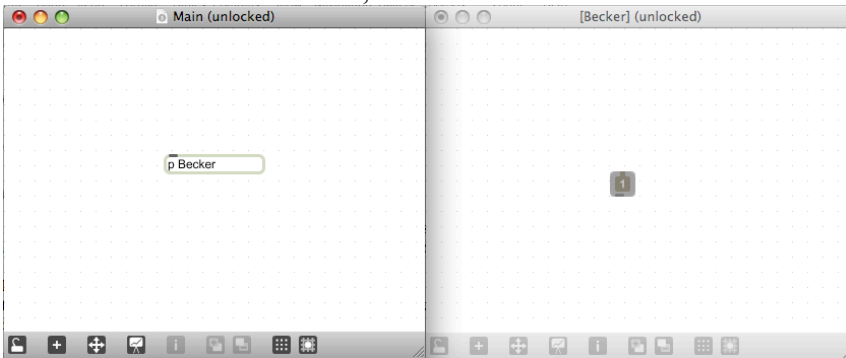
1. Overview of sub-patches.
2. To make a sub-patch, do the following.
 - a. Create a new patch and save it as “Main”, This name appears at the top of the window and in the Windows menu, as shown in the first two images on the left, below:



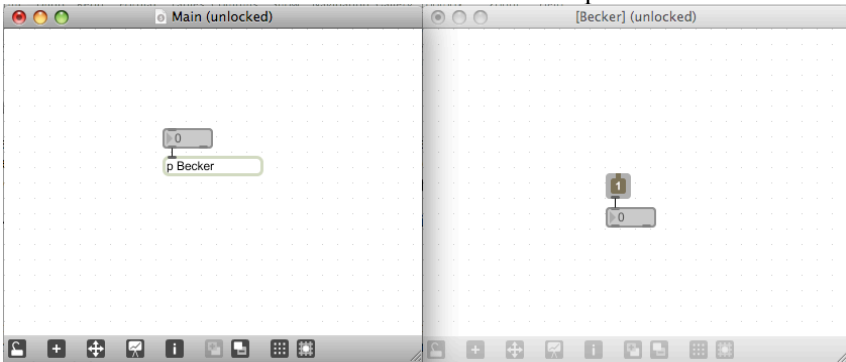
- b. Create a new object and type in it “p Becker”. Do not click on the white space outside the object yet. The letter p denotes the patcher object and the word “Becker” is the name of the sub-patch.
 - c. Click on the white space outside the object and notice that a new patcher window named “Becker” appears, as shown third from left, above.
 - d. Notice that the Windows menu lists this window as [Becker], as shown on the right, above.
3. Discussion of parent and sub-patches in the Windows menu. Also discuss saving patches, but not sub-patches.

4. In the “Becker” sub-patch, drag an inlet from the object palette into the white space, using this icon: 

5. After placing the inlet in the sub-patcher, notice what happens in both windows. In the Main window, an inlet appears on the top left corner of the “p Becker” object. In the Becker window, the inlet is labelled “1”. These windows are shown on the left, below:

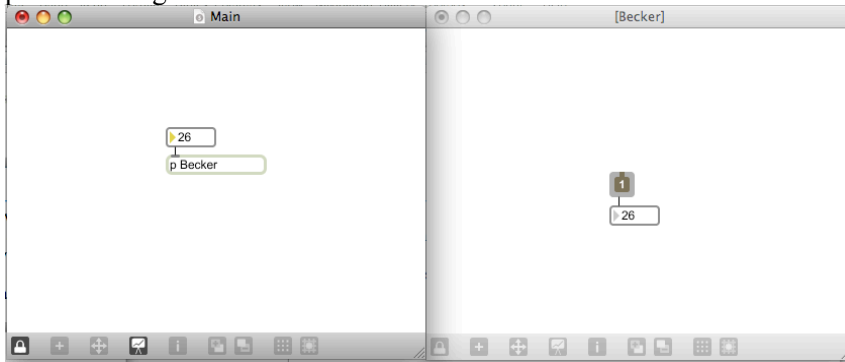


6. To see how the patcher object works, do the following:
 - a. Place a number box in the Main window and patch its outlet to the inlet of the “p Becker” object, shown below.



- b. Place a number box in the Becker window and patch the outlet of the “1” inlet to the inlet of the number box, as shown above.

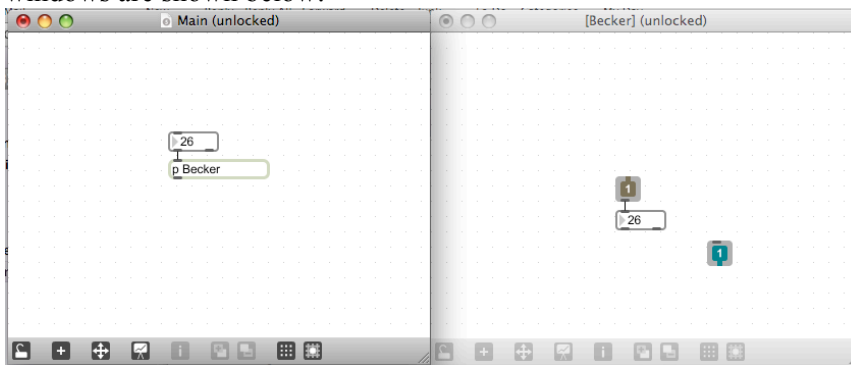
7. Lock both windows and move the number box in the Main window up and down. Notice that these numbers are passed through the “1” inlet and to the number box in the Becker window, as shown below:



- a. The sub-patch window does not need to be open for it to function. Messages to and from a sub-patch will be sent and received when the window is not open.
 - b. If the sub-patch window is closed, it can be open by double-clicking on the “p Becker” object.
8. To reverse the communication between window, go to “Becker” and drag an outlet from the object palette into the white space, using the icon shown below:

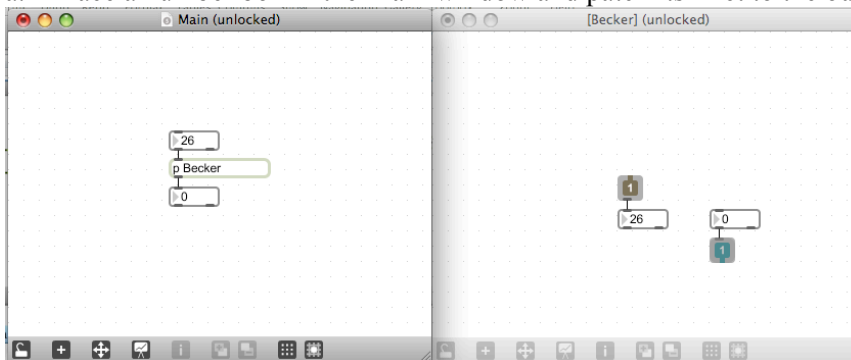


9. After placing the inlet in the sub-patcher, notice what happens in both windows. In the Main window, an outlet appears on the bottom left corner of the “p Becker” object. In the Becker window, the outlet is labelled “1”. These windows are shown below:

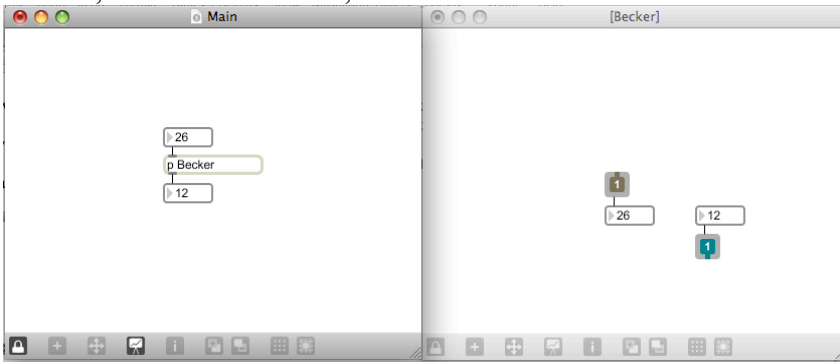


10. To see how the sub-patch communicates with the main patch, do the following:

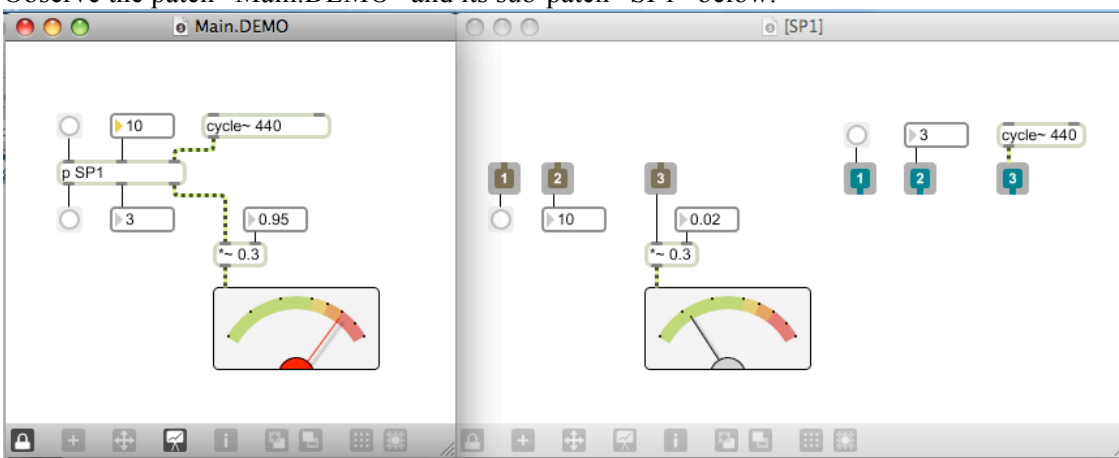
- a. Place a number box in the Main window and patch its inlet to the outlet of the “p Becker” object, shown below.



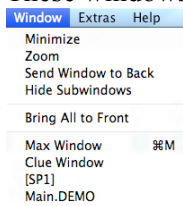
- b. Place a number box in the Becker window and patch the outlet of outlet object to the inlet of the number box, as shown on the left, below.



11. Lock both windows and move the number box in the Becker window up and down. Notice that these numbers are passed through the “1” outlet and to the number box in the Main window, as shown on the right, above.
12. Observe the patch “Main.DEMO” and its sub-patch “SP1” below.



- a. These windows are shown in the Windows menu as Main.DEMO and [SP1], as shown below:



- b. The Main.DEMO window sends to the SP1 window a bang, a number, and a sine wave, reading left to right.
- c. The SP1 window receives these messages as a bang, a number, and a sine wave. The sine wave is patched into a playback module, as shown in the window.
- d. The 3 inlets in the SP1 window are numbered 1, 2, 3. These numbers are automatically assigned when dragging an inlet into a sub-patcher.
- e. The SP1 window sends to the Main.DEMO window a bang, a number, and a sine wave, reading left to right.
- f. The Main.DEMO window receives these messages as a bang, a number, and a sine wave. The sine wave is patched into a playback module, as shown in the window.
- g. The 3 outlets in the SP1 window are numbered 1, 2, 3. These numbers are automatically assigned when dragging an outlet into a sub-patcher.
14. Class discussion of the following:
- Comparison of send/receive with inlets and outlets in a sub-patch.
 - Modules that compute, randomize, use sfplay~, synthesize. These can take up space in the parent window.
 - Using sub-patches for experiments and texts that are notes to oneself.