

Name: Nguyen Le | **E-mail:** nguyenle@bu.edu | **Course:** IN 250 Cosmic Visions

Constellations of Knowing

Finished Website URL (Poem + Visuals hosted on Website):

<https://filiple.github.io/constellations-of-knowing/>

GitHub Repository URL (Codebase):

<https://github.com/FilipLe/constellations-of-knowing>

Raw Poem (attached in Google Docs since poem is long):

https://docs.google.com/document/d/1ii2757JOO1PsT_GV3LvUguzhLtmUhS5emUP4zAOL1m4/edit?usp=sharing

Artistic Statement

Many of us had heard names such as Copernicus and Galileo without every truly grasping how their ideas shaped the way we see the cosmos today. Their models defined our view of the universe, yet their contributions often feel unfamiliar like the distant stars in the sky. Realizing how interconnected the discoveries of these philosophers and mathematicians are, I wanted to create an accessible medium that lets students experience our cosmic understanding grow, star by star. By pairing a poem with an interactive website, I hope to bring each thinker's model to life and to offer a more engaging form of learning for students.

I started with writing a poem in which each stanza captures an astronomer's contribution. Each stanza is made up of 4 lines to balance clarity and engagement. It is long enough to convey key contributions of each thinker, but short enough to keep readers focused without feeling overwhelmed. The poem uses an AA/BB rhyme scheme, which encourages readers to pause and absorb each idea. This gives the viewers time to reflect on the connection between ideas whilst creating a rhythm that complements the interactive visualizations. Poetry not only allows me to recount the history we learned in class, but also to recreate the gradual revelation that has shaped humanity's understanding of the sky.

Because astronomy is inherently visual, built from diagrams and evolving models, the poem needed an interactive companion to truly form that constellation of thought. Hence, I coded a website using React, TypeScript, and p5.js, where each stanza is paired with a visualization of the corresponding historical model. I designed these visualizations not just to depict the models accurately, but to express the evolving sense of wonder as well as the underlying philosophy that each thinker brought to the cosmos. As viewers navigate between thinkers, the drawing on screen transforms to trace the philosophers in sequence, reflecting the unfolding discoveries of the universe in chronological order.

We begin with the prologue, which features bright stars scattered across a vast dark sky, evoking the boundless universe and sense of wonder that drives observation. Pythagoras appears as a single sphere traced with a faint orbit, reflecting his vision of perfect harmony. Plato and Eudoxus follow with concentric celestial shells, layered delicately to suggest the nested structure of the heavens, while Aristotle's moving spheres turn at a distinct speed to convey natural motion. For Eratosthenes, I drew Alexandria and Syene with the sun's rays striking at an angle, illustrating his geometric reasoning and the revelation of our spherical and vast planet. For Hipparchus, I depicted clusters of stars with varying brightness, connected by lines to represent his cataloging system. Ptolemy's epicycles are animated in nested loops, allowing viewers to observe the retrograde motion that motivated his model.

Copernicus' planets orbit around a central sun, representing the shift to heliocentrism, while Tycho's hybrid system places Earth at the center with the sun orbiting it and other planets orbiting the sun, reflecting his skepticism of Copernicus' model. Galileo's visualization displays the phases of Venus and Jupiter's moons, highlighting his telescopic observations that supported heliocentrism. Kepler's orbits are drawn as ellipses around the sun, updating Copernicus' circular paths to reflect his laws of planetary motion. Newton's model features Earth orbiting the sun, with a red arrow pointing toward the sun to signify gravitational force and a blue arrow indicating Earth's direction of travel to illustrate inertia, all animated to convey the dynamic interplay of his three laws. At the end, the epilogue returns to a dark sky dotted with stars, bringing the journey full circle of endless possibilities for exploration.

To make the project even more accessible, I added small help icons beside each stanza. When clicked, they provide a brief, simplified explanation of that philosopher's contribution. Like the interactive models themselves, they are part of the artwork, acting as small prompts that guide attention and reinforce the interplay between text and imagery.

Together, the poem, the visual models, and the explanatory icons form a cohesive artwork. None of them stand alone. Each element reinforces the others. My goal is for viewers to experience astronomy not merely as a science but as a long, unfolding story of human curiosity. Working on this project has allowed me to combine creativity with analytical thought and storytelling. In the end, this project forms its own constellation, drawn through history to illuminate one interpretation among the infinite possibilities of the sky above.