To Main Proceedings Document

Readability of Glass-Box Models as Part of Learning Environments in Vocational and Economics Education*

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Background of the experimental activities:

Research Program on Teaching and Learning within the German *Dual Vocational Training System* for Qualified Office Clerks

Project* on modeling and simulation of complex business processes within vocational / economics curricula, especially the one for qualified industrial office clerks (1997 - 1999)

*** Grant: DFG Br 1045/5-1**

domain specific approach & results

What's experimental ? Aspect 1

Concept of *complexity*

as feature of objectives within

teaching and learning:

Concept of Complexity within Training Curricula

An example from the training curriculum for qualified industrial office clerks :

Students shall ...

- **...**
- **develop the ability of thinking within complex economic environments;**
- **become able to understand complex business tasks and problems, and learn to develop appropriate solutions;**
- **...**

Concept of Complexity ...

Basic dimensions of complex domains

Dynamics

- **exponential growth**
- **delays, time lags**
- **feedback loops**

training curricula

Multi-plicity

Number of Variables

What's experimental ? Aspect 2

Application of SD-based simulation and modeling acitivities within vocational / economics classes targeting at teaching and learning of complex business issues.

Domain specific use of the cognitive tool *modeling software* sensu Salomon and Jonnason.

Overall approach to teaching:

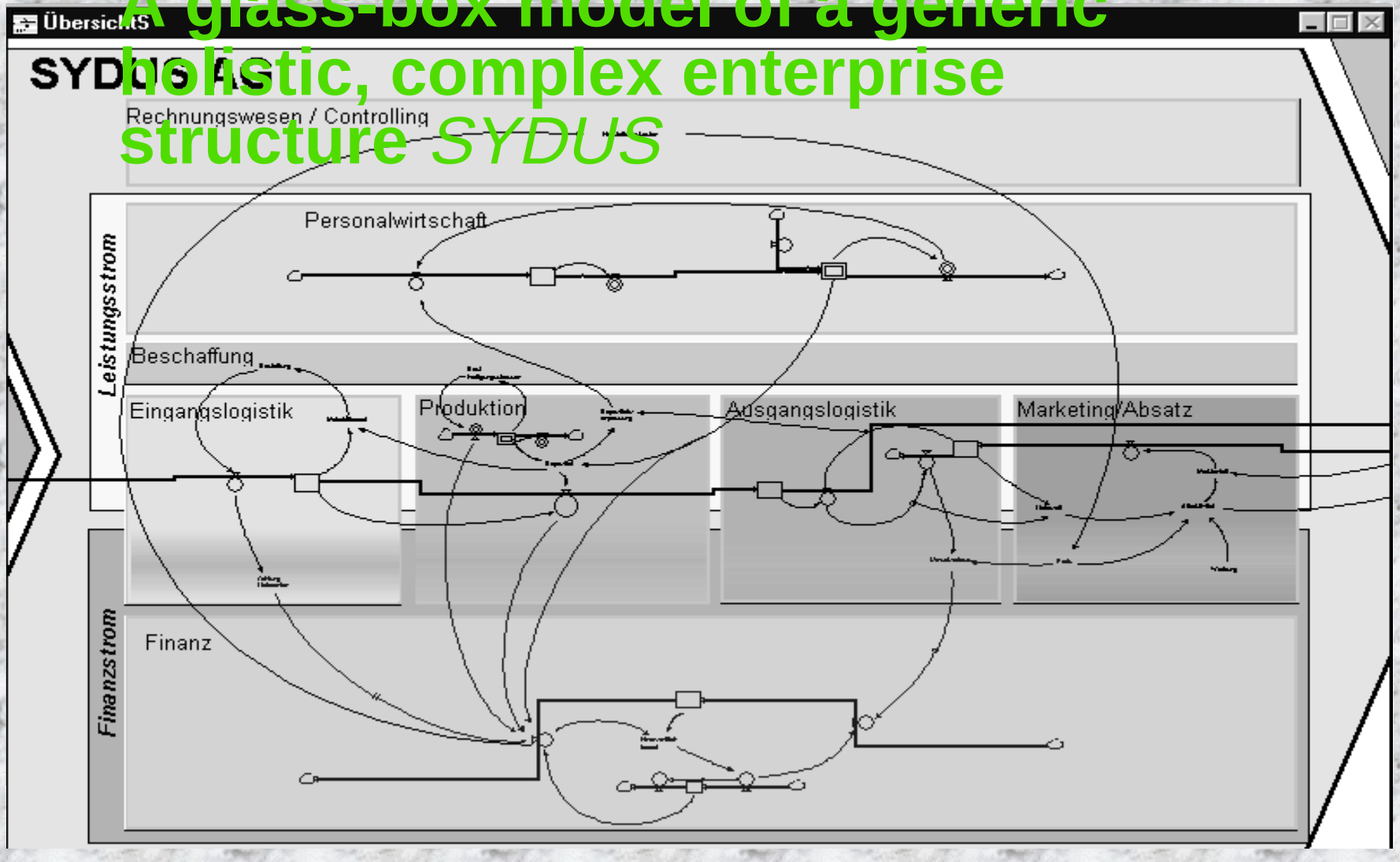
#1:exploration # 2. sodes # 3: managing

August 1998 June 1999

What's experimental ?

Aspect 3

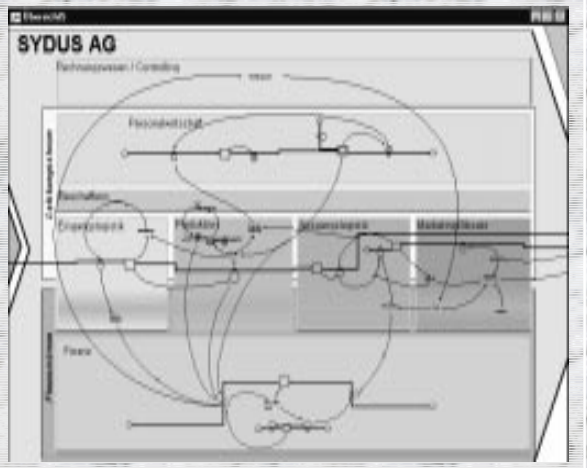
A glass-box model of a generic holistic, complex enterprise structure *SYDUS*



Concern of this study: Readability of the glass-box ?

Microworld SYDUS:

- based within the approach of enterprise activities sensu **PORTER**
- represents generic business policies
- simultanious representation of structure and dynamics based within a functional notation



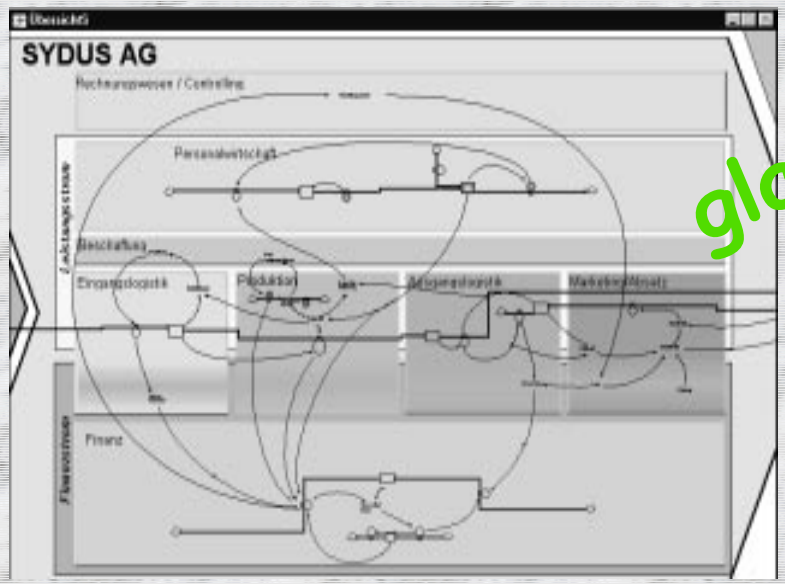
Assignments for students on:

conceptualisation of the enterprise activities

exploration of the activities

description of the structural logic of the activities (core elements and relations)

Assigments for students



glass-box model

Worksheets

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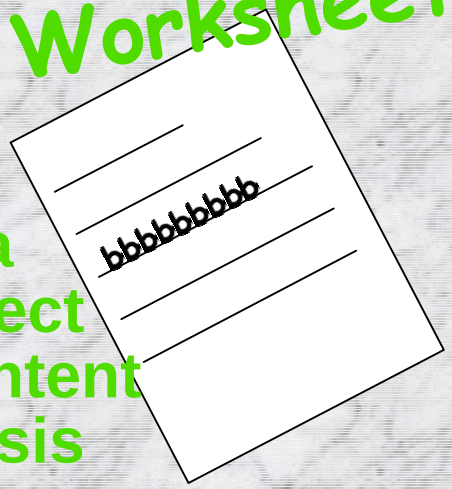
Methodology

❶ Assignments on
1 Conceptualisation of the structure
2 Description of the structural logic

❷ Worksheets

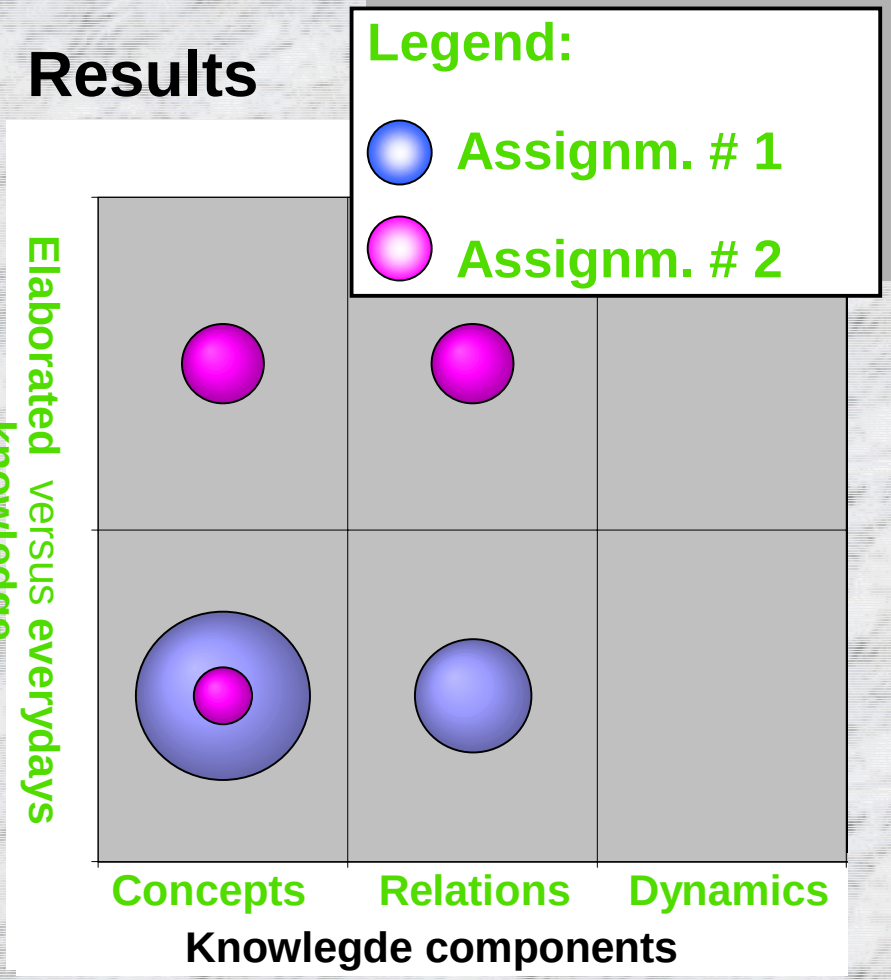


Media & object of content analysis

❸ Content analysis on
a) concepts and structural relations between concepts depicted based in
b) everydays versus elaborated business education terminology

Readability of the glass-box model ?

- Results



- Based on the explora-tion of the enterprise model students apply more business adaequate descriptions
- Everyday‘s knowledge becomes substituted by more elaborate systemic knowledge

Conclusions and Perspectives

- **Students can *read* the glass-box representation of the generic complex enterprise model SYDUS**
- **Extension of the analyses to the processes of actively modeling and of decision-making within running the model enterprise**
- **Development of different modes/ levels of instruction within a more adaptive approach**

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