



Collaborative Systems:

a systems theoretical approach to inter-organizational relationships

Donald Neumann, M.Sc.
12.08.2011

Agenda

1. Actual Perspectives on Collaboration
2. Social Systems at a Glance
3. The Collaborative System
4. Implications



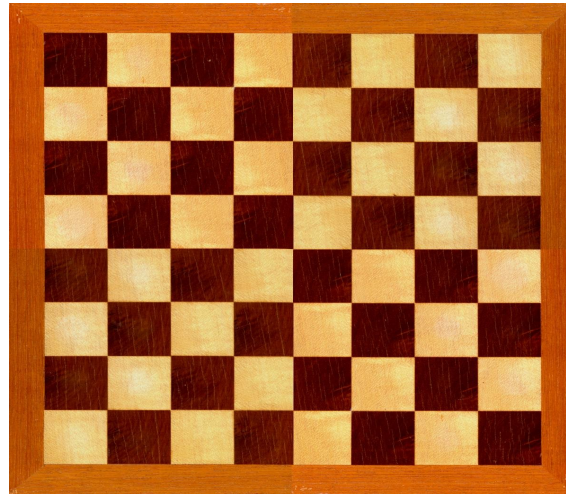
Actual Perspectives on Interorganizational Collaboration

Perspective	Mechanism	Results (Mainly Economic)
Social Network Analysis	Characteristic of ties, position in network	Social Capital
New Institutional Economics	Mixed governance form/contracts	Lower Transaction Costs
Game Theory / Principal Agent	Utility maximizing behavior	Optimal Strategy/Contract
Resource Based View of the Firm	Access to resources	VRIN Resources
Supply Chain Management	Transparent and coordinated processes	Stable and optimized flow of materials

- Why are failure rates still so high? (50-70%)
- Are these perspectives equally valid for other organizations than firms?
- How exactly do organizations become coupled?
- How does the relationship identity, the “we”, emerge from “you” and “I”?

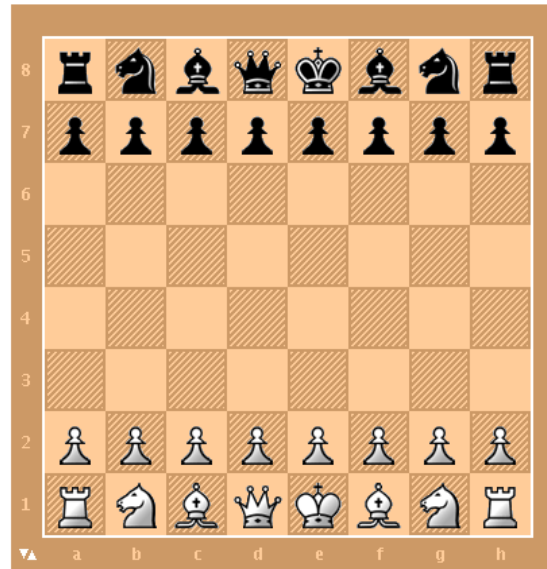
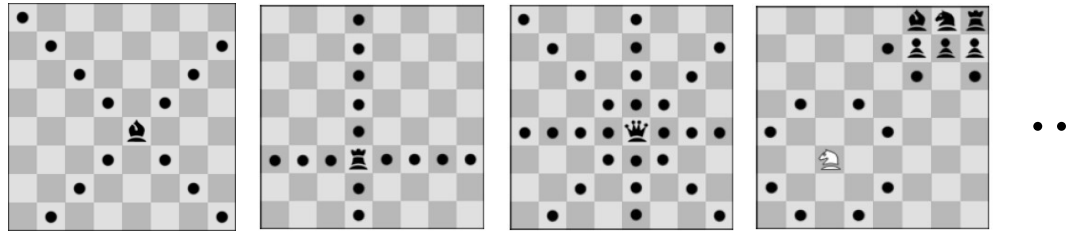
What is a chess game?

Luhmann's Social Systems at a Glance



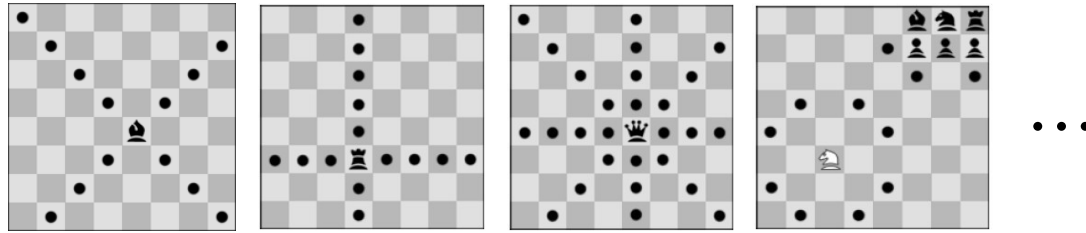
Do we have a chess game?

Luhmann's Social Systems at a Glance



Do we have a chess game now?

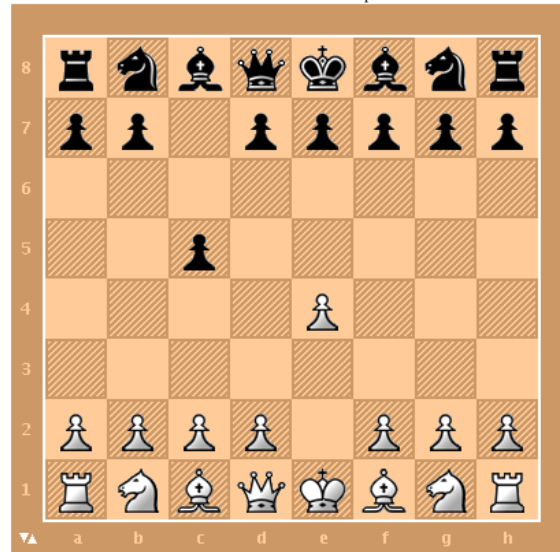
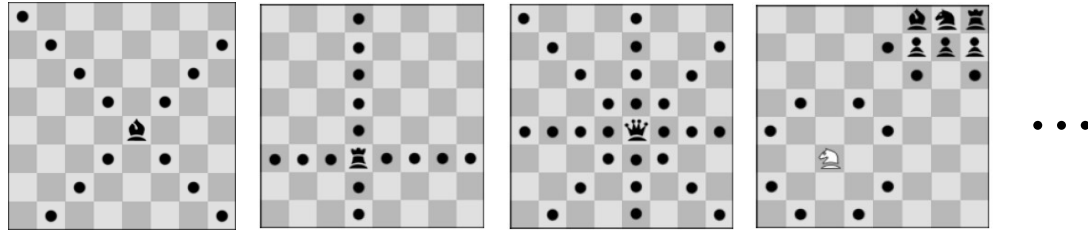
Luhmann's Social Systems at a Glance



1.E4 C5

And now?

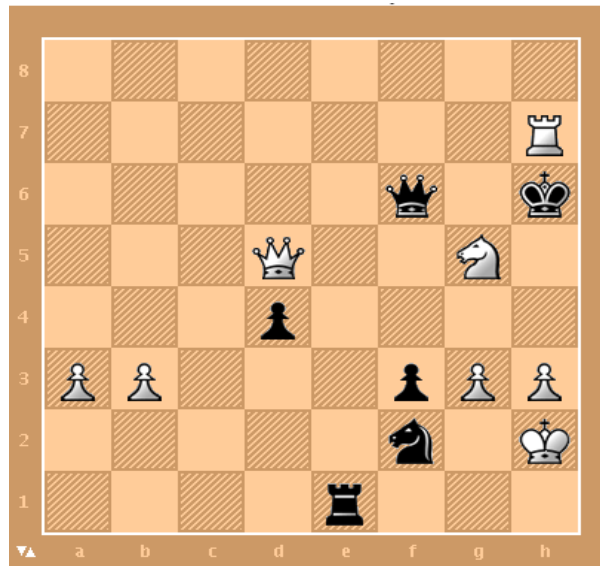
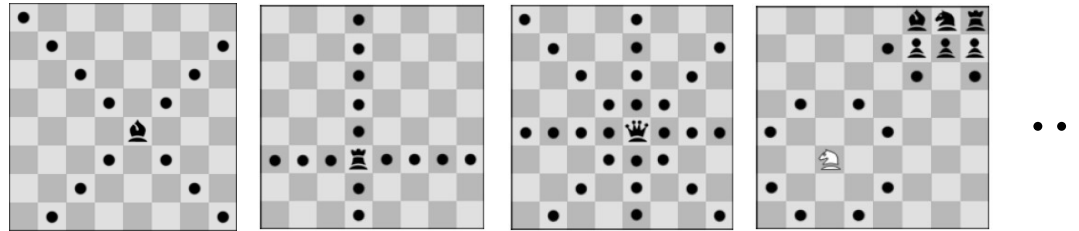
Luhmann's Social Systems at a Glance



1.E4 C5 2.C3 D5

Afterward: “Ah, that was a chess game!”

Luhmann's Social Systems at a Glance

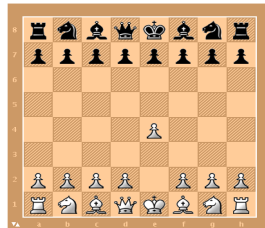


1.E4 C5 2.C3 D5 3.EXD5 QXD5 4.D4 NF6 5.NF3 BG4 6.BE2 E6 7.H3 BH5 8.O-O NC6 9.BE3 CXD4
 10.CXD4 BB4 11.A3 BA5 12.NC3 QD6 13.NB5 QE7 14.NE5 BXE2 15.QXE2 O-O 16.RAC1 RAC8 17.BG5
 BB6 18.BXF6 GXF6 19.NC4 RFD8 20.NXB6 AXB6 21.RFD1 F5 22.QE3 QF6 23.D5 RXD5 24.RXD5 EXD5
 25.B3 KH8 26.QXB6 RG8 27.QC5 D4 28.ND6 F4 29.NXB7 NE5 30.QD5 F3 31.G3 ND3 32.RC7 RE8
 33.ND6 RE1+ 34.KH2 NXF2 35.NXF7+ KG7 36.NG5+ KH6 37.RXH7+ 1-0

Chess and Social Systems

Luhmann's Social Systems at a Glance

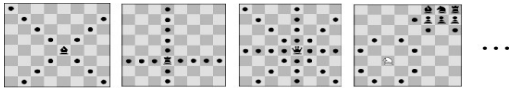
Everything:
Players, Pieces, Board,...



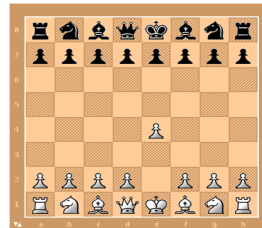
Chess and Social Systems

Luhmann's Social Systems at a Glance

Strategies and Rules:
Expectations about Expectations



Everything:
Players, Pieces, Board,...



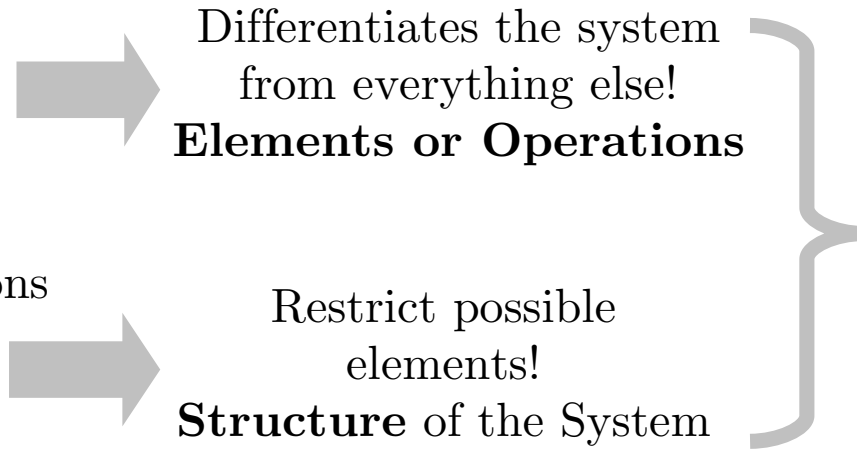
Chess and Social Systems

Luhmann's Social Systems at a Glance

Moves:

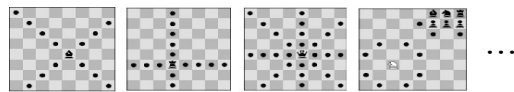
Communication

1.E4 C5 2.C3 D5 3.EXD5 QXD5
4.D4 NF6 5.NF3 BG4



Strategies and Rules:

Expectations about Expectations



Everything:

Players, Pieces, Board,...

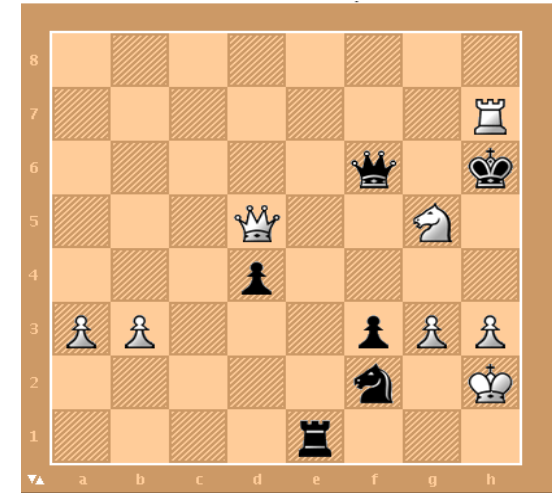


Environment of the System

Important Properties of Social Systems

Luhmann's Social Systems at a Glance

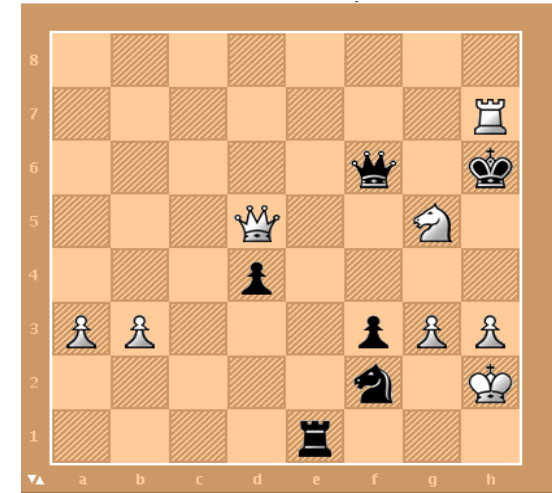
- Different operations, different systems:
 - Changing **moves and rules** changes the game!
- Social systems operationally closed:
 - **Only moves** can change the state of the game!



Important Properties of Social Systems

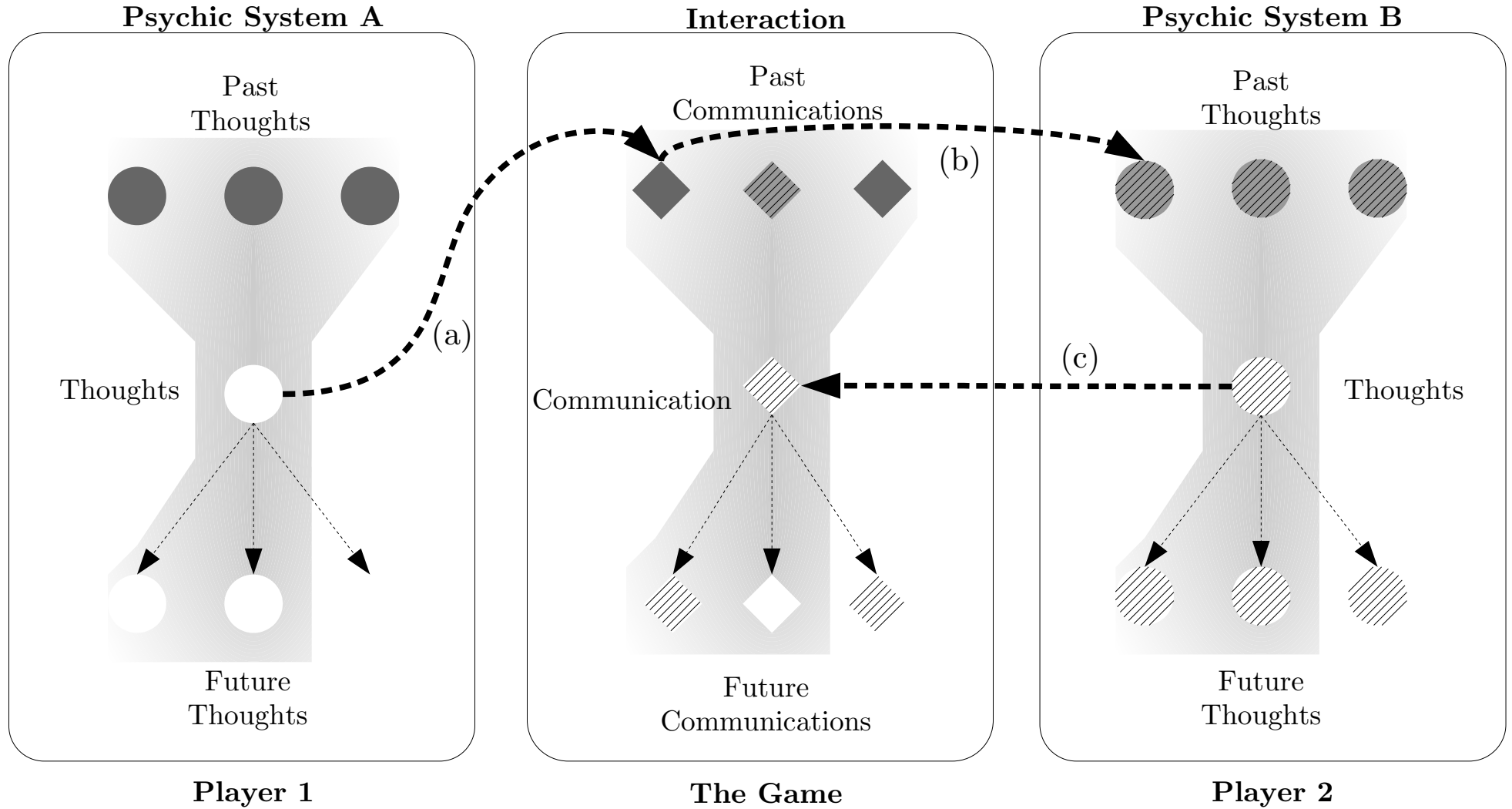
Luhmann's Social Systems at a Glance

- Different operations, different systems:
 - Changing **moves and rules** changes the game!
- Social systems operationally closed:
 - **Only moves** can change the state of the game!
- Social systems couple other systems:
 - Players, their strategies and thoughts (or algorithm) are **coupled** to the game through moves, but they are not part of the game.
- Social systems are not controllable, nor predictable:
 - You cannot control the moves of the game, only **try** to influence the game through your moves, based on your expectations!
- Social systems construct their reality:
 - Each game is different and **depends on history, expectations and evolution**: some are easy, some are difficult, etc.



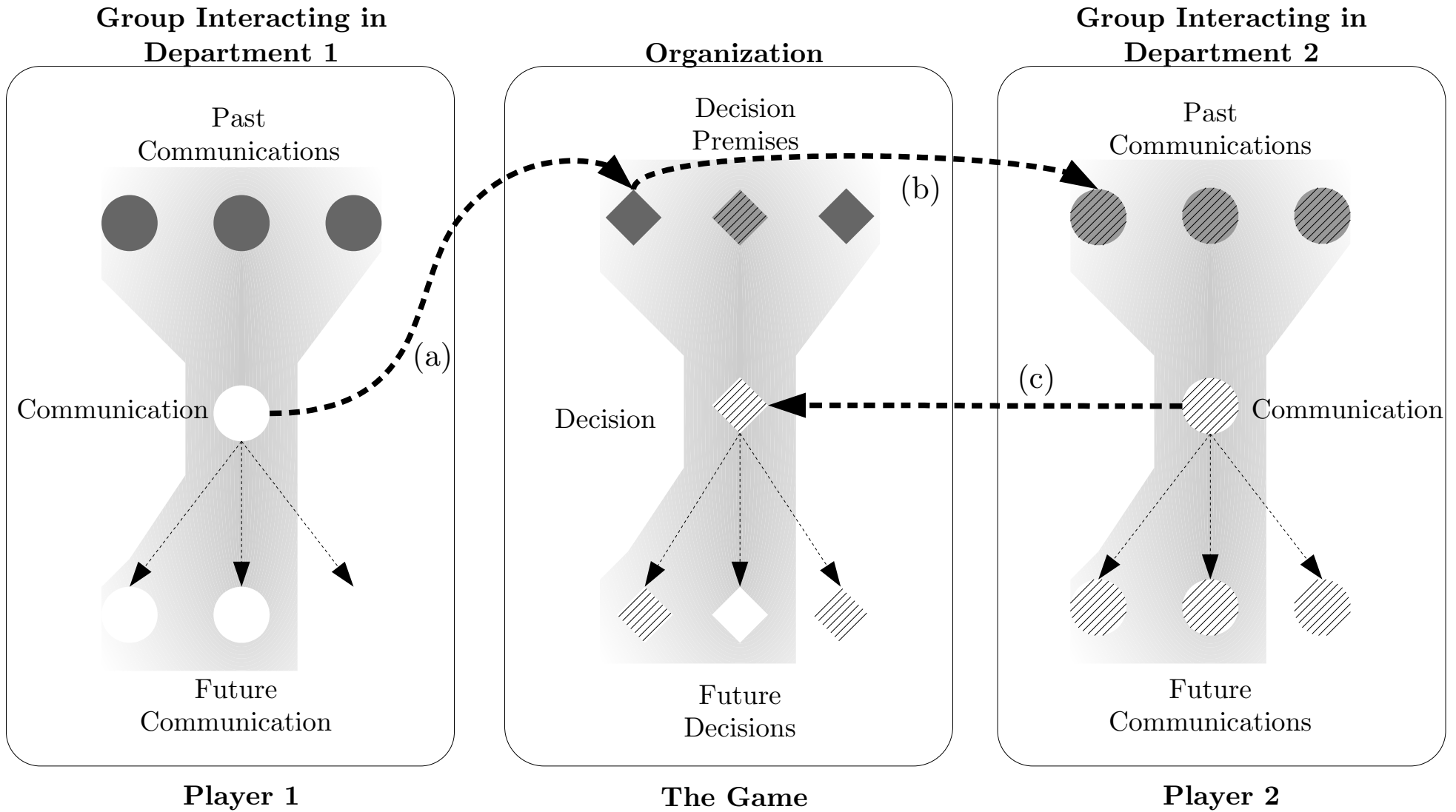
Interactions: social systems based on language.

Examples of Social Systems



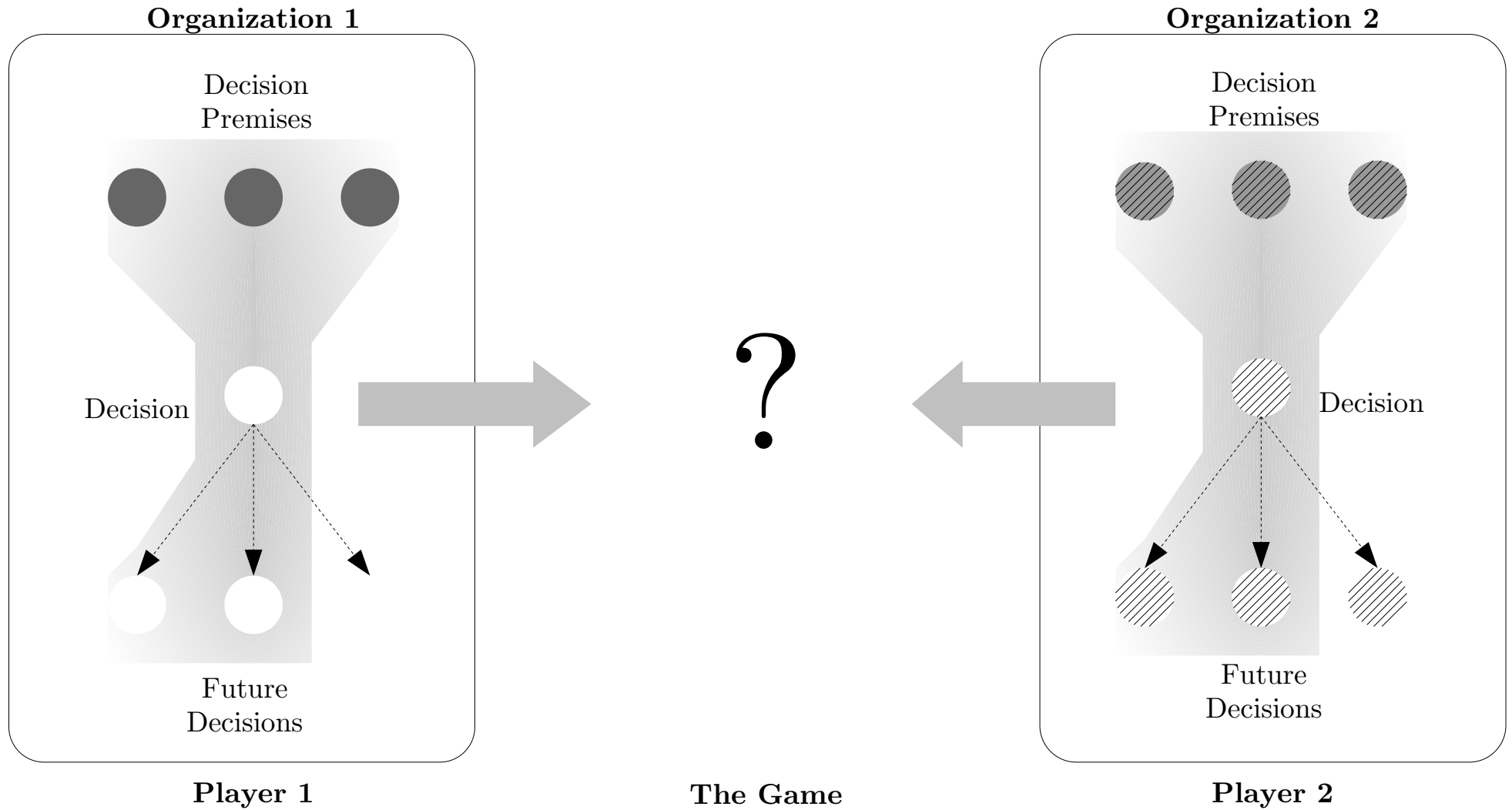
Decisions are the elements of organizations.

Examples of Social Systems



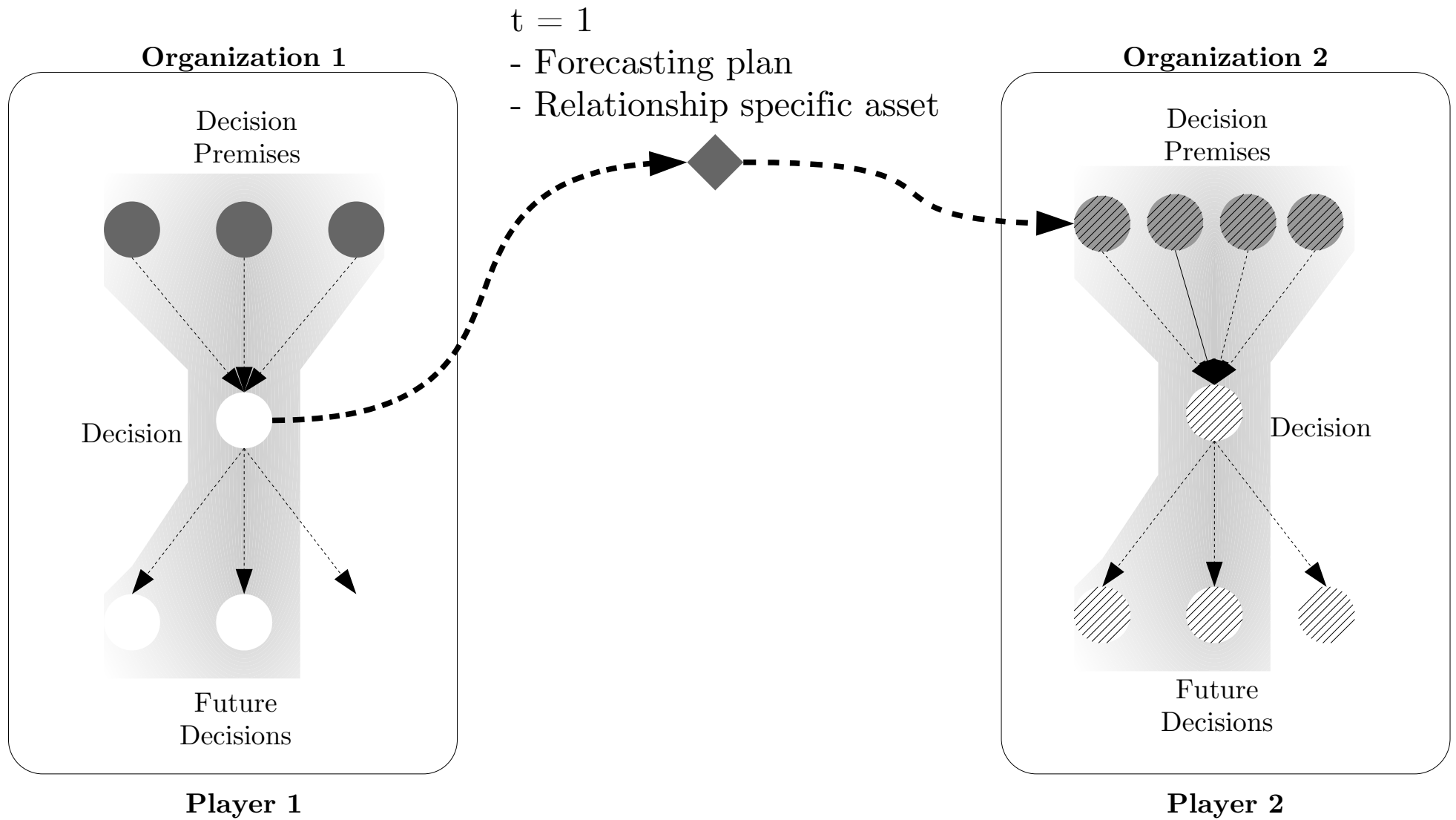
What about relationships among organizations?

The Collaborative System



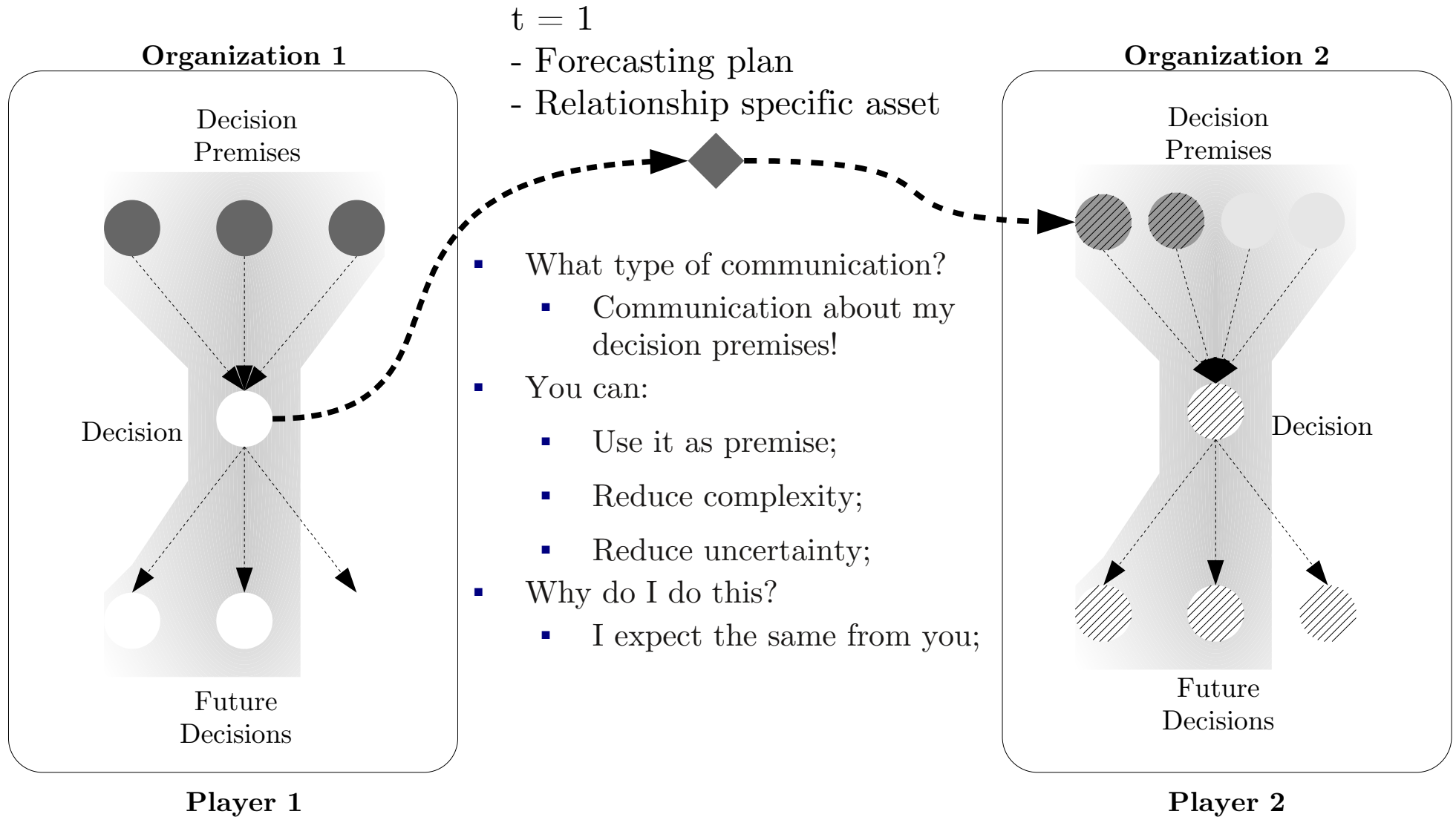
Analyzing collaboration.

The Collaborative System



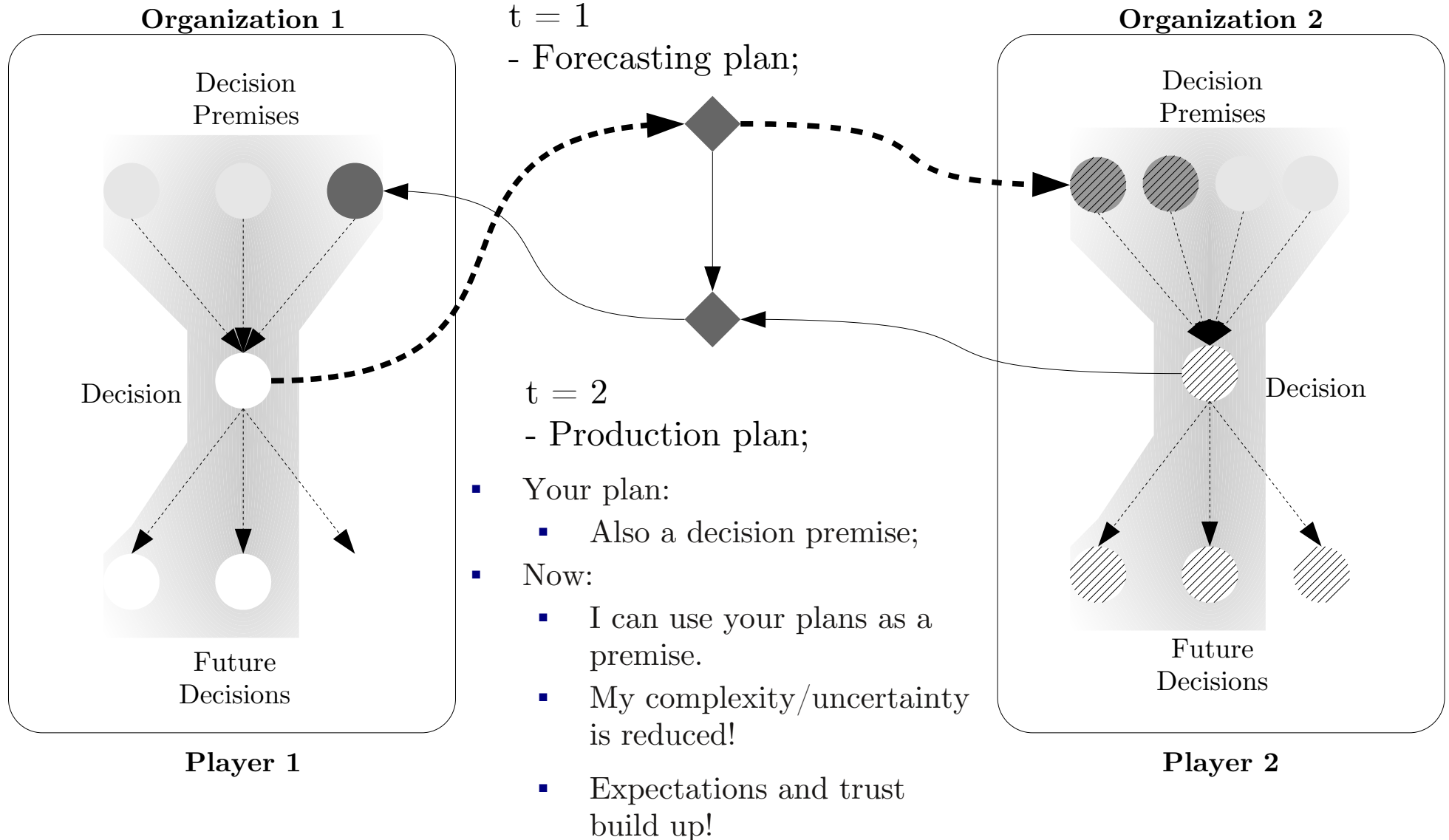
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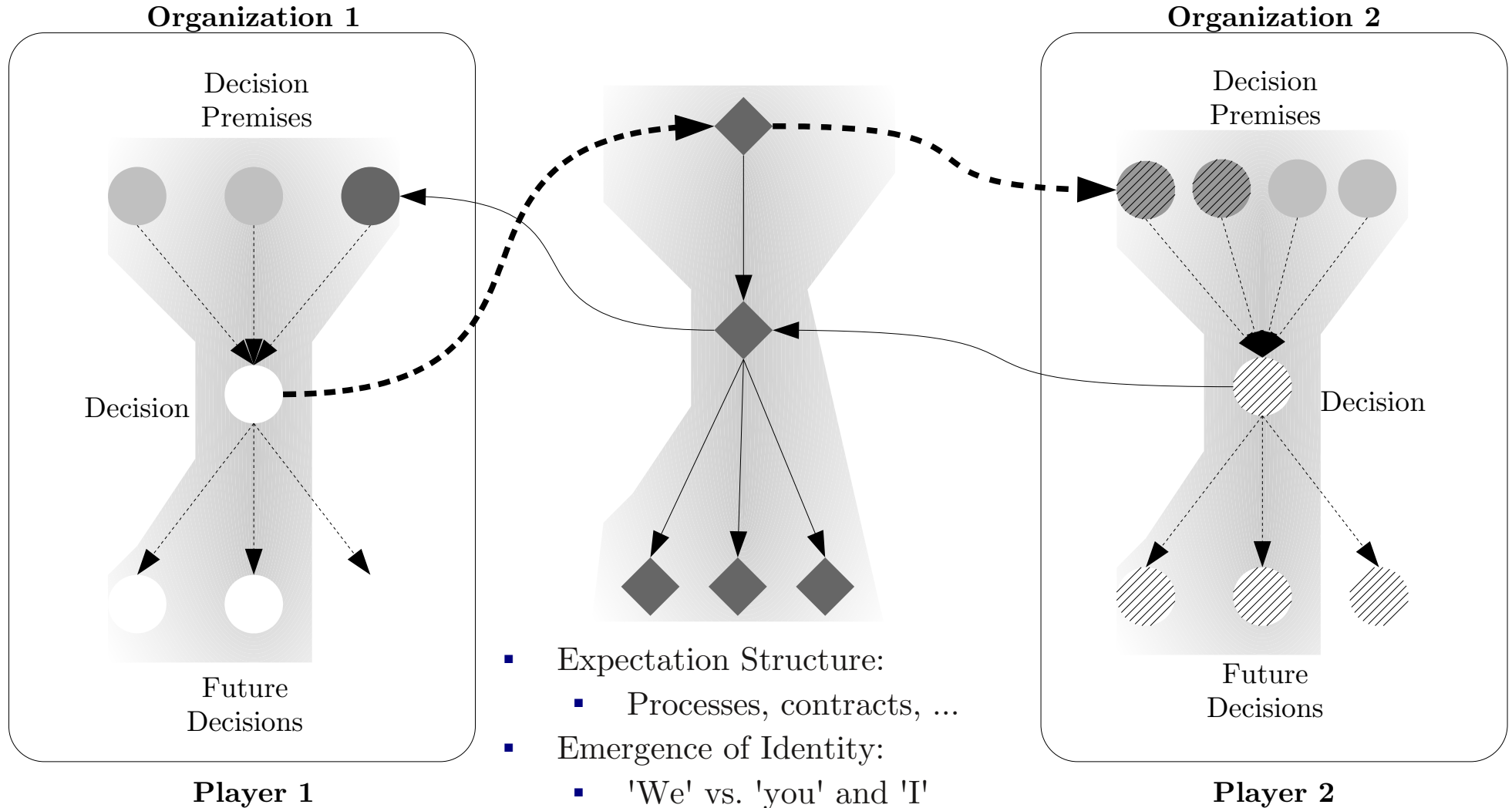
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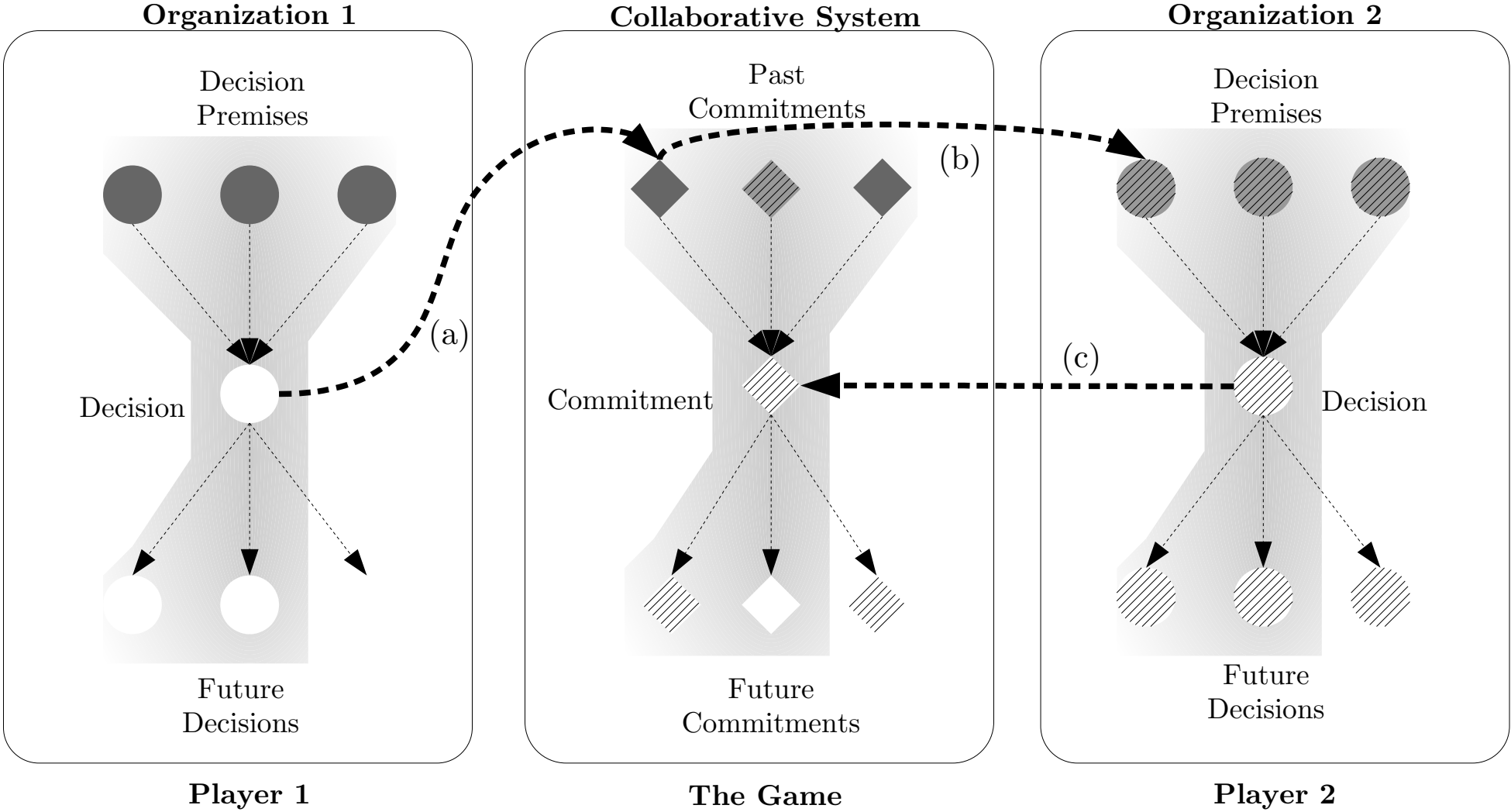
The Collaborative System



- Expectation Structure:
 - Processes, contracts, ...
- Emergence of Identity:
 - 'We' vs. 'you' and 'I'
- Emergence of Trust:
 - In system, not in partner!

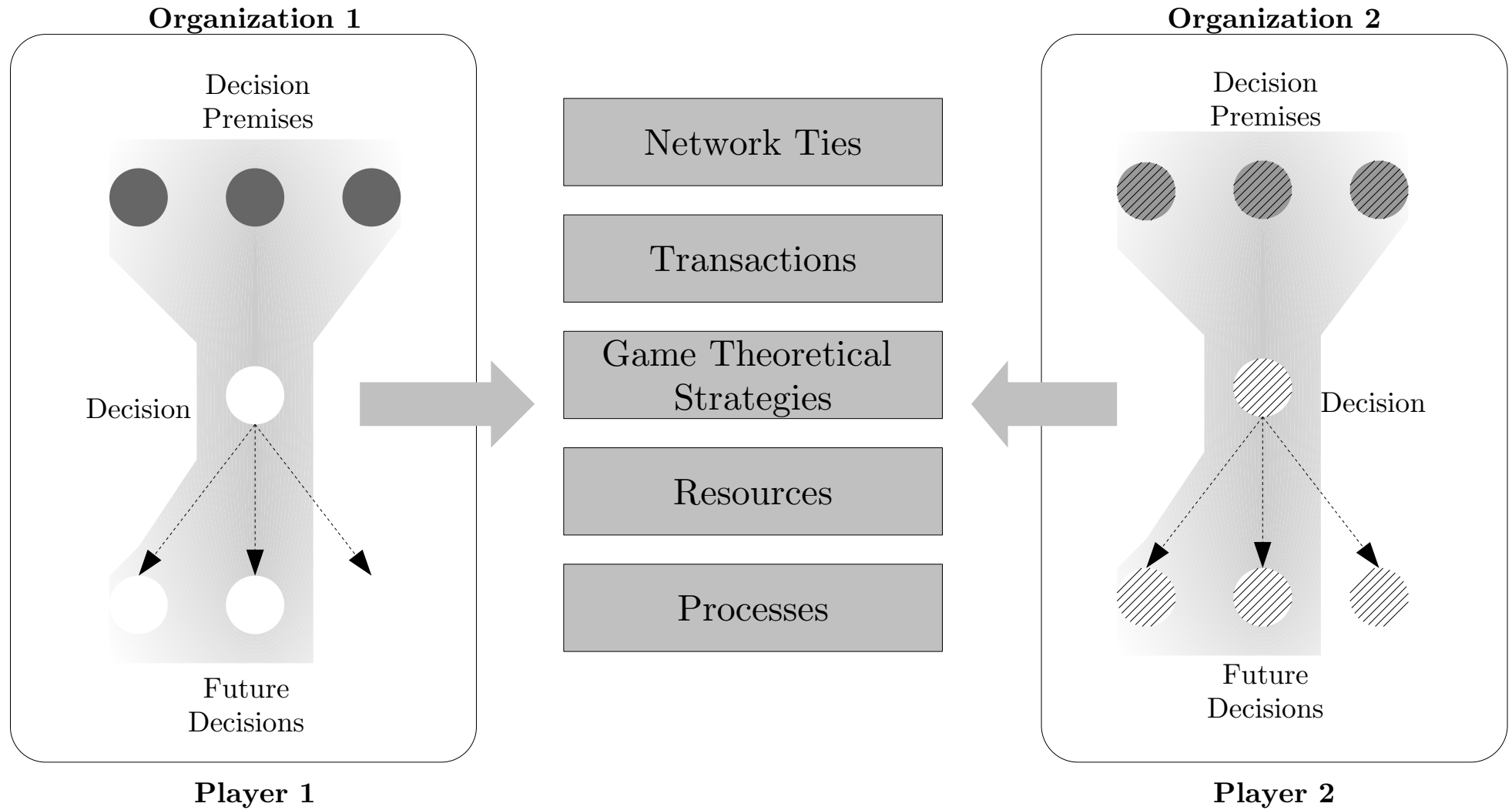
Commitments: communications about premises.

The Collaborative System



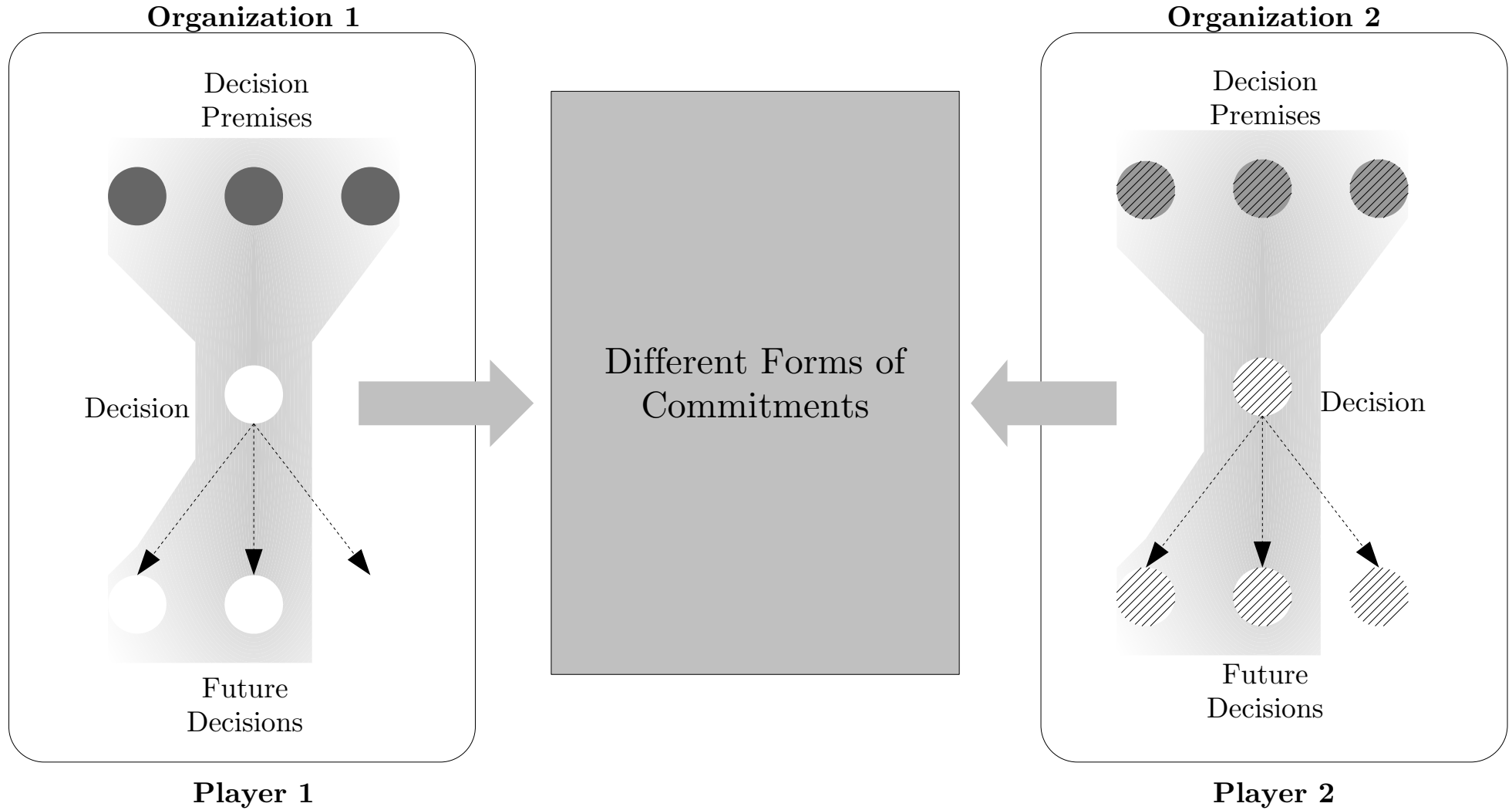
What about other perspectives?

The Collaborative System



What about other perspectives?

The Collaborative System



Theoretical Implications

The Collaborative System

- A theory of collaboration valid for any type of organization:
 - Not restricted to firms (economic system)!



Theoretical Implications

The Collaborative System

- A theory of collaboration valid for any type of organization:
 - Not restricted to firms (economic system)!
- A possible common explanation to:
 - High failure rates:
 - Hypothesis: are we trying to control the uncontrollable?
 - The Relational View:
 - Hypothesis: relationship specific assets, information sharing, are *commitments par excellence!*
 - Transaction Costs Economy:
 - Hypothesis: commitments reduce costs of transactions by reducing the complexity and uncertainty!
 - Why the use of power is detrimental to collaboration:
 - Hypothesis: I require that you commit, although I explicitly communicate that I won't.



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 - Why the use of power is detrimental to collaboration:
 - Hypothesis: I require that you commit, although I explicitly communicate that I won't.
- New Unit of Analysis:
 - Commitments as basic elements of network ties;
 - Commitments as the basic element of supply chain collaboration.

Practical Implications: The Collaborative System

Strictly Speaking:

If you want something, you need to give something first and hope for the best!

- Commitments are the **necessary** mechanism to:
 - Collaborate: alliances, networks, etc.
 - Influence system's state;
 - Create relational value – whatever that means!

Practical Implications: The Collaborative System

Strictly Speaking:

If you want something, you need to give something first and hope for the best!

- Commitments are the **necessary** mechanism to:
 - Collaborate: alliances, networks, etc.
 - Influence system's state;
 - Create relational value – whatever that means!
- But they **are not sufficient** to:
 - Success – whatever that means!
 - Generate value – whatever that means!
 - Improve performance – whatever that means!

Further Reading:

NEUMANN, D.; DE SANTA-EULALIA, L.A.; ZAHN, E. *Towards a Theory of Collaborative Systems*. L.M. Camarinha-Matos et al. (Eds.): PRO-VE 2011, IFIP AICT 362, pp. 306–313, 2011. In Press.

That's all Folks!

Donald Neumann, M.Sc.

Doctoral Candidate

Graduate School of Excellence for Advanced
Manufacturing Engineering, GSaME

University of Stuttgart, Germany

donald.neumann@gsame.uni-stuttgart.de



Back up Slides



What about existing perspectives?

The Collaborative System

Social Network
Analysis

Transaction Cost
Economics

Game Theory
Principal Agent

Resource-Based
Perspective

Supply Chain
Management

Performance



What about existing perspectives?

The Collaborative System

..functioning as decision premises...

Different Forms of
Commitments

...couple organizations...

Restrict the
Alternatives

Create New
Alternatives

Improve Probability
of Some Alternatives

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...allowing...

Reduce
Uncertainty

Reduce
Complexity

...influencing...

Performance

Three Forms of Committing

The Collaborative System

- Communicating that a decision premise will be disclosed:
 - I tell you, I'm going to disclose my production plan;
- Communicating the decision premise itself:
 - A production plan;
- Acting:
 - Investing in a relationship specific asset;

Yes, alright, but where are we in this all this?

Future Work

- We need to better place the theory:
 - Relation to theories of the firm;
 - Relation to economic theories of collaboration.
- We need to detail it better:
 - What are the types of commitments (e.g. contracts, assets, ...)?
- We need to test it empirically:
 - Systems theoretical tools to observe collaborative projects;
 - Observe the flow of commitments and structure/identity building and common measures of success;
- We need to investigate it from the normative perspective:
 - Derive managerial methods to improve collaboration;