Work Completed:

Over Spring Break I was able to weld and connect the major assemblies of the easel. This included welding brackets, 80/20 tracking, and the tilting components to the device. One of the problems encountered involved the 80/20 slider used for the tilting motion. This slider was not fabricated to be compatible with the clamps used on the other flat-faced sliders. This prevented this slider from locking onto the track for stable support of the tilting actuator. I was able to carefully drill a hole through one side of the slider, and use one of the polymer bearings from the other sliders to make the vertical faced slider compatible with the clamp. The tracking was welded to the underside of the carriage with the slider attached.

Another major step taken was finding hardware such as bolts, nuts, and washers to help connect different parts of the easel. Fortunately a lot of these parts were found at the shop as well. Spacers were cut from ¼” stainless steel pipe to allow the tilting actuator room to rotate about the different pivoting points.
Finally, a small aluminum plate with a hole punched in its center was welded to the back of the backbone of the vertical channel piece on the tilting frame of the easel.

A picture of the entire tilting set up can be seen below.
Future Work:

There is yet a lot of cleaning to be done from the welding of the past components. These parts can also be painted soon. A pin connector for the top of the tilting actuator was mentioned for an easier release system to detach the horizontal and vertical frames. Also some of the sharper edges and rough sides of the aluminum frame can be smoothed and made fine. Integration of the circuit will also begin to develop throughout the easel.

Project Review:

Testing of the prototype will occur within the next two weeks. From there we will analyze the setup and perhaps change some problems, add actuators and sliders, or better compact the device when folded down. As of now, however, I am very pleased with how some of our initial designs are still working out perfectly. One of my only concerns pertains to the sliders controlling forward and back movements. The moment about these sliders was never analyzed because the strength of the polymer bearings were unknown. This problem needs to be remedied due to the fact that the entire carriage rests on these bearings.

Hours Worked:

Over the break I spent over 20 hours welding, fabricating, and searching for parts.