444 Lecture 8.3 - Stag Hunt

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Stag Hunt

	gather	hunt
Gather	x, x	y, z
Hunt	z, y	w, w

With the following constraints:

- $x > z$
- $w > y$
- $w > x$
- $x + y > z + w$

Concrete Example of Stag Hunt

	gather	hunt
Gather	2, 2	4, 0
Hunt	0, 4	5, 5

Differences with Prisoners’ Dilemma

- Again, there is a cooperative move (in this case Hunt), which is socially better than the individualistic move (Gather).
- But in this case, cooperation is an equilibrium; it isn’t dominated.
- The problem is that there are nevertheless reasons to do the individualistic thing.

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- If you Gather when the other player Hunts, you'll get 4 and you could have got 5 - a regret of 1.
- If you Hunt when the other player Gathers, you'll get 0 and you could have got 2 - a regret of 2.
- Mistakenly Hunting leads to higher regret than mistakenly Gathering.
- Minimising regret, which a lot of people think is important in decisions under radical uncertainty, implies Gathering.

Random Choice

- There are two equilibria.
- Maybe it's reasonable, as a first pass, to have equal probabilities in each hypothesis about what the other player will pick.
- So in this case, you'd be (as a first pass), 50/50 about whether the other person will Gather or Hunt.

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- So in this case, you’d be (as a first pass), 50/50 about whether the other person will Gather or Hunt.
- But then it maximises expected utility to Gather.
- That has expected utility 3, while Hunting has expected utility 2.5.

Evolutionary Explanations

- Imagine an Axelrod type evolutionary situation, that starts out with equal numbers of Gatherers and Hunters.
- Each person interacts with everyone else in the community, and they add up their score.
- Then in the next generation, the number of Gatherers and Hunters is proportionate to the score that Gatherers and Hunters get in this generation.

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- Then in the next generation, the number of Gatherers and Hunters is proportionate to the score that Gatherers and Hunters get in this generation.
- Well, in fairly short order, you have a population of more or less all Gatherers.
- Indeed, that happens unless you start with at least 2/3 Hunters.

Social Challenge

- How do we get people to be cooperative, i.e., Hunt?
- Note that we don’t have to imagine changing the payouts, i.e., punishing, or taking away options.
- It suffices to get everyone to (truly) believe that others will Hunt.
- This isn’t trivial, but it’s a very different kind of challenge than in PD.

Modeling Challenge

- Which cases are really Stag Hunt not PD?
- I'm going to talk about this a bit more, but it's really worth thinking through real life cases.
- Is there a genuine equilibrium where merely by everyone believing that everyone else will Hunt, it becomes in their own interest to Hunt?

Modeling Challenge

- Which cases are really Stag Hunt not PD?
- I'm going to talk about this a bit more, but it's really worth thinking through real life cases.
- Is there a genuine equilibrium where merely by everyone believing that everyone else will Hunt, it becomes in their own interest to Hunt?
- Note that it is really great if this is so.
- The view from Hobbes on was that getting out of PD required heavy handed intervention.
- But getting to the cooperative equilibrium in Stag Hunt might just require nudging.

Mixing the Issues

- The modeling challenge and the social challenge can run together.
- If we want to change behavior, it helps to know what kind of game people are, or take themselves, to be playing.
- So the theoretical question of how to conceptualise a practice might be related to the social question of how to repair it.

For Next Time

I’ll go over a bit what PD and Stag Hunt look like in n player cases.