

# 1. Andromeda

The idea for this sculpture originated with a study of the galaxy Andromeda which, except for our sun, contains the nearest stars to earth. It is a spiral galaxy, and pictures from space telescopes show a densely packed field of stars. Here, I tried to show this galaxy (in a very condensed way) by making chains of gold plated beads strung with highly reflective stainless steel wire which then revolve slowly by means of a hand cranked barrel gear. The darkened sphere at the center represents the center of the galaxy and the base of ancient hand hewn oak represents the passage of time.



## 2. Moon Stars Sun Rain

The concept here was to have the universe shown as a small roofed structure. The sun, moon, and stars are up in the attic while the horizontal revolving plate shows our atmosphere with rain falling below. The roof represents our limited view of the extent of our universe.



### 3. Two Moons, Two Stars, and Two Planets

In this piece a hand crank operates a worm gear which turns a barrel gear rotating a planet. Its motion in turn rotates a moon. The crank shaft, through linkage, activates the two tall stars while the universal joint transmits power to the last moon and planet. The idea here is that everything in the Universe is connected.



## 4. Sun Shower

Sun showers occur when, on a rainy day, there is a break in the clouds allowing the sun to shine through. To illustrate this I chose to have three curtains of rain represented by hanging stainless steel wire to move back and forth. Each curtain has a cloud above it, and the sun, at times, peaks through the clouds. The trick here was to slow down the arc of the sun while the clouds moved in opposite directions.



## 5. Iowa

This piece was inspired by old fashioned rural windmills still seen in the midwest. The simple chain drive is reflective of the machinery of early horse driven hay rakes. The piece is named “Iowa” in tribute to the many bike rides I did across the state in the 1990’s and where I viewed many such farm windmills.



## 6. Exultation of Shad

I read once that in the eighteenth century the Delaware river was so jammed with shad swimming upriver to spawn that it was hard to see the water! Here I chose to have a dizzying array of brass waves and highly reflective fish moving against the current. The crank shaft is turned by a spur gear which is itself turned with a barrel gear in a ratio of 2:1.



## 7 Star Abacus

On a clear night who cannot be moved by the dizzying array of stars overhead? To emulate that effect, and show the spacial depth of space, I loosely strung gold plated beads on fine black wires which cross at different angles. Since the beads (stars) can move along the wires it is reminiscent of an abacus, hence the name.



## 8. Waves, Moon, Stars

This piece was inspired the romantic poem “Meeting at Night”  
by Robert Burns (1812-1889)

The grey sea and the long black land;  
And the yellow half-moon large and low;  
And the startled little waves that leap  
In fiery ringlets from their sleep,  
As I gain the cove with pushing prow,  
And quench its speed i’ the slushy sand.

Then a mile of warm sea-scented beach;  
Three fields to cross till a farm appears;  
A tap at the pane, the quick sharp scratch  
And blue spurt of a lighted match,  
And a voice less loud, thro’ its joys and fears,  
Than the two hearts beating each to each!





## 9. Conjunction

A Conjunction occurs every 20 years when the planet Jupiter overtakes Saturn in its orbit around the sun. But every 400 years is an Conjunction event when the light they reflect is particularly bright. The idea here was to gear the mechanism so that it takes 400 turns of the crank for all the orbs to align with the central “pointer” returning to dead zero.



## 10. Star Clock

This piece features a model of an astrolabe, an ancient device used for determining time and location, among other things. It enabled astronomers to calculate star locations and had astrological applications. The alidade on the front (the pointer) was useful for surveying. The revolving nested rings at the top reference the passage of time.



# 11. Meteor

This sculpture tries to emulate what happens when we look up at the night sky and suddenly, a meteor streaks across the sky. I have geared it so that stars and moon move in different directions while a sphere is slowly lifted into a vertical position where it sits momentarily. Then, without warning, it suddenly falls!



## 12. Sectioned Universe

Here I have divided the night sky into four quadrants each not visible to its neighbors. The moon can be seen in its various phases as the crank is turned. The concept here, as in many of my pieces, is that our view of the universe is limited by the small section we can observe.



## 13. Numbering Clock

The inspiration for this piece came from William Shakespeare's Richard the III with Richard contemplating his imprisonment. In it he compares himself to a clock with time running out. My piece is made like a clock in reverse with the pendulum, represented by the hand crank, driving the escapement, represented by the verge gear, at the far end. So our lifespan can be viewed not only as a clock that starts with birth but as a clock that winds down to zero at the end of life.



“I wasted time, and now doth time waste me;  
For now hath time made me his numbering clock.

My thoughts are minutes; and with sighs they jar  
Their watches on unto mine eyes, the outward watch,  
Whereto my finger, like a dial's point,  
Is pointing still, in cleansing them from tears.  
Now sir, the sound that tells what hour it is  
Are clamorous groans, which strike upon my heart,  
Which is the bell: so sighs and tears and groans  
Show minutes, times, and hours: but my time  
Runs posting on in Bolingbroke's proud joy,  
While I stand fooling here, his Jack o' the clock.”

## 14. New Moon, Blue Moon

This piece references so called blue moons, a name given to a second full moon in a calendar month. The two revolving crescents represent the moons that occur at the beginning and end of the month while the central sphere is the moon itself showing its phases when the crank is turned



## 15. Moon Works

This is a simplified study of moon phases. The imperfect spiral of the worm gear creates a motion that hesitates and starts. The revolving satellites in the center reference the passage of time. I used old wood for the base and a repurposed steel panel to provide a sharp contrast between the old and new (the polished brass).



## 16. Alchemy I

This was the first in a series of kinetic sculptures about alchemy, once considered a serious science which combined astronomy, astrology and the study of the natural world. Alchemy means change or transmutation and one of its aims was to turn base metals such as lead into noble metals such as gold. The crystal shape of the super structure was thought to have healing powers and the different movements reflect, time, materials and the recipe for transmutation.





## 17. Alchemy V

This was the fifth in a series of kinetic sculptures about alchemy. It was once thought that if two metals were brought in close contact with each other that each would be changed in some way by that contact. Once considered a serious science which combined astronomy, astrology and the study of the natural world. Alchemy means change or transmutation and one aim was to turn base metals such as lead into noble metals such as gold.



## 18 Alchemy VI

This was the sixth in a series of kinetic sculptures about alchemy. In this piece the four corner crescent shapes represent gold, silver, copper, and lead. The central shape that revolves in the center represents an alchemical symbol for the four basic elements; air, earth, fire and water.

