

# Canonical two-player games: application

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*Formal theory: 1.2*

*Which canonical two-player game best captures the strategic interaction described in each of the following situations? State any necessary assumptions. Also state any relevant differences between the scenario and the most relevant canonical game.*

## **Electioneering**

Two candidates compete for office. Candidates value winning the office but dislike campaigning. Each candidate's probability of winning is increasing in her own campaign effort and decreasing in her opponent's campaign effort.

## **Tennis**

Suppose I prepare for you to serve to my right. If you do serve to my right, I can hit a strong return and I am likely to win the point; if you serve to my left, I hit a weak return and I am likely to lose the point. Vice versa if I prepare for you to serve to my left.

## **Revolution (1)**

Both the secular activists and the religious activists want this regime to fall, but it will only happen if both groups revolt.

## **Birds and seeds**

The farmers in a valley all plant seeds later than would be ideal for maximizing yields. Asked why, one farmer explains that no one "is willing to plant first, as the seeds on any lone plot would be quickly eaten by birds." (Bowles, 2004, p. 24)

## **Climate change**

Excessive carbon concentration in the atmosphere will increase global temperatures and cause widespread suffering. Curbing emissions requires economic sacrifices.

## Draining a meadow

“Two neighbors may agree to drain a meadow, which they possess in common; because ’tis easy for them to know each other’s mind; and each must perceive, that the immediate consequence of his failing in his part, is the abandoning of the whole project. But ’tis very difficult and indeed impossible, that a thousand persons should agree in any such action; it being difficult for them to concert so complicated a design, and still more difficult for them to execute it; while each seeks a pretext to free himself of the trouble and expense, and would lay the whole burden on others.” (David Hume, *A Treatise of Human Nature*, 1739, cited in Bowles, 2004, p. 23)

## Revolution (2)

Moderates who were comfortable in the old regime quickly adopted revolutionary rhetoric once the presidential palace was occupied by protesters.

## Government shut-down

If the president and Congress cannot agree to a budget, there will be a government shut-down, with considerable disruption to public services. The president wants the budget to include funding for a Mexican border wall, while Congress does not.

## Corruption investigation

A government official would like to steal public funds but would **not** like to go to jail. A corruption investigator would like to successfully prosecute a corrupt government official, but would **not** like to launch an investigation that uncovers no wrongdoing.

## PureGym Oxford

Many people at the gym like to use a machine, rest for a bit, and use it again for while. Most of these people sit on the machine while they rest, making it impossible for other people to use it.