Greek Gods and Game Theory

Game theory is the study of mathematical models of strategic interaction. Connecting it with famous stories makes it easier for students to grasp.

The Procession of the Trojan Horse in Troy by Giovanni Domenico Tiepolo
via Wikimedia Commons (https://commons.wikimedia.org/wiki/File:The_Procession_of_the_Trojan_Horse_in_Troy_by_Giovanni_Domenico_Tiepolo_(cropped).jpg)

By: Farah Mohammed (https://daily.jstor.org/daily-author/farah-mohammed/) | April 29, 2019 **3 minutes**

Game theory is the study of how participants interact and strategize in competitive situations. While it can be used to understand actual games like ***Monopoly*** **(https://daily.jstor.org/the-different-meanings-of-monopoly/)** and **Go (https://daily.jstor.org/game-artificial-intelligence/)**, game theory is also useful when it comes to understanding people's behavior in business, politics, and war.

Undergraduate students are often exposed to **game theory (https://daily.jstor.org/can-game-theory-help-save-our-forests/)**. But as economics scholar James D. Miller and classics scholar Debbie Felton point out in ***The American Economist*** , upon graduation most students "will never again encounter a formal game theoretic model." They suggest that professors who rely on mathematical models and theorems should instead turn to something more familiar and compelling to students, something that will stay with them long after graduation.

Greek characters' behavior can be applicable to academic principles.

One route they suggest is learning game theory through Greek mythology:

> Many Greek myths concerning truth-telling are consistent with economic theories of human behavior, and economics instructors should exploit this similarity by using stories from classical Greek mythology to teach contemporary game theory.

The scholars use a few examples to show how Greek characters' behavior can be applicable to academic principles.

Legend: Odysseus' Insanity
Lesson: Separating Equilibria

In one story, the Greek hero Odysseus was (unsurprisingly) not enthusiastic about joining the army in what would become the legendary Trojan War. When a party arrived to recruit him, he feigned insanity, spending hours plowing his land at random, expecting that they would see him behaving oddly in his fields, and leave.

Palamedes, however, was unconvinced that Odysseus was truly insane. As a test, when Odysseus's plow was at full speed, Palamedes threw Odysseus's young son in front of it, knowing that an insane Odysseus would continue to plow nonetheless, whereas a sane one would divert course.

In game theory this is called "separating equilibria." In games, business, and everyday life, we often devise ways to divine the truth about people through their behavior or actions, instead of relying on what they say.

Legend: Dionysus Abducted by Pirates
Lesson: Signaling

As the myth goes, when Dionysus was captured and tied up by a group of pirates, he effortlessly caused the ropes to fall off. Seeing this, the ship's helmsman realized they'd inadvertently angered a god, and warned his shipmates to leave him alone. (Despite the warning from the ropes and the helmsman, they don't. It ends badly.)

This correlates with the idea of "signaling." Signaling is when, through their actions, "players" give other players information about themselves or their "type," which would impact or inform other players' strategy. An example of this in biology is the way gazelles jump particularly high when they see a predator instead of running—it signals to predators that they are healthy, agile, and will be particularly difficult to chase and catch.

Legend: Helen Tests the Trojan Horse
Lesson: Imperfect Recall

When the Trojan horse was at the gates, hiding an army inside it, Helen knew something was amiss. She walked around the structure, calling to the men inside by name, imitating each of their wives, trying to get them to respond and thereby reveal themselves.

It isn't hard to believe one or two men would be tempted to answer, exhausted and traumatized after years of battle. One, Anticlus, nearly does, but Odysseus covers his mouth with his hands until Helen leaves. He saves his men, thereby sealing Troy's fate.

The game theory principle of “imperfect recall” refers to when players fail to accurately recall previous information about their situation. Generally speaking, however, because it’s based on statistical models and patterns, game theory is less concerned with irrationality than other behaviors.

As the Miller and Felton point out, Greek mythology is still so widely read today because it fascinates us. Using Greek mythology provides compelling examples which can help us mortals to understand game theory.