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Systems Thinking and Organisations Design

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Agile by Example 2018 Warsaw

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Introduction

Agenda 14:00 - 17:00

Introduction

- Systems Thinking

Exercise 1

Reflection

Exercise 2

Reflection

Bonus Exercise 3

Reflection

Who am I

Who Are You

Your name?

Work history?

What you do at the company?

How does your team build products?

Experiences with Scrum / Agile?

Thinking Fast and Slow

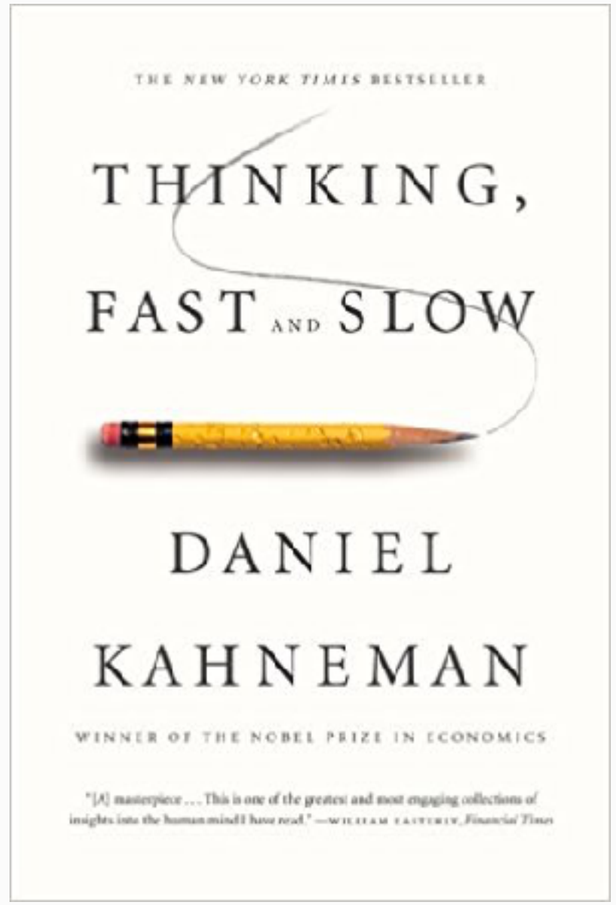
You can think of human reactions to outside world by using simplification like System 1 and System 2

System 1 makes fast intuitive decisions

- Uses heuristics and models
- Can be amazingly fast and wrong or right
- Picks fast one interpretation and discards others

Therefore System 1 is falls easily to biases

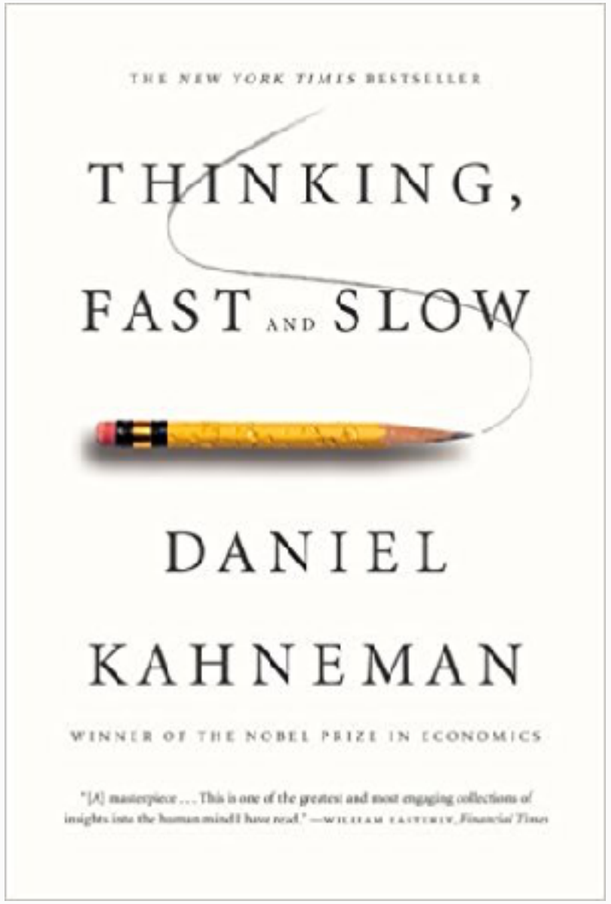
- https://en.wikipedia.org/wiki/List_of_cognitive_biases



Thinking Fast and Slow

System 2 makes decisions that require thinking

- Rational deduction
- Considers alternatives
- Creates new models and heuristics for System 1
- Using it takes energy and time (is hard)
- And People are lazy so too often they are satisfied with the System 1 interpretations of the world



Puzzle

Linda is thirty-one years old, single, outspoken, and very bright. She majored in philosophy. As a student, she was deeply concerned with issues of discrimination and social justice, and also participated in anti-nuclear demonstrations…

Please rank in order of likelihood various scenarios individually on paper: Linda is

- (1) an elementary school teacher,
- (2) a bank teller,
- (3) an insurance agent, or
- (4) a bank teller also active in the feminist movement.

Does Base Rate Change Your Answer?

Bank Tellers: 600,000

Insurance Agents: 1 Million

Elementary School Teachers: 3 Million

23% of women in the US identify as feminist

Answer

Using Base Rates: Elementary School Teacher, Insurance Agent, Bank Teller, Bank Teller + Feminist Movement Active

The remarkable finding is that respondents deem scenario (5) more likely than scenario (3), even though (5) is a special case of (3). The finding thus violates the most basic laws of probability theory. Not only do many students get the Linda problem wrong, but some object, sometimes passionately, after the correct answer is explained.

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Systems Thinking

Peter Senge

Senior Lecturer, MIT

Founding Chair, Society for Organizational Learning

Systems Thinking

Organizations are wonderfully complex system and understanding the cause and effect relationships is in best case difficult

Visualization and conversations about underlaying system dynamics using causal loop diagrams may help

We model to have conversation

All models are wrong some are useful

Systems Thinking

Understand there is a SYSTEM

Learn to reason about ‘any’ system, not 1 system

See the whole, over space and time

See how things influence one another and the interaction effects

Optimize the whole

Beware local-optimization cognitive bias

Think & talk about system dynamics by drawing systems model diagrams in groups

Systems Thinking at Bar

Variables:

- Level of thirst
- Beer intake
- Water intake
- Alcohol level at blood
- Happy mood
- Salty food
- Time since last beer
- Cash reserve

Practise Systems Thinking

Create system model starting with these variables for puzzle:

- "We are too busy to write clean code"

Start with these variables; write the bold words **verbatim** *(as written here)*

- **% well written and tested code** (clean code)
- **time available to craft clean code**
- **effort to create a new feature**
- **velocity** (…to deliver new features)
- **# defects**
- **effort handling defects**
- **pressure to deliver and "go faster"**

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Systems Thinking in Designing Organization

Exercise

Draw Systems Model that explores impact of dependencies that are distributed in time.

Start with following variable:

- #dependencies
- #fulltime coordinators
- %time spend coordinating
- Amount of intermediate plans and documents created
- % wastes created
- Time spent waiting other teams
- Partially done work

Reflection

How to move the dependencies that are distribute in time to shared work?

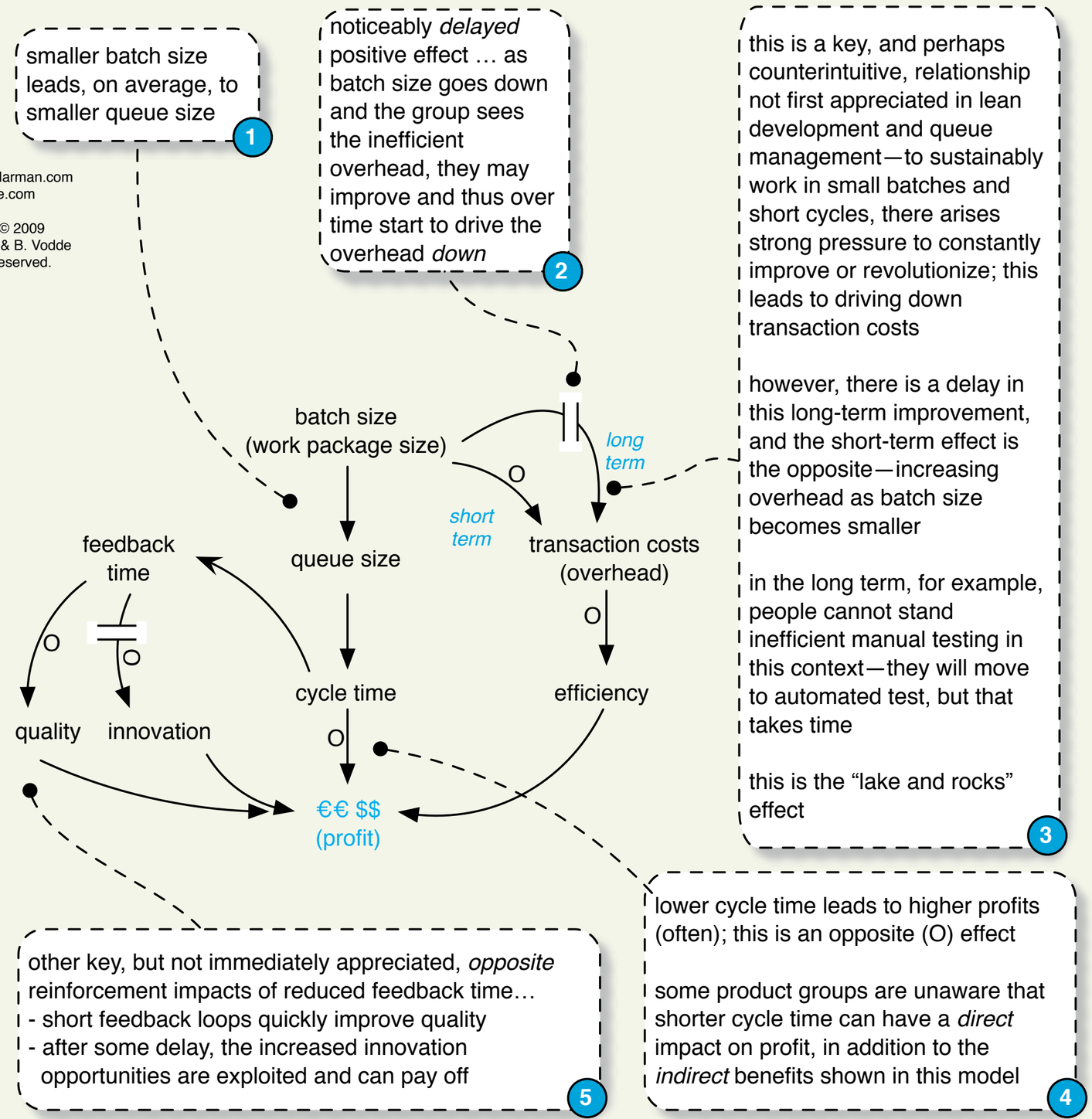
Queues and Batch Size

Puzzle: How does batch size and queues affect the system

Create system model with:

1. **Batch size** (work package size)
2. **Queue length/size**
3. **Cycle time**
4. **Feedback time**
5. **Quality**
6. **Innovation**
7. **Profit**
8. **Transaction costs** (overhead)
9. **Efficiency**

One View



Reflection

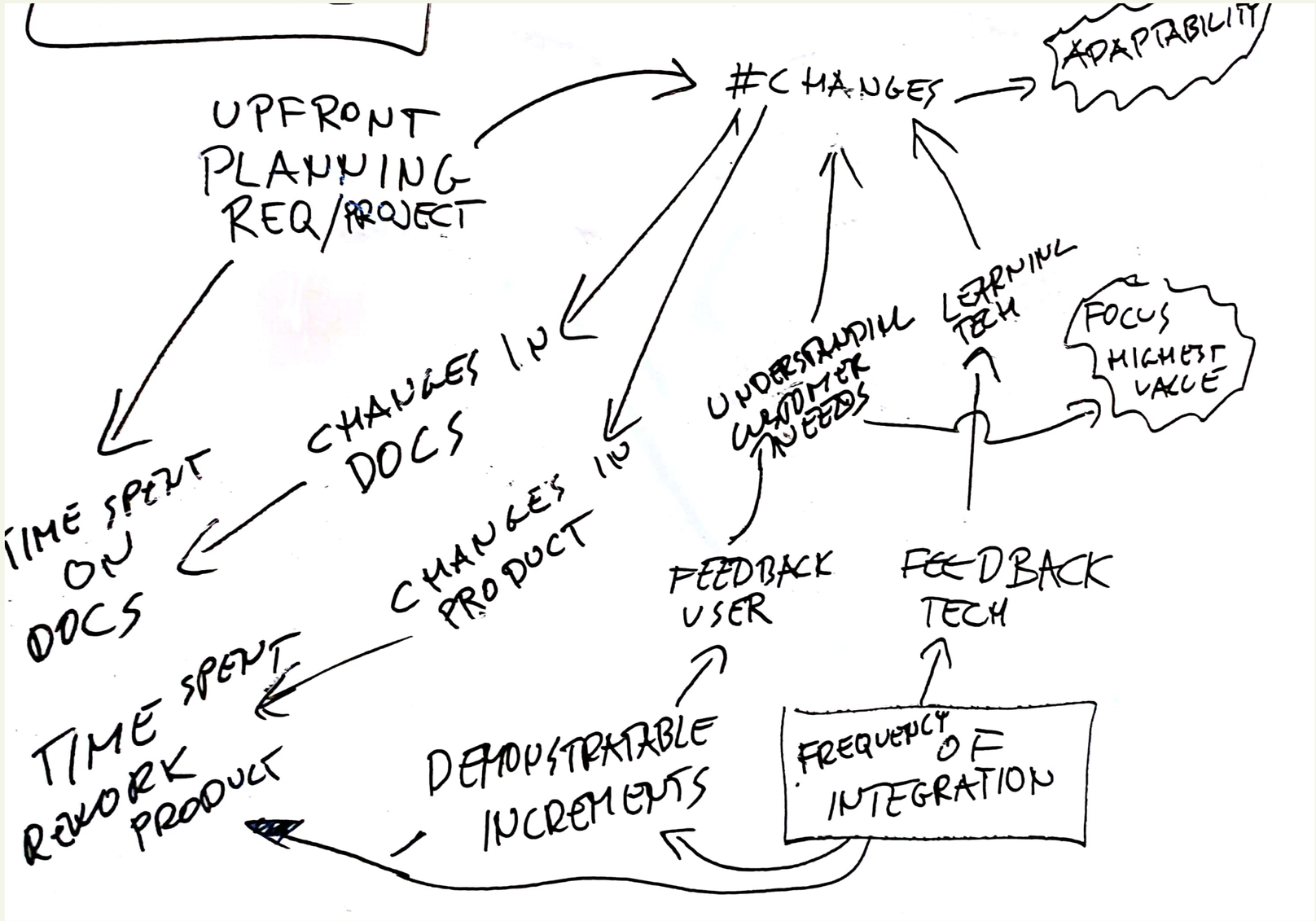
How to design organisation that has small batch size since it is driving variable in this scenario?

Exercise

Draw Systems Model that explores impact of upfront planning. Start with following variables:

1. **Time spent in planning activities before development starts (meetings, documents, analysis, etc)**
2. **Time spent in updating the documents**
3. **Likelihood of committing to unrealistic schedules**
4. **Likelihood that changes will rejected**
5. **Time spent in rework of the product**
6. **Feedback from the users**
7. **Feedback from the technology**
8. **Frequency of integrating all parts together**
9. **Frequency demonstrating product increment to users**
10. **Feedback from users**
11. **Understanding customer needs**
12. **# changes**
13. **Adaptability / Agile**
14. **Focus on highest value from customer view**

Early Sketch



Reflection

How to speed up the customer involvement?

How to abandon sequential mind set?

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