

THERMODYNAMIC

GABY CLARKE, SPRING 2017, PARSONS PARIS

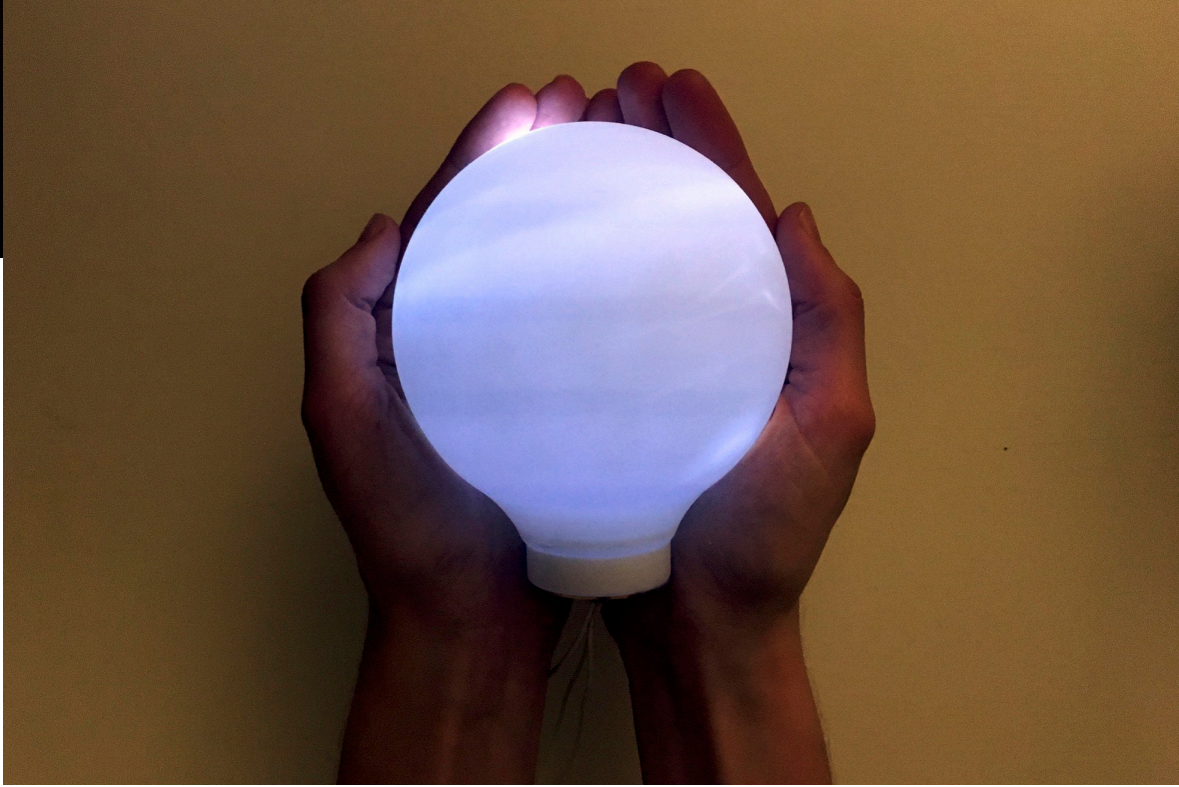


Thermodynamic is a light fixture. Though seemingly static, *Thermodynamic* is constantly reflecting change—its brightness is determined by the local air temperature at some distant location. Like a ghost light, an old theater tradition from which it draws formal inspiration, *Thermodynamic* is always on. Its affect on our immediate environment, and therefore our perception of our surroundings and our moods, is omnipresent, just as ours is on the environment at large. Our actions as humans are creating world-wide climate change. In the

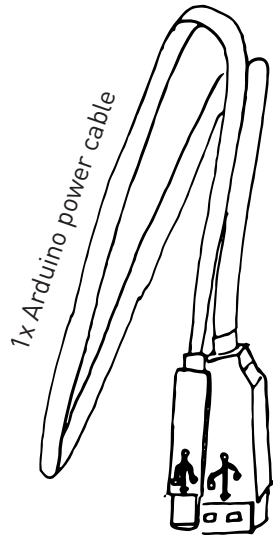
shifts in climate. Our glaciers are melting, the sea level is rising, and various regions are experiencing intolerable drought. Our impact is undeniable: 97% of peer-reviewed scientific publications agree that humans are responsible for the changes we have witnessed since the start of the Industrial Revolution.

Thermodynamic reiterates that we influence distant spaces' climate, and that climate in turn influences us in our near space. It serves as a constant reminder.

THE FIXTURE

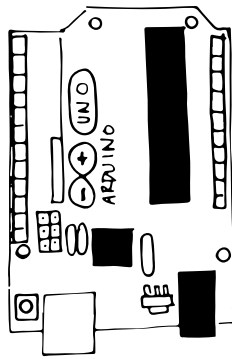


MATERIALS

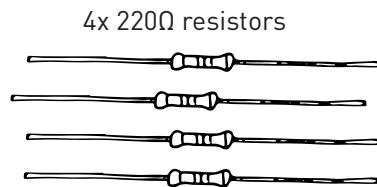


1x Arduino power cable

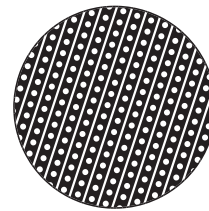
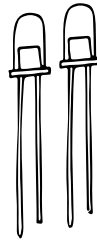
1x Arduino UNO



2x white LEDs

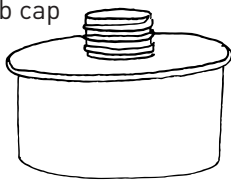


4x 220Ω resistors

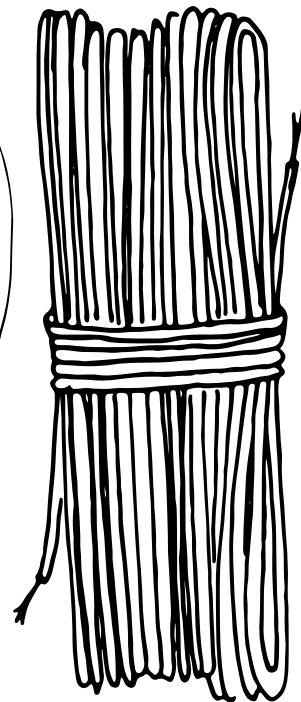
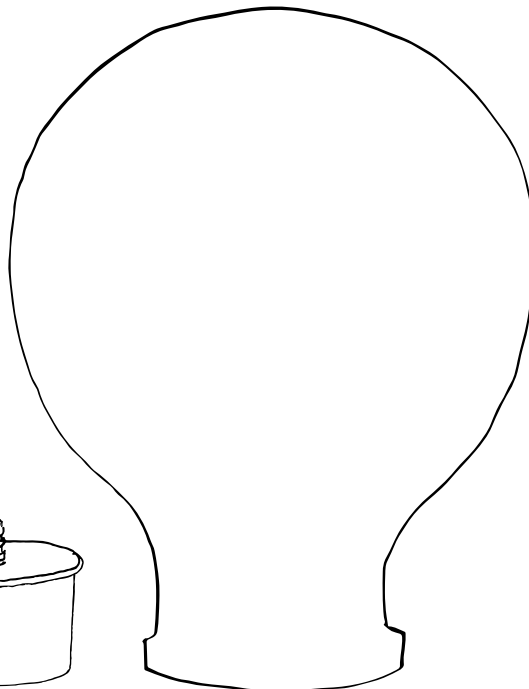


1x circuit board, cut to fit in bulb

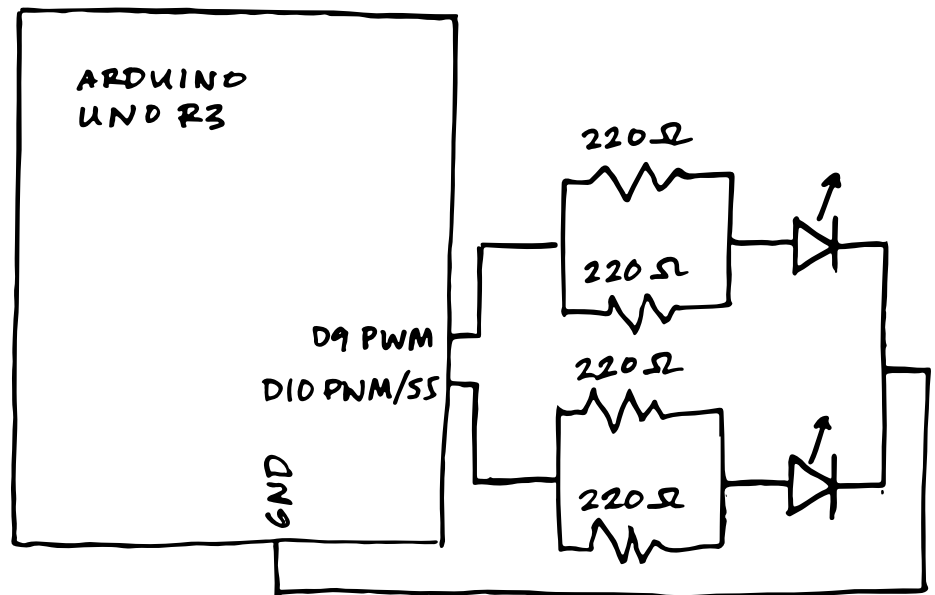
1x adjustable bulb cap



1x glass bulb



12m electrical wire



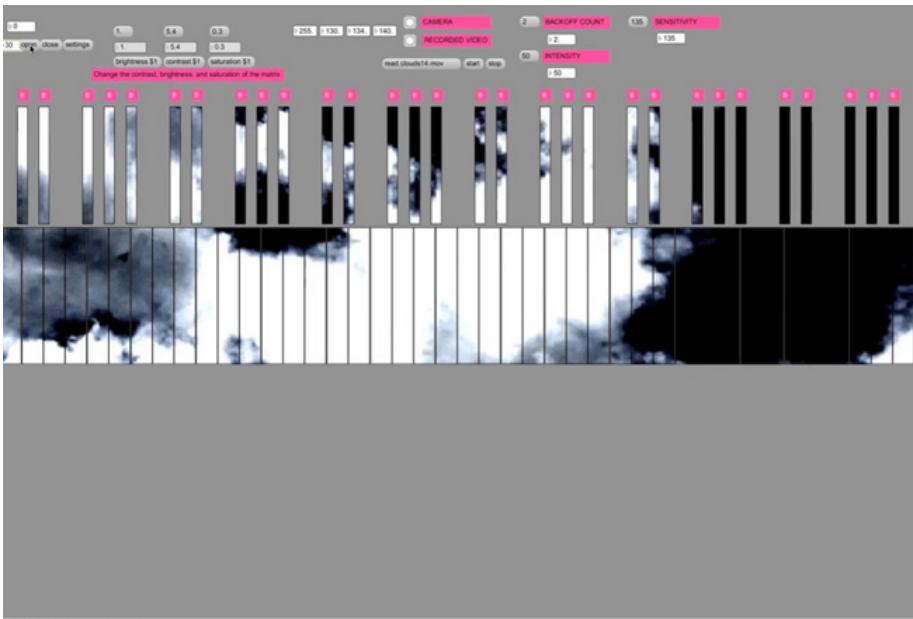
Thermodynamic was made in Python 3, and is powered by [Dark Sky](#). It makes use of the [Forecast.io Python 3 wrapper](#) for the [Forecast.io Dark Sky API](#). The project also makes use of an Arduino UNO.

The current air temperature from a distant location is retrieved via the Dark Sky API in a Python script. That value is then passed to the Arduino via Serial, where it is remapped: the relative value of the temperature on the historical range (the lowest to highest recorded temperatures at the given location)

becomes the designated brightness of the LEDs, on a scale of 0 to 255. The Arduino then illuminates the LEDs in the light fixture at that brightness. The schematic for the hardware in the fixture is shown above.

Documentation for *Thermodynamic*, including other experiments done during the making of the project, can be found in the following git repository: <https://github.com/gabyclarke/Thermodynamic>.

INSPIRATION



cloud piano

David Bowen, 2014

Bowen's piece uses visual surveillance of the movement of clouds in the sky to actuate motors that play a piano, generating seemingly random and chaotic music.



ghost lights

Ghost lights are an old theater tradition. They are electric bulbs left on after the theater is closed. Superstition holds that the light gives a chance for the theater ghosts to perform, thus preventing them from sabotaging performances.



tele-present wind

David Bowen, 2011

Bowen's piece takes measures the wind on a distant beach via a plant stalk and some sensors, then recreates the same motion in the gallery via plant stalks attached to motors.

