

Games, norms and obligations

Josua Potschien, Chris Venn

Table of contents

1. Normative Systems
2. Detachment
3. Violation Games
4. Norm Creation Games
5. Conclusion

Normative Systems

Normative Systems

Definition (Normative System)

A normative system is a description of good and bad

- Hijacked plane
- Is it good or bad to shoot down the plane?

⇒ We need a more precise definition

There are some more definitions mentioned but all of them have their own flaws

General problems with the traditional approach of deontic logic:

- Lawyers \Rightarrow more classification problems
- Computer Scientists \Rightarrow some problems are hard to specify as a norm
- And various other fields

Detachment

Detachment

Definition

Detachment is a way to solve a problem in a normative system with two conflicting rules or obligations. It is not possible to use the detachment approach in every situation

- $O(\neg kill)$ and $kill \rightarrow O(killgently)$
- Implies $killgently \rightarrow kill$
- Detachment can solve this paradox
- Consider $O(Q|P)$ as Q ought to be the case given P
- Mistake: Conclude $O(Q)$ from $O(Q|P)$ and P
- With detachment we only conclude $O(Q)$ from $O(Q|P)$, if $O(P)$ is given

Violation Games

Definition (Violation Games / Normative Systems)

Violation games are social interactions among agents to determine whether violations have occurred, and which sanctions will be imposed for such violations. A normative system is a specification of violation games

Violation Games

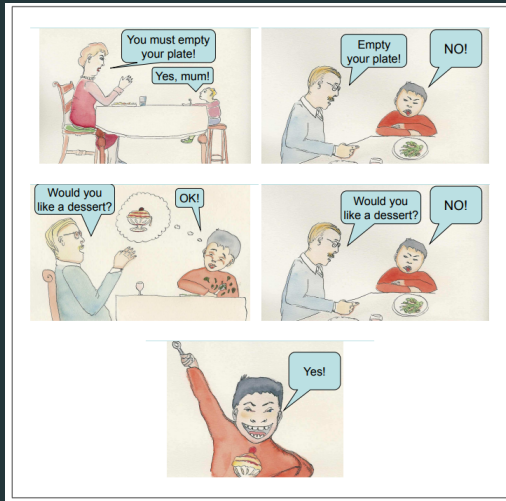


Figure 1: Expectation, from [van der Torre, 2010]

Violation Games

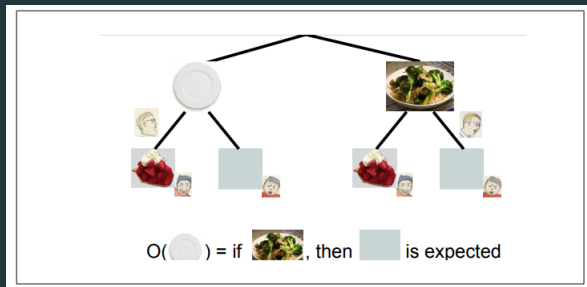


Figure 2: Expectation, from [van der Torre, 2010]

- $O(\text{eatVegetables}) = \text{notEatingVegetables} \rightarrow \text{noDessert}$

Violation Games

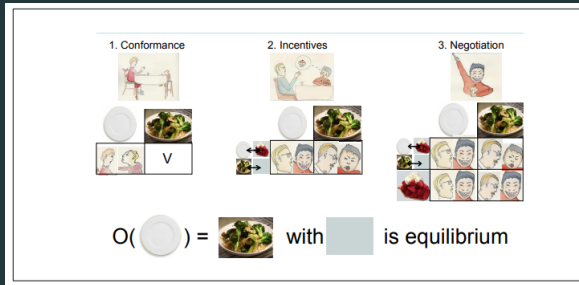


Figure 3: Expectation, from [van der Torre, 2010]

- $O(\text{eatVegetables}) = \text{notEatingVegetables}$ with noDessert is an equilibrium

We can separate the behaviour into different phases:

- Phase 1: Son eats vegetables and violation does not occur
- Phase 2: Not eating vegetables is identified with absence of dessert
- Phase 3: As long as the norm is in force the son will believe to be sanctioned
- Phase 4: The norm is no longer in force

Norm Creation Games

Norm Creation Games

Definition

Norm creation games are social interactions among agents to determine which norms are in force, whether norm violations have occurred, and which sanctions will be imposed for such violations. A normative system is a specification of norm creation games

- A pool with 100 bystanders and one child in the water
→ what are the norms/obligations?
- Consider mental modalities of each bystander
- The more you know about the situation the more you can say about the protocol that loads to the norm

Conclusion

Conclusion

- Actions, mental modalities and permissions are important for violation games
- We can't use the violation games approach in every scenario (hijacked plane)
- Negotiation is an essential part to model a violation game
- Norm creation games have no practical use
- Trying to use game theory on the hijacked plane example leads to no solution

Conclusion

How can deontic logic be based on both norm and detachment, as well as decision and game theory?

- Kind of impossible to model every moral dilemma
- Violation games itself are complex enough
- Detachment approach can be combined with hijacked plane example but also leads to no practical solution
- In our opinion it is not possible to combine norm, detachment and decision and game theory

Sources

- https://en.wikipedia.org/wiki/Social_norm
- L. van der Torre. Violation games: a new foundation for deontic logic. *Journal of Applied Non-Classical Logics*, 20(4):457–477, 2010
- Gabriella Pigozzi, Leendert van der Torre. Multiagent Deontic Logic and its Challenges from a Normative Systems Perspective