Imaging Saturn

Risa Horowitz, 2011-2040

The Project

Imaging Saturn emerged from my experience of seeing Saturn through a telescope for the first time in May 2010. That viewing was a profound and sublime personal experience. It raised questions about the incomprehensible scale of the universe and our ability to make sense of that scale both logically and intuitively.

Key Concepts

I have become an amateur astronomer within a professional and scholarly art practice that aggravates boundaries between expert and amateur, work and hobby, leisure and productivity. The methodological framework serves to limit divisions made between the worlds of visual and media art, the university, and amateur astronomy. Sometimes these activities (processes, methods,) are indistinguishable from one another, where for example a weekend spent camping is a form of dissemination of artistic knowledge, the creation of drawings is a form of investigative research, and a gallery exhibition is a form of information gathering.

Processes and Works

At the core of the project is an ongoing collection process based on the capture of at least one image of Saturn for each year of its orbit around the sun: a 29.42 year-long cycle. This component of the project has challenged me to broaden my base of knowledge in the sciences of photography, digital imaging, optics, and astronomy.

I have created a series of drawings of the planet (***Imaging Saturn: Oppositions***) in the context of Earth's horizon and the Milky Way, using openly accessible data available primarily through planetarium software.

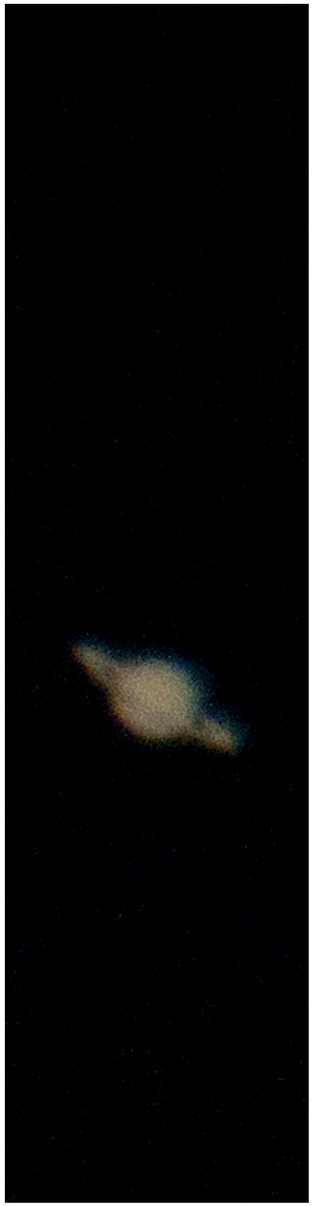
And I am currently in the process of developing a series of micro-controlled kinetic sculptures of the planet (***Imaging Saturn: Modelling Views***) that, with image recording devices, will depict its appearance throughout its orbit.

Captured Images

Methods

Aside from the obvious learning curve related to the workings of the solar system and universe, astrophotography is a highly specialized sub-discipline with a unique set of tools and techniques. These include operating a telescope that requires precise physical orientation to the cosmos to account for Earth's rotation, and acquiring images through video capture for processing multiple still frames into image "stacks" that provide more detailed still images than our "blurry" atmosphere would otherwise permit.

The image on the right, from 2011, was captured by 'projection', that is, holding my camera to the eyepiece of the 14" scope at the Regina Science Centre.



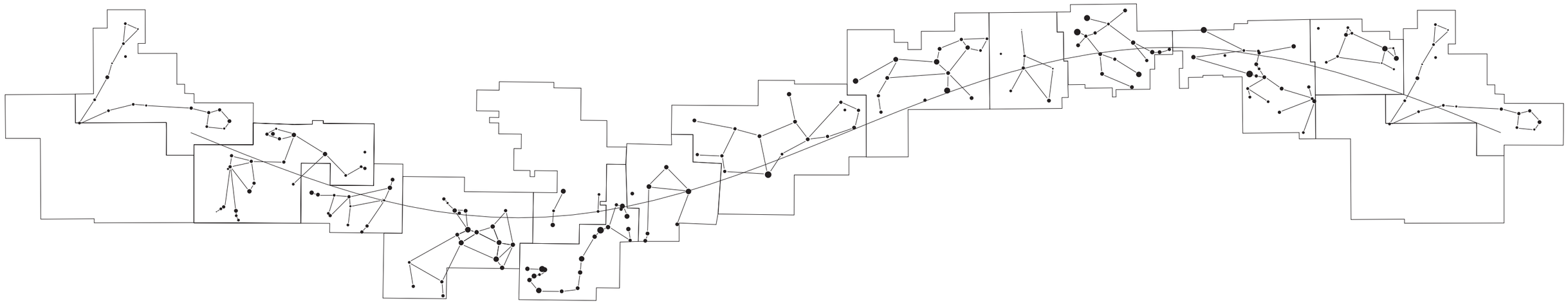
Above: playful impositions of the planet on to scenes during my travels (left: Las Vegas; right: Wawa).
Below: an image stack from 22 frames captured by video using the largest optical telescope in Canada at the David Dunlap Observatory in Richmond Hill, ON, operated by the Royal Astronomical Society of Canada. The dSLR was attached directly to the scope, with an effective focal length of 33,000mm.

Drawings

In 2013 I created a series of twenty-nine charcoal drawings that depict three views of Saturn on the day of its opposition—that moment each year when the planet is opposite the Earth from the Sun—throughout its orbital period. Creating these drawings was both a research and a creation activity insofar as the drawings are finished and exhibited works of art. Making the drawings helped me to visualize and understand relevant planetary and galactic motions as seen from Earth, along with what the planet would look like each year. These were first exhibited at MKG127 Gallery in February 2013.

Charcoal on Arches 88, 15x30”

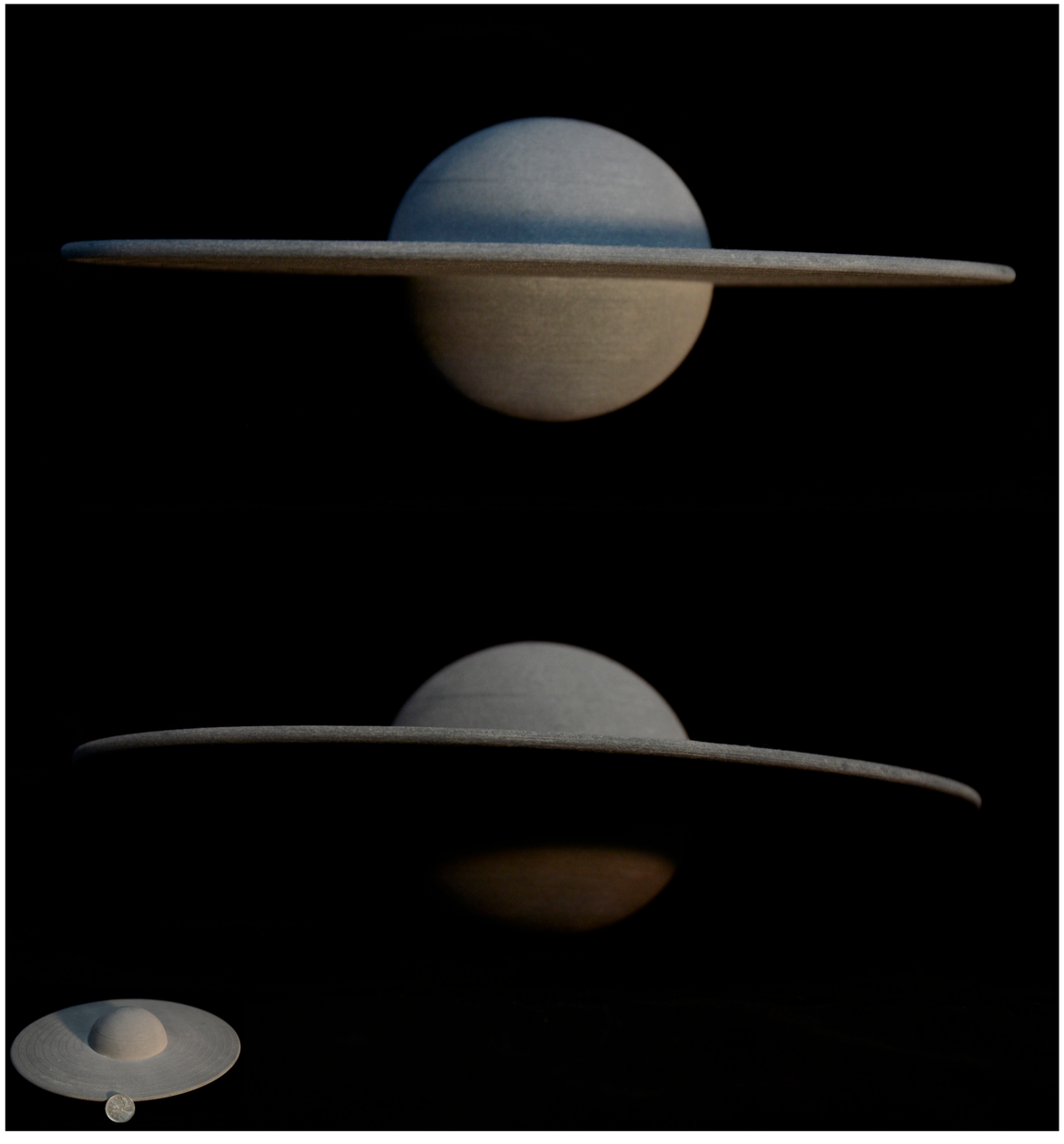
Kinetic Scuptures
the ecliptic projection

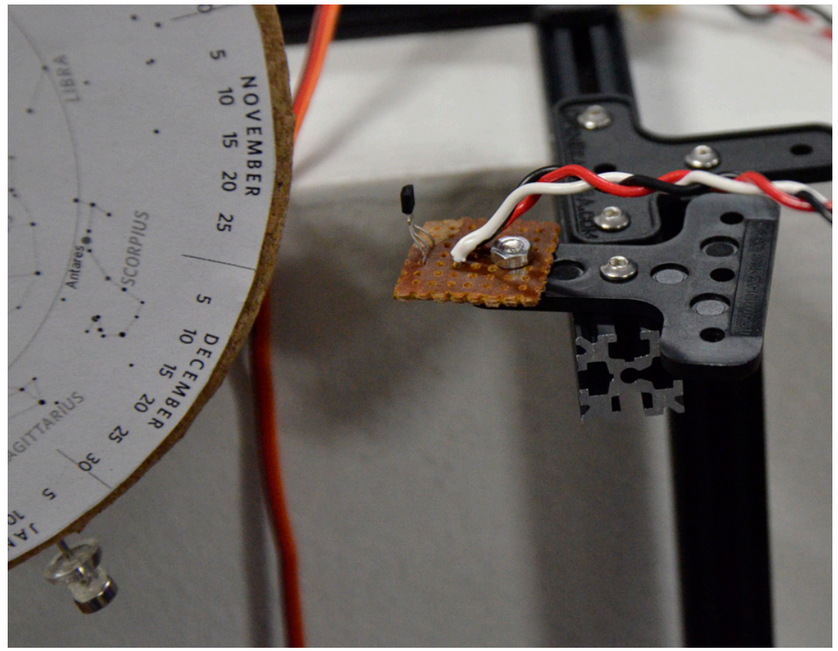


May 2014 has been spent in artist residency at Video Pool Media Arts Centre in Winnipeg, MB, developing skills towards building a set of micro-controlled kinetic sculptures. The objects will variously simulate and depict the appearance and motion of Saturn in relation to the backdrop of zodiacal constellations along the ecliptic (the apparent paths of the sun, constellations, and planets), using cameras to capture images of the models to animate or present on-screen. One key activity has been gathering openly available data about the positions of the constellations, their boundaries, and the ecliptic and methodically charting this as a map which will form the basis for the contextual imagery that will be used for the kinetic models.

Kinetic Scuptures

the 3d model and the electronics





While in Winnipeg I have spent time with Rob Cruickshank, who is helping me to learn basic electronics, code, and mechanics towards conceptualizing the kinetic sculptures.
Above: testing a hall sensor and magnet using a modified planisphere, stepper, and servo motors

I have also spent some time at Assentworks testing some laser cutting of the ecliptic projection, and using their ZCorp 3d printer, which prints full colour plaster 3d objects.
Left: 3” planet, 8.75” rings, charcoal coloured plaster saturn from CAD file.