

Hello everyone, I am Ryan and am now representing group D28, which includes myself (obviously), Aurelian, Jesper, and Leander.

Practically speaking, we live in a world of finite resources—the distribution and moderation of which, we must continually navigate together. Unfortunately, from a logical perspective, people are motivated to abuse shared utilities, known as common-pool resources, because if they do not, they are at a disadvantage to those that do. This leads to a depletion of shared resources beyond the threshold of regeneration and can be seen with things like over-fishing and carbon-footprints. This paradigm is called *The Tragedy of The Commons*—a term first coined by British Economist William Foster Lloyd in 1833 and later formalized by American Biologist and Philosopher Garrett Hardin in 1968.

Humans have, however, been known to reach localized equilibriums with their environment where individual needs are met sustainably. In this project, we plan to examine the individual and societal attitudes that lead to such states.

In the paper, *True versus strategic fairness in a common resource dilemma*, one metric in particular is provided that we feel may be indicative of system outcomes in Common Resource Pool environments. Social Value Orientation or ranges from pro-self to pro-social attitudes, which influence the behavior of individual resource usage, where pro-social individuals always behave in accordance to the greater good and pro-self individuals only cooperate collectively when given enough time to *deliberate* on the individual reward they would receive through cooperation and otherwise behave *intuitively*, abusing the environment by reflex.

Our model will be that of a fishing village with some finite-source of fish. While the fish regenerate over time, they will cease to do so if their population ever reaches zero. In this case, the village starves to death. An additional constraint is that if an individual does not consume fish at a certain rate, that individual starves to death. Individuals will fish at some rate determined by a fishing-function, representative of their Social Value Orientation, where pro-self individuals are more likely to behave selfishly when they are low on fish because they have “less time” to live.

Initially, we will model SVO as homogenous across the population and look for sustainable states. If this works well, we can examine a distribution of SVO's across the population that are influenced by various social and environmental factors such as fish population and individual fish stores. In this way our agents will respond directly to environmental states and behave accordingly. Again we can observe what attitudes lead to stable sustainability. One final feature we may examine, is how social regulation can lead to stable states.

** We plan to model in MESA.