

# Information, Organization, and Management

## Unit 2

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Textbook: Wigand/Picot/Reichwald: *Information, Organization and Management*, John Wiley & Sons, 1997

# Unit 2: Overview

- Markets and Corporations
- Coordination and Transaction Costs
- Wallis/North: Empirical Findings
- Transformation and Transaction Services
- Markets as Processes
- Entrepreneurship
- Organization Theory
  - Institutions
  - Game Theory
  - Property Rights Theory
  - Transaction Cost Theory
  - Principal Agent Theory
  - Contract Theory
- Impact of ICT on Market Structures and Organizations

# Markets and Corporations

## Coordination and Transaction Costs

- Scarcity and Choice
- „Raw“ Natural Goods vs. consumption
- Transformation: Raw materials -> Goods
- Requires coordination
- Approaches for the Reduction of Scarcity
  - Division of Labor
  - Specialization Gains
  - Production Detours
- All of them require exchange and coordination  
cf. Wigand/Picot/Reichwald (1997)

# Scarcity and Choice

- Humans have unlimited wants
- Resources are limited
- Resources must be allocated
- Examples
  - Microeconomic Perspective: Household Budget
  - Macroeconomic Perspective: Usage of Land, Labor, and Capital

# Division of Labor and Specialization

- Mutually dependent
- Division of Labor
  - Breakdown of complex transformation processes into individual tasks and assigning dedicated workforce for single tasks or small sets of tasks
- Specialization
  - One individual is involved in only a very small task of the overall transformation
- Motivation:
  - Cognitive and temporal limitations of humans
  - Productivity gains: Specific knowledge, processes, skills

cf. Wigand/Picot/Reichwald (1997)

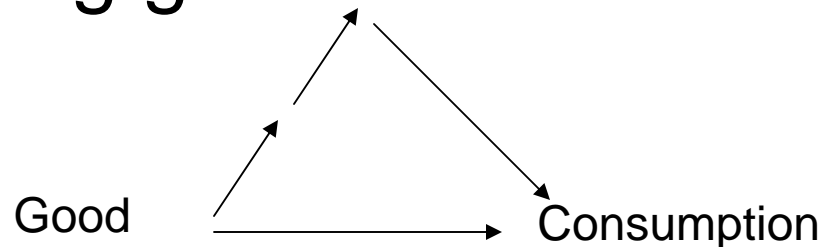
# Division of Labor and Specialization

- Specialization observable on various levels
  - By unit
    - Personal
    - intrafirm
    - interfirm
  - Geographically
    - sectoral
    - regional
    - national
    - international

cf. Wigand/Picot/Reichwald (1997)

# Production Detours (Menger)

- Classifies goods according to their proximity to consumption
- Production Detour: Sacrificing immediate consumption for the sake of future productivity increase
- Example: Using grain as seed instead of food



cf. Wigand/Picot/Reichwald (1997)

# Coordination

- Division of labor increases the problem of coordination:
  - who shall produce what in which quantity by when using which resources (...) ?
- Coordination does not happen automatically, but is a task in its own right
  - Exchanges must be initiated, negotiated, observed
  - also consumes resources
  - „Management“
- Ignored in neo-classical models
  - Determining prices etc. free of cost

cf. Wigand/Picot/Reichwald (1997)

# Distribution of Experience, Knowledge, and Abilities

- Actors have different resources and skills
  - Ability to process information is limited
- 
- Asymmetric distribution of information
  - Also, search and evaluation of information consumes resources
  - Example: Capabilities and intentions of potential partners
- cf. Wigand/Picot/Reichwald (1997)

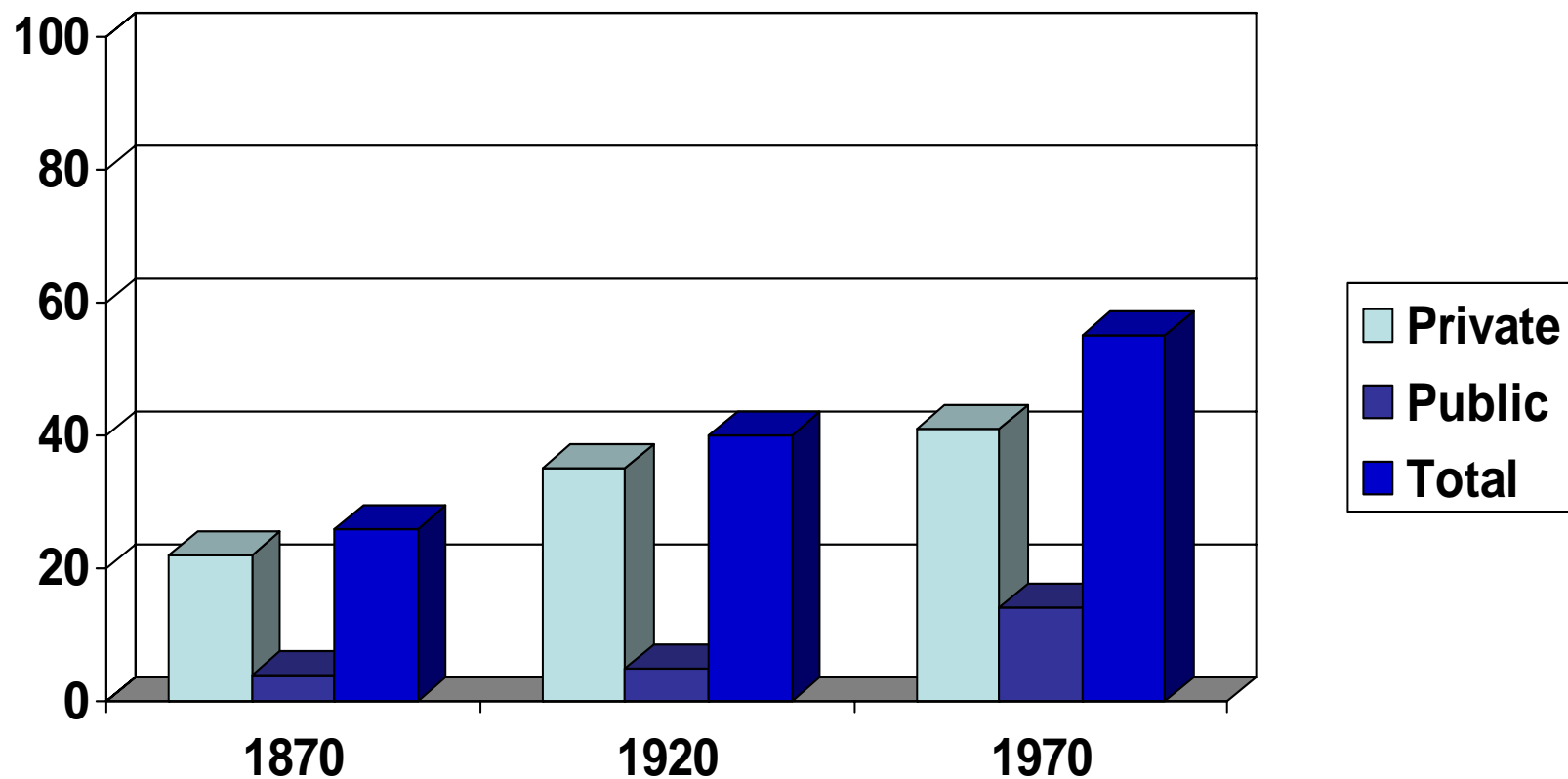
# Coordination of Economic Activity

- Coase (1937), Williamson (1975), Picot (1982)
- Transaction costs: „production costs of coordination“
  - using the market
  - internal
- Resources spent on
  - initiation
  - negotiation
  - completion
  - control
  - supervision

cf. Wigand/Picot/Reichwald (1997)

# Wallis/North: Empirical Findings

## Percentage of Transaction Costs on GNP



simplified from Wallis/North (1986);  
cf. Wigand/Picot/Reichwald (1997)

# Trade-off: Specialization Gains vs. Cost of Coordination

- Further increase in specialization is limited by level of transaction costs (cost of coordination)
- Thus, technology and methodologies for reducing transaction costs are of utmost importance for future economic development.

cf. Wigand/Picot/Reichwald (1997)

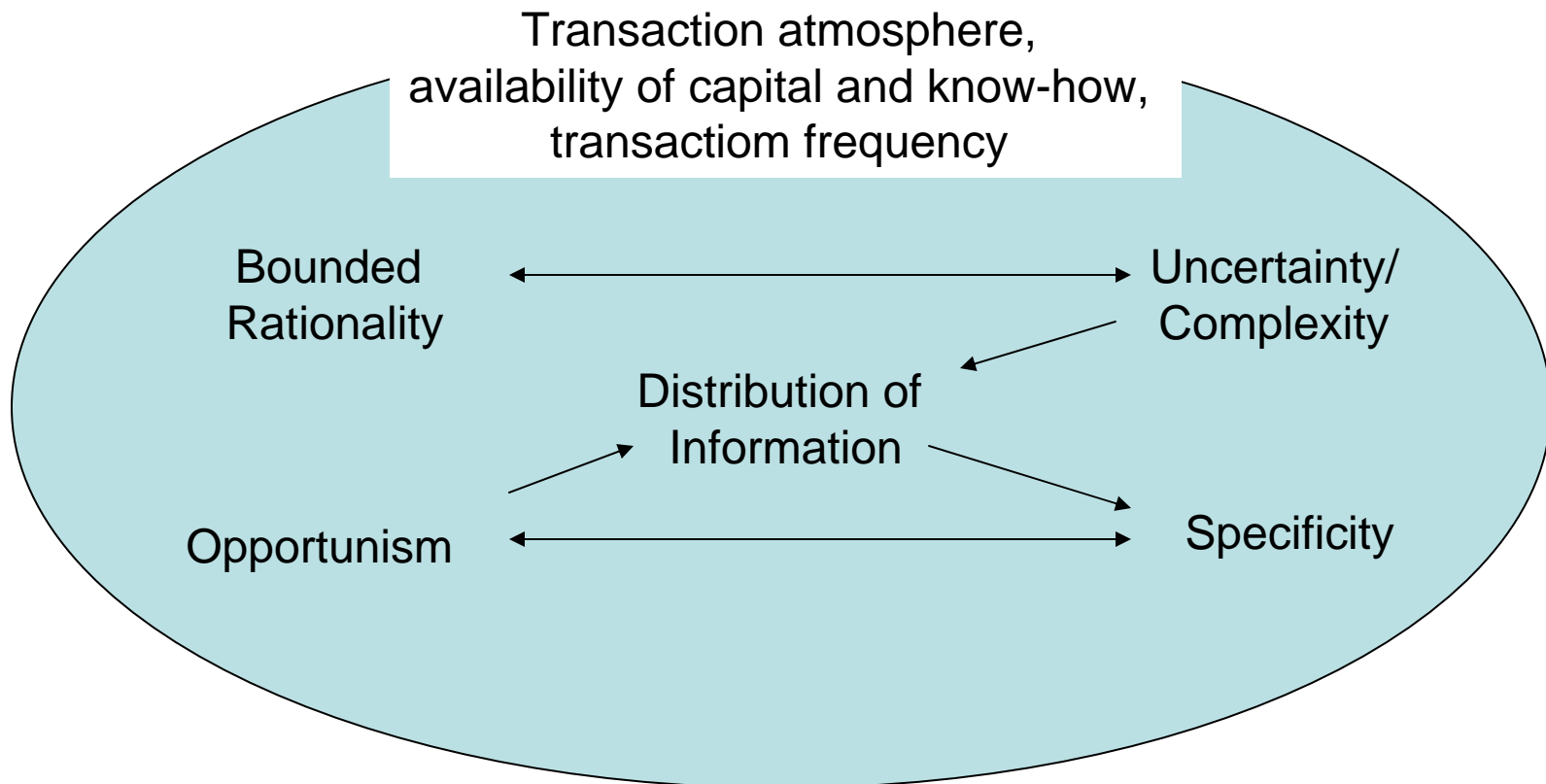
# ICT promises to reduce Transaction Costs

- Froogle vs. printed yellow pages
- Communication by e-mail, IRC, Skype vs. TTY
- ERP Systems
- eBay vs. Flea Market
- etc.

# Factors Influencing Transaction Costs

Behavioral Assumptions

Environmental Factors



cf. Wigand/Picot/Reichwald (1997)

# Transformation and Transaction Services

- Transformation Services: Actual transformations
- Transaction Services
  - By industry: financial, insurance, wholesale, retails
  - By task within non-transaction industries

cf. Wigand/Picot/Reichwald (1997)

## Impact of a Higher Market Dynamics on the Forms of Coordination

- Modification and adaptation of institutional arrangements consumes resources
  - Business Process Reengineering
  - Staffing
  - Updating of contracts
  - Any adaptation of capacities
- The higher the dynamics, the higher the likelihood of adaptation and associated costs.

cf. Wigand/Picot/Reichwald (1997)

# Markets as Processes

- Markets: Economic locations where supply and demand meet
- Neo-classical:
  - goods on one market are perfect substitutes -  
>homogenous/perfect market
  - all information is reflected by the price
  - all actors have all information
- Criticism: about half of all economic activity is about exchanging and processing information

cf. Wigand/Picot/Reichwald (1997)

# Market Process Theory

- Paradigm: Asymmetric Distribution of Information
- Austrian School: Menger, von Mises, Schumpeter, von Hayek et al.
- Hayek: „The Use of Knowledge in Society“ (1945)

cf. Wigand/Picot/Reichwald (1997)

# Hayek: „The Use of Knowledge in Society“ (1945)

- Price as a mechanism to convey information
- Empowers actors to make good decisions with relatively little information
- Example: Rise in price for oil

cf. Wigand/Picot/Reichwald (1997)

# Entrepreneurship

- Entrepreneurs: have „informational lead“
- Three functions of entrepreneurship
  - Innovation
    - Exploits „informational lead“
    - Only until other businesses imitate
  - Coordination
  - Arbitrage

cf. Wigand/Picot/Reichwald (1997)

# Knight's Profit Theory

- Differences in risk preferences between individual
- Employment is an insurance surrogate
- Employer guarantees employment for a given duration, takes over risk of being able to sell results, gets profit for that

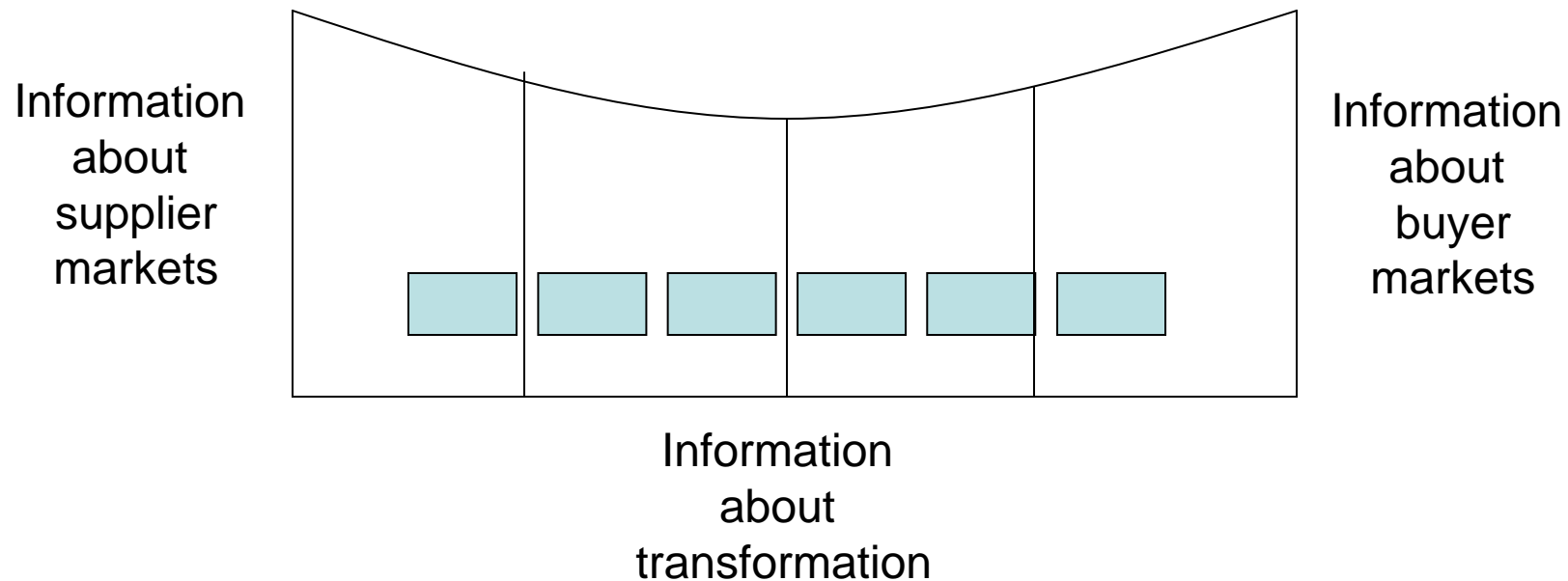
cf. Wigand/Picot/Reichwald (1997)

# Arbitrage

- Exploiting differences in prices for goods on different markets
  - Based on „informational lead“
  - Important role
    - by exploiting the opportunity, arbitrator destroys the opportunity
    - makes markets more efficient and integrates fragmented markets
  - Bridging discrepancies in time, location, and quantity
- cf. Wigand/Picot/Reichwald (1997)

# Creative Bridges Between Information Spheres

Entrepreneurial Idea =



cf. Wigand/Picot/Reichwald (1997)

# Organization Theory

- Institutions: „Socially sanctionable expectations, related to actions and behavior of one or more individuals“
- Stabilize expectations and facilitate the coordination of production
- Self-maintaining vs. such requiring supervision

cf. Wigand/Picot/Reichwald (1997)

# Game Theory: Prisoner's Dilemma

		Thief 1	
		Confesses	Does not confess
Thief 2	Confesses	8, 8	1, 10
	Does not confess	10, 1	2, 2

cf. Wigand/Picot/Reichwald (1997)

**Lack of Institutional Arrangement -> suboptimal choices**

# Property Rights Theory

## Foundations:

- Assumption: Individual maximization of utility
- Existence of Property Rights
- Existence of Transaction Costs
- Appearance of External Effects

cf. Wigand/Picot/Reichwald (1997)

# Property Rights

- Rights to
  - use a good (usus)
  - change the form and substance (abusus)
  - keep the profits and carry the losses resulting from a good (usus fructus)
  - sell the good (right of liquidation)

cf. Wigand/Picot/Reichwald (1997)

# Property Rights Theory: External Effects

- not all property rights are held by one individual
- not the full effect of economic consequences of usage of a resource on one actor
  - Example
    - I drive my car through the Inn valley and create pollution
    - A spark from a steam-engine train ignites and destroys a forest

cf. Wigand/Picot/Reichwald (1997)

# Property Rights: Efficient Setting

- Such distribution of property rights that minimizes the sum of transaction costs and the loss caused by external effects.
- Example: CO2 certificates
- Also for the internal structure of a corporation!
  - Modularization
  - HR / Incentives

cf. Wigand/Picot/Reichwald (1997)

# Transaction Cost Theory

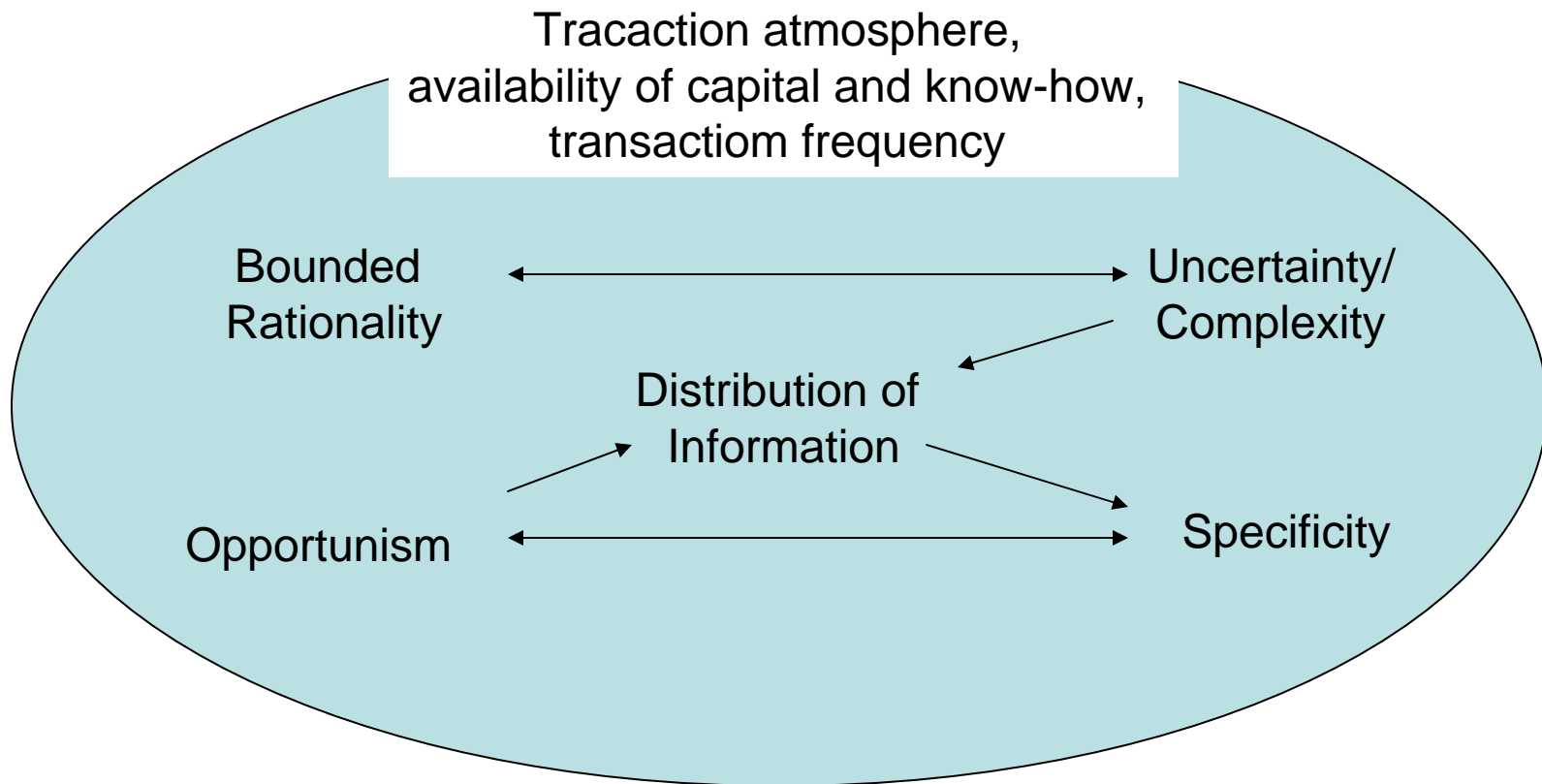
- Taking into account the resources spent on coordination (i.e. the transfer of property rights)
- Explains the existence of firms

cf. Wigand/Picot/Reichwald (1997)

# Factors Influencing Transaction Costs

Behavioral Assumptions

Environmental Factors



cf. Wigand/Picot/Reichwald (1997)

# Specificity

- Value reduction of a good when used not for the originally intended purpose but the second best alternative.
- Sources
  - Location
  - Time
  - Logistics

cf. Wigand/Picot/Reichwald (1997)

# Opportunism

- Strategic behavior of increasing one's own utility eventually at the expenses of others and under disobedience of social norms.

cf. Wigand/Picot/Reichwald (1997)

# Uncertainty

- Likelihood of unexpected task modifications

cf. Wigand/Picot/Reichwald (1997)

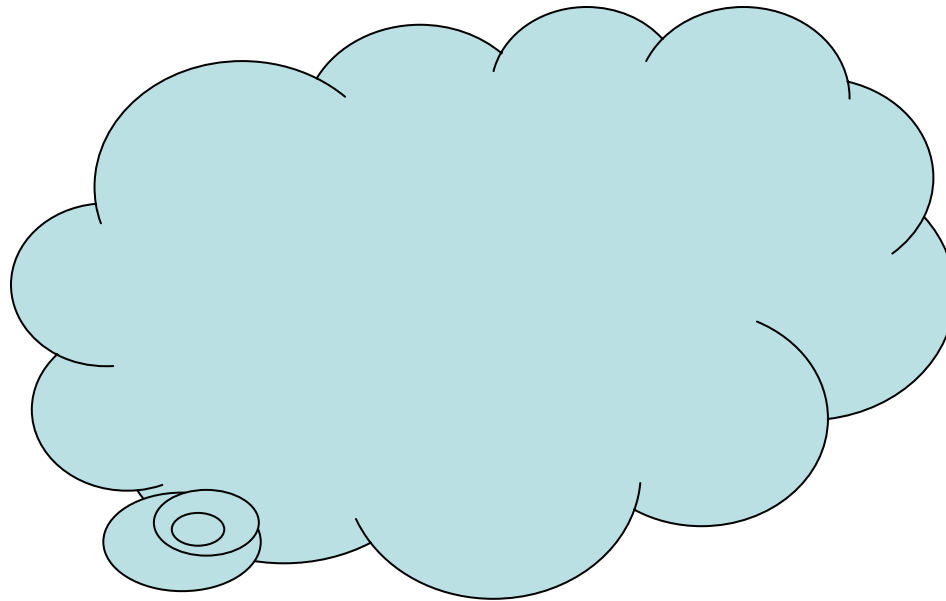
# Availability of Knowledge and Capital

- Ability to produce a good internally is subject to the availability of knowledge and capital

cf. Wigand/Picot/Reichwald (1997)

# Market and Hierarchy: A Continuum in between

Hierarchy

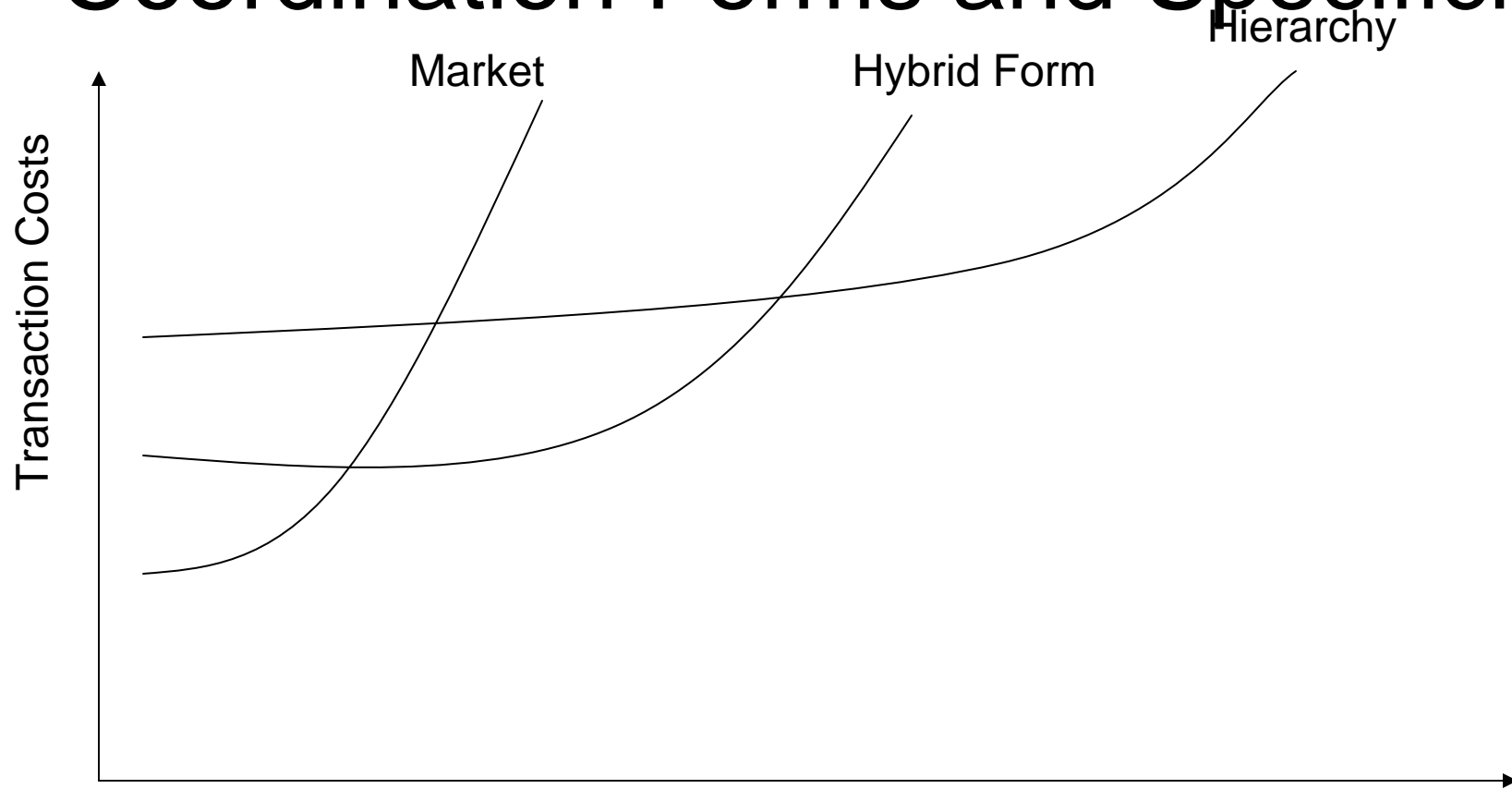


Only Individuals  
Acting on Markets

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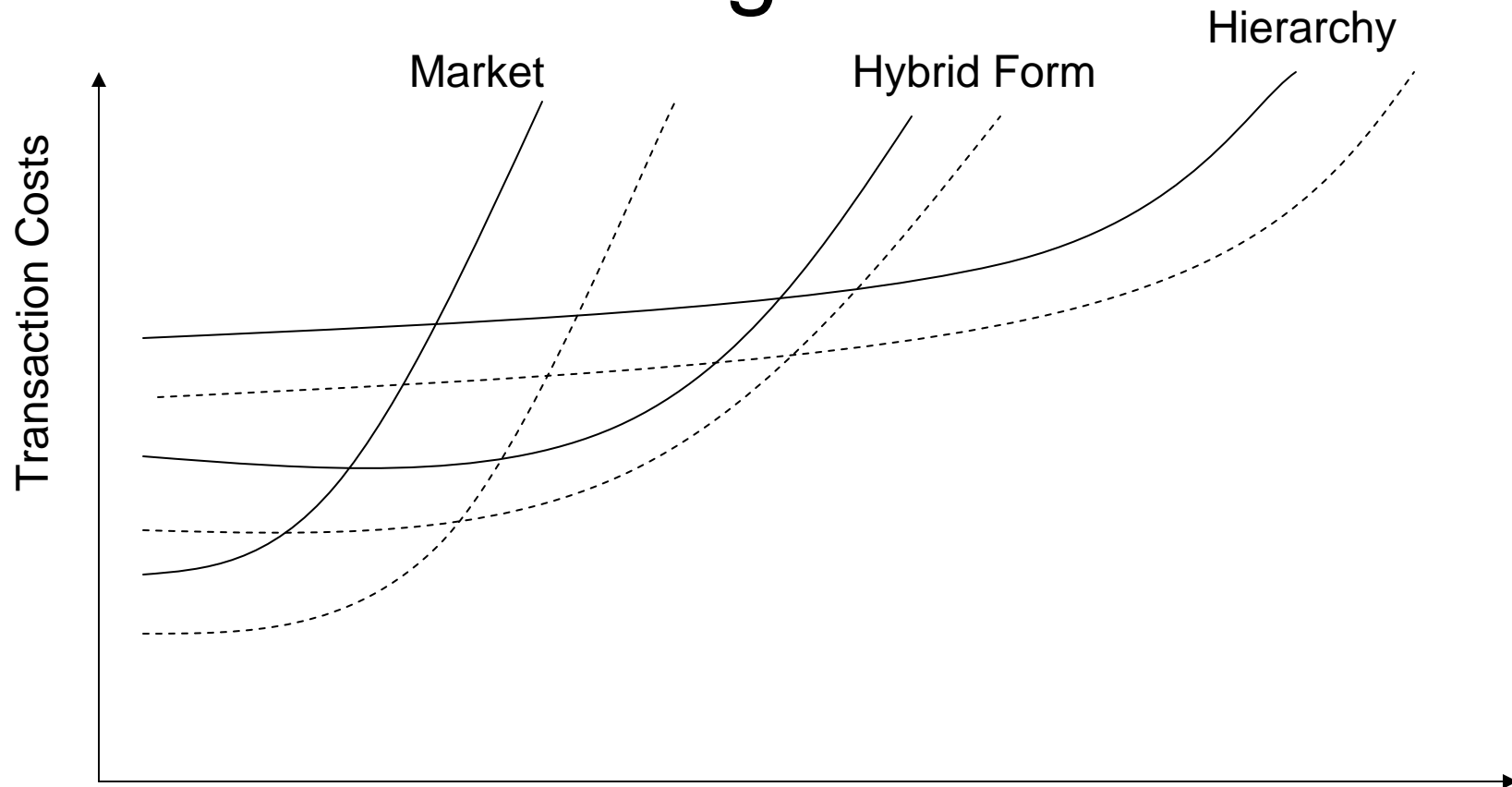
cf. Wigand/Picot/Reichwald (1997)

# Coordination Forms and Specificity



cf. Wigand/Picot/Reichwald (1997)

# Impact of ICT on Market Structures and Organizations



cf. Wigand/Picot/Reichwald (1997)

# Principal Agent Theory

- Division of labor -> asymmetric distribution of information -> space for opportunistic behavior
- Examples of Principal/Agent relations

cf. Wigand/Picot/Reichwald (1997)

# Principal Agent Theory: Problems

- Hidden characteristics
- Hidden Action
- Moral Hazard
- Hidden Intention

cf. Wigand/Picot/Reichwald (1997)

# Principal Agent Theory: Solutions

- Signaling
- Screening
- Self-Selection

cf. Wigand/Picot/Reichwald (1997)

# Contract Theory

- Classical contract:
  - commodities
  - short-term
  - change of partners easy, no dependencies
- neo-classical
  - as above, but spans some time
  - spec already an approximation
  - explicit mediation rules
- relational
  - contract is only an approximation

cf. Wigand/Picot/Reichwald (1997)

# Review Question 1

- Explain the basic assumption of the principal/agent theory. Name four typical failures and give an example of a principal/agent problem.

## Review Question 2

- Use the findings from Wallis/North (1986) to explain why a microeconomic theory that assumes complete information in markets is deficient.

# Review Question 3

- Explain how division of labor and specialization are interrelated.

# Review Question 4

- Why is the reduction of transaction cost a necessity if we want to reach additional specialization gains?

# Additional Reading

- Wikipedia: *Principal-Agent Problem*  
[http://en.wikipedia.org/wiki/Principal-agent\\_problem](http://en.wikipedia.org/wiki/Principal-agent_problem)
- Wikipedia: *Economic Calculation Problem*  
[http://en.wikipedia.org/wiki/Economic\\_calculation\\_problem](http://en.wikipedia.org/wiki/Economic_calculation_problem)
- Wikipedia: *Ideas and Life of Friedrich Hayek*  
[http://en.wikipedia.org/wiki/Friedrich\\_Hayek](http://en.wikipedia.org/wiki/Friedrich_Hayek)
- Wikipedia: *Transaction Cost Theory*  
[http://en.wikipedia.org/wiki/Transaction\\_cost](http://en.wikipedia.org/wiki/Transaction_cost)
- Wikipedia: *Game Theory*  
[http://en.wikipedia.org/wiki/Game\\_theory](http://en.wikipedia.org/wiki/Game_theory)
- Wikipedia: *Prisoner's Dilemma*  
[http://en.wikipedia.org/wiki/Prisoner's\\_dilemma](http://en.wikipedia.org/wiki/Prisoner's_dilemma)

# Reading Assignment for Next Unit

- Read chapter 3: „Fundamental Information and Communication Models“, pp. 57-95, in:  
Rolf Wigand, Arnold Picot, Ralf Reichwald:  
*Information, Organization and Management*, John Wiley & Sons, 1997

# Thank you!

The slides of today's class will be available  
at <http://www.heppnetz.de/teaching/img/>  
shortly.