

Predictability of Change: a Complexity View

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Outline

- Change
- Predictability of Change
- Complexity
- Example



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Change

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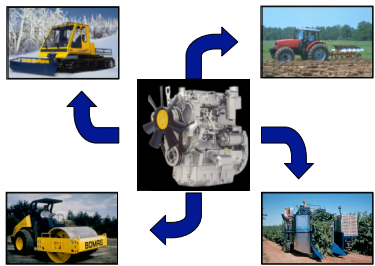
Introduction

- Using theories and ideas from complexity science to understand and support design processes
- Managing of changes and variety is an important part of current design practice

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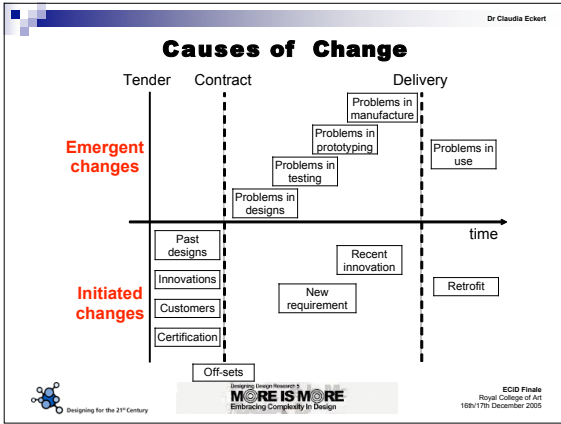
Introduction

- Using theories and ideas from complexity science to understand and support design processes
- Managing of changes and variety is an important part of current design practice
- Questions:
 - How can change propagation be assessed and managed?
 - How can change propagation be predicted?
 - Why is change complex?
 - How can change propagation be visualised?
 - How useful are these visualisations?

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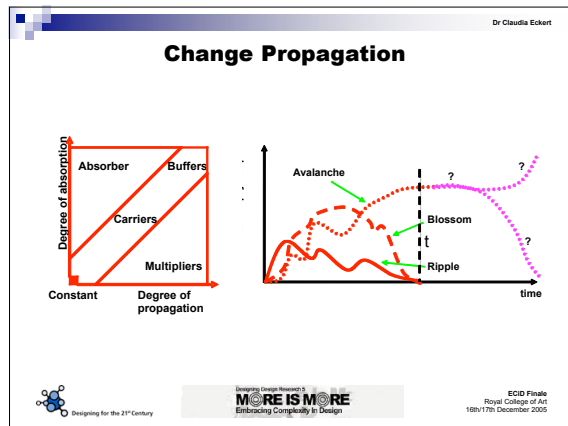
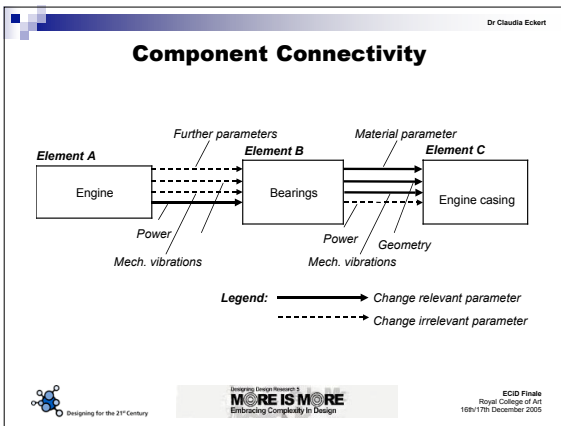
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- ### Planning Change Propagation
- Change is not deterministic
 - Designers have a choice at each connection
 - Change can't always propagate
 - Freezes for platform parts or long lead time item
 - Change multipliers, e.g. engine block
 - Absorbers can turn into multipliers
 - Change can be redirected to other components
 - Designers make mistakes → suboptimal solutions
 - Long propagation chain arise from overlooked connectivity
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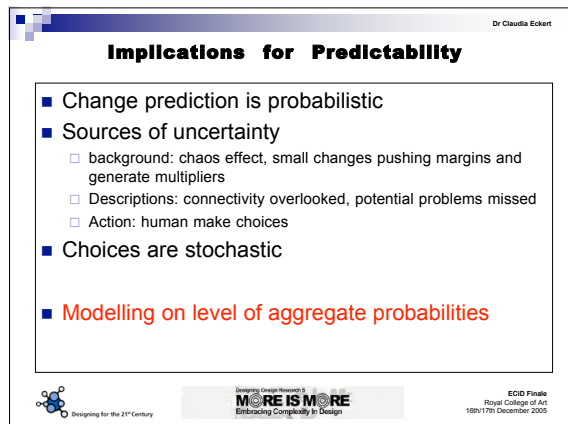
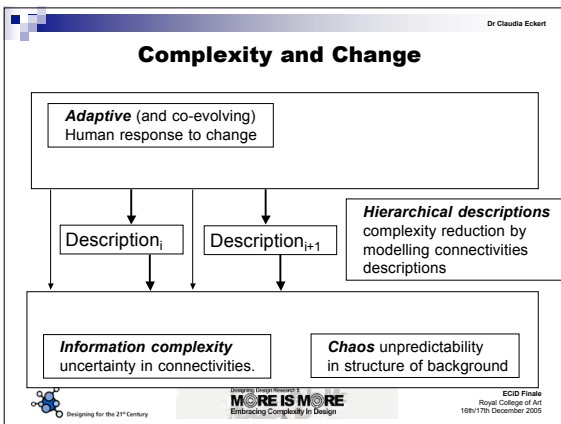
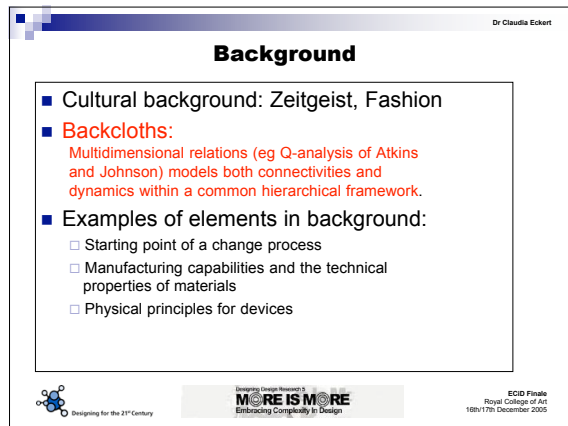
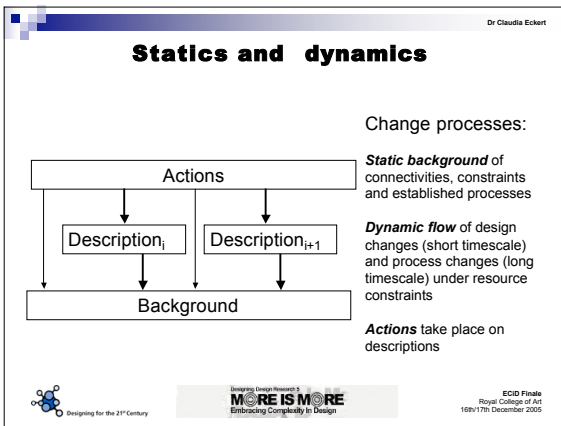
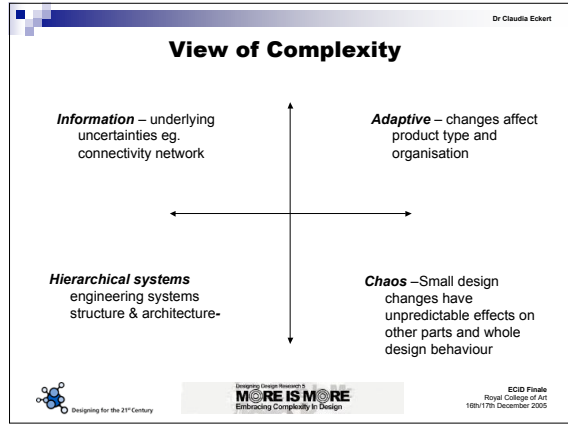
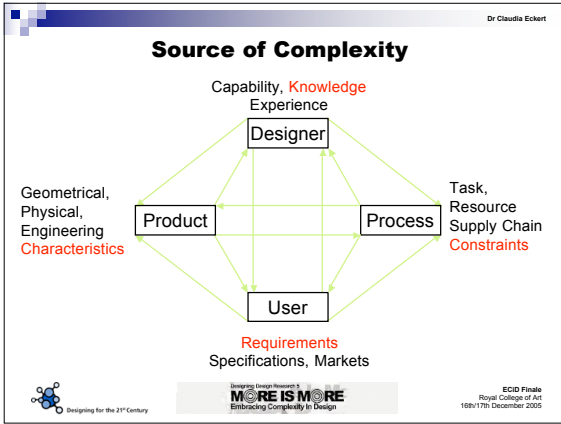
Complexity

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Example

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DSMs: Direct Connectivity

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Change Risk Plot

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Networks

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Propagation Tree

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Conclusion

- How can change propagation be predicted?
- Why is change complex?


Answers:

- Changes is ubiquitous in design
- Change can not be deterministic
- Change is complex on different levels
- Predications have to be aggregate predictions

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