Project 2: The Seasons, the Sun, and the Moon

Variant B: Other Worlds, Fantasy, and Science Fiction

Due at the end of the day Tuesday, September 22

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| **Group Number and Name:** | | |  | | |
| **Member Name #1:** |  | **Email #1:** |  | **Scenario #:** |  |
| **Member Name #2:** |  | **Email #2:** |  | **Scenario #:** |  |
| **Member Name #3:** |  | **Email #3:** |  | **Scenario #:** |  |
| **Member Name #4** |  | **Email #4:** |  | **Scenario #:** |  |
| **Collaboration Time and Date:** |  | | **Evaluating Group Number:** |  | |
| **Collaboration Methods (in-person, Zoom, etc.)** |  | | | | |

In this project, you’ll think from the perspective of a science fiction or fantasy writer, wondering what sorts of fantastic stories might be told about a planet which is like Earth, but whose motion around the Sun is changed in some way.

The best science fiction involves breaking the laws of physics deliberately and intentionally, and thinking carefully about the consequences. Writers change something about the way our world works in order to design a compelling setting, one which enables a story set in a world that is not real, but which *could* be real. Combinations of mythology with real astronomy lead to fascinating results – for instance, if vampires are destroyed by sunlight, how would their lives change if they lived above the Arctic Circle?

The possibilities are endless – even more so in a fantasy world, where (for instance) the astrological alignment of the Sun and Moon with the constellations of the Zodiac has real effects on people’s lives.

In each of the following scenarios, imagine that something changes about the Earth’s motion (or the Moon’s motion).

1. **Suppose that the Earth stopped moving around the Sun.** Instead, it stays in exactly one spot, rotating in place, with the Moon orbiting it as always.
2. The Moon rotates at exactly the same rate as it orbits the Earth. (This happens because of friction caused by the tides.) This means that the same face of the Moon always faces toward Earth. **Suppose that the same thing happened to Earth in its orbit around the Sun, so that the same side of Earth also always faced the Sun**.
3. **Suppose that the Earth stopped rotating entirely,** so that each location on Earth points in the same direction in space all the time. It continues to move around the Sun as before.
4. **Suppose that the tilt of Earth’s axis increased to 60 degrees** from the 23 degrees that it is right now.

Your group should discuss the effect that each of these things would have on life on Earth. You should consider things like:

* How would the cycles of day and night (sunlight and darkness) change?
* How would the cycle of the phases of the Moon change?
* How would the cycle of the seasons change? (Remember, summer and winter are caused by periods where there is more or less sunlight; if regions of Earth experience large changes in the amount of sunlight they get, it would cause very different seasons!)
* How would the apparent motion of the stars in the sky change, and how would their alignment with the Sun and Moon change?
* How would these changes vary from one location on Earth to the other?

**Assignment:** Your group should write a brief description of how and why things on Earth would change if each of the above changes happened suddenly. How would our experience with the Sun, the Moon, and the stars change, and why?

Then, each person in your group should choose a different one of these scenarios and think of an idea for a speculative-fiction (fantasy, alternative history, science fiction) story. They should write a brief proposal (one or two paragraphs) for a book or film – explaining how the world changes, how it affects people’s lives, and what sort of story you’ll tell in this world. This can involve only realistic things, or it can involve fantastic elements like vampires, werewolves, astrology, and so on. Each person will be primarily responsible for one of the proposals, but you should all collaborate to help out with everyone’s ideas!

If you choose, you can actually *write* this story as your final project for the class – collaborating with your group if you wish!

*When your group is done, one person should send a link to your shared Google or Microsoft document by email to* [suast101projects@gmail.com](mailto:suast101projects@gmail.com)*.You should cc: both your other group members and the group members of the group that will evaluate you. This means that ordinarily you will be emailing six different addresses:* [suast101projects@gmail.com](mailto:suast101projects@gmail.com)*, the other two members of your group, and three members of another group. (Of course, if one of those groups has only two people, then this will be different.)*

*See* <https://walterfreeman.github.io/ast101/project1instructions.html> *to see what group is evaluating you, what to put in the subject line of your email, what their email addresses are, and what their group number is.*

*Make sure you fill out the information at the top about who you worked with and how you worked together.*

*As before, the information about who to submit your work to will be coming closer to the due date.*