



The Use of Game Theory in Voluntary Urban Readjustment Measures

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Content

- 1 Motivation
- 2 Basics of Game Theory
- 3 Game Theory in Land Management
- 4 Conclusion and Further Works




Decision-making Situation in Daily Life

Coffee or tea?



Thin or thick jacket?



Vegetarian or not?







Football or cinema?



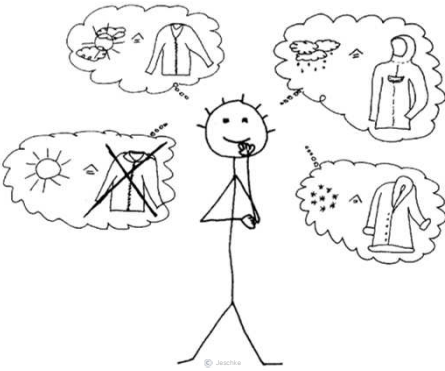
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Decision Theory

The result of a decision-making process depends on

- ✓ own decision and
- ✓ unsure environmental conditions.



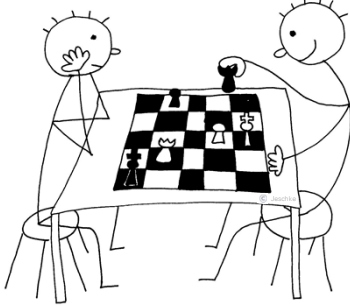
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Game Theory

The result of a decision-making process depends on

- ✓ own decision,
- ✓ unsure environmental conditions and
- ✓ **the decisions of other stakeholders.**



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Game Theory and Land Management

- Decision-making processes can be found in many areas of land management
- Different stakeholders from administration, economy and citizens are involved






Planning of new building areas




Rural land readjustment

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Form of Presentation

Game Matrix



- Simple way of presentation
- Only two players
- Each combination of strategy causes the payoff of each player
- Set of all combinations of strategy = Strategic Space

Player 1	Strategy s_{11}	Strategy s_{12}
Player 2	Strategy s_{21}	Strategy s_{22}
	Payoff 1 p_{21} p_{11}	Payoff 2 p_{22} p_{12}
	Payoff 3 p_{23} p_{13}	Payoff 4 p_{24} p_{14}

Combination of Strategy
 S_i

Strategic Space
 S

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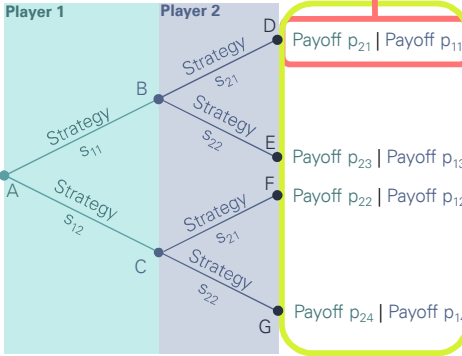
Form of Presentation

Game Tree

- Behaviour of two players or more can be illustrated
- Each combination of strategy causes the payoffs
- Set of all combinations of strategy = Strategic Space
- Detailed description of a game (e.g. temporal structure)

Player 1

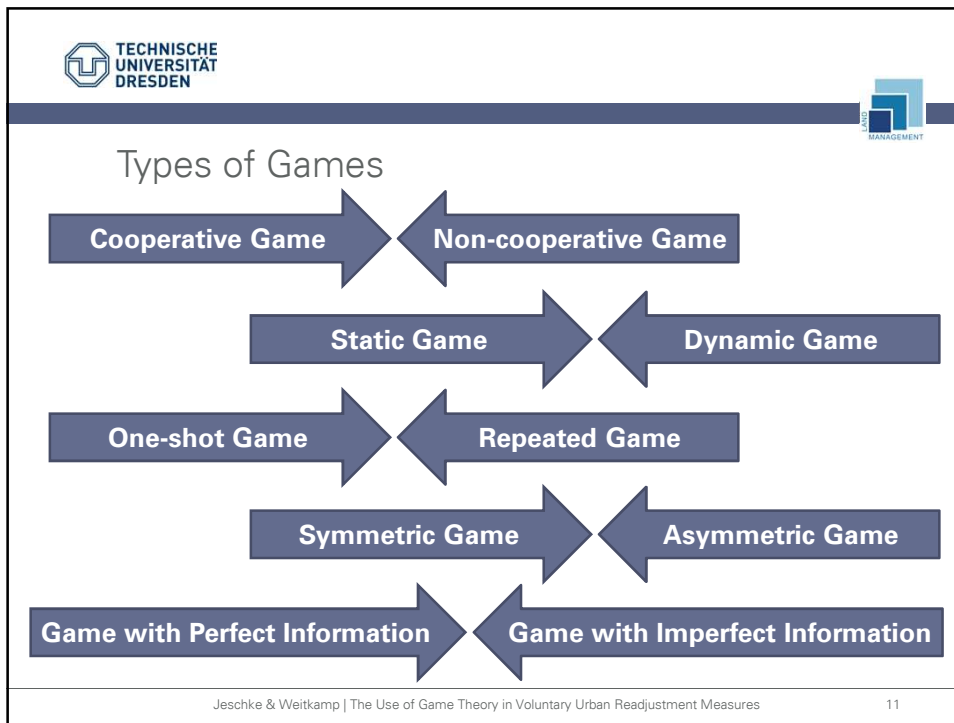
Player 2





Combination of Strategy
 S_i

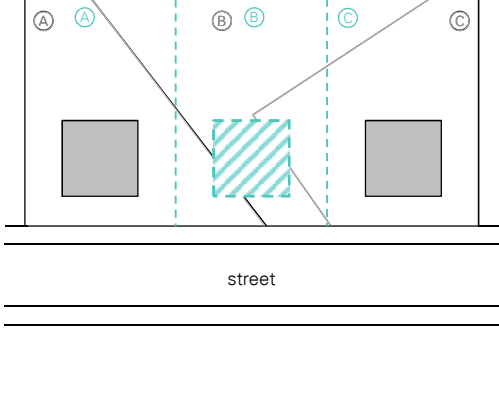
Strategic Space
 S

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Voluntary Urban Readjustment Measures



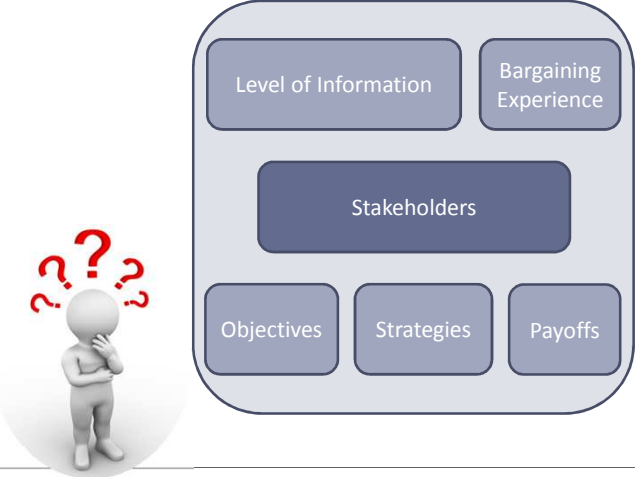
street

— old stock
- - - new stock



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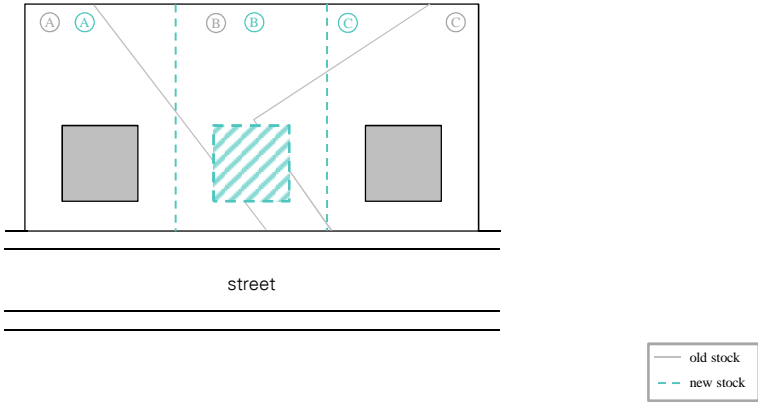
Game Theoretical Modelling



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Voluntary Urban Readjustment Measures



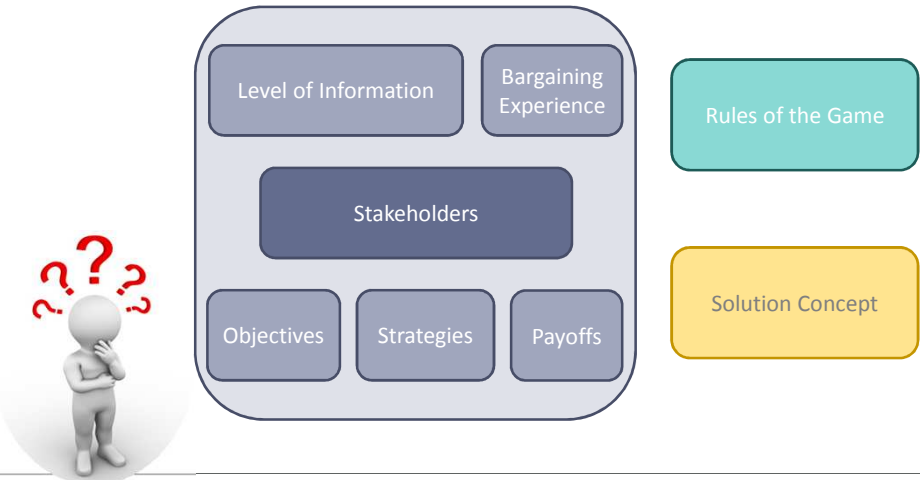
street

— old stock
- - new stock

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Game Theoretical Modelling



Level of Information Bargaining Experience Rules of the Game
Stakeholders
Objectives Strategies Payoffs Solution Concept

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Conclusion and Further Works


Idea of Research

- Game theory = instrument for modelling decision-making processes with several stakeholders
- Attempt to transmit game theory in land management

Application Fields in Land Management

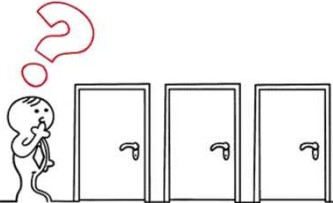
- Solutions for existing decision-making processes with given rules
- Opportunity to model different games, when the rules are unknown
- Derivation of recommendations for similar decision-making processes
- Nomination of adjustments for decision-making processes

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MANAGEMENT

Types of Games

The diagram illustrates the classification of games into three pairs of categories. Each pair is represented by two blue arrows pointing towards each other, with the category name inside the arrow. The top pair consists of 'Cooperative Game' and 'Non-cooperative Game'. The middle pair consists of 'Static Game' and 'Dynamic Game'. The bottom pair consists of 'One-shot Game' and 'Repeated Game'.

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MANAGEMENT

Types of Games

This diagram is identical to the one on slide 19, showing the classification of games into three pairs of categories: Cooperative vs Non-cooperative, Static vs Dynamic, and One-shot vs Repeated.

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