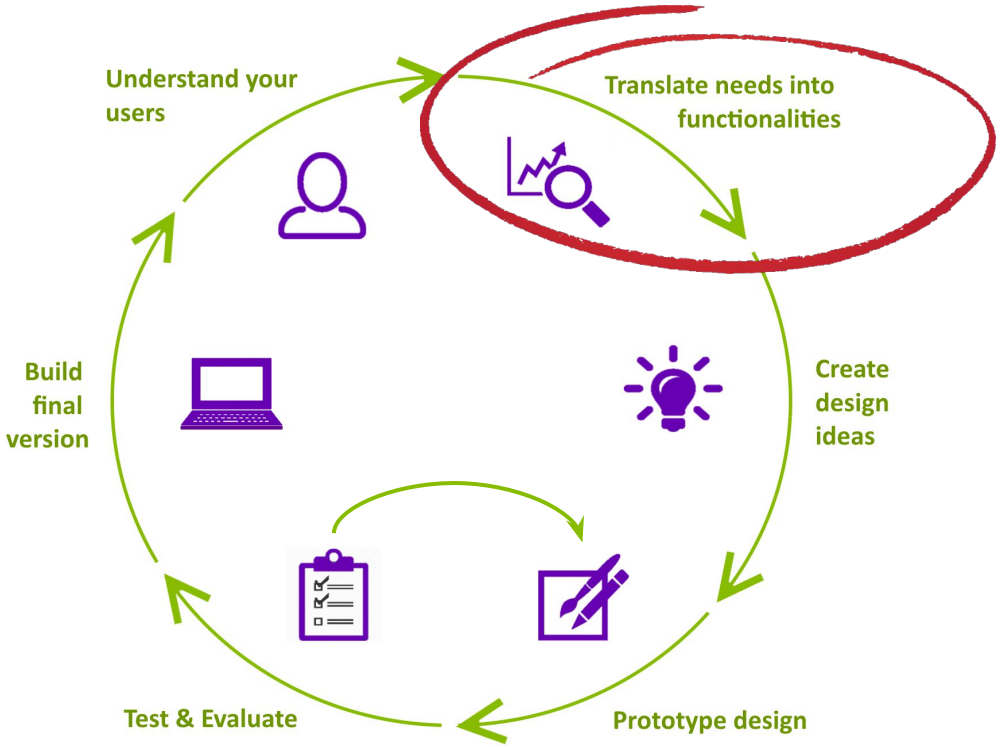
CS449/649:
Human-Computer Interaction

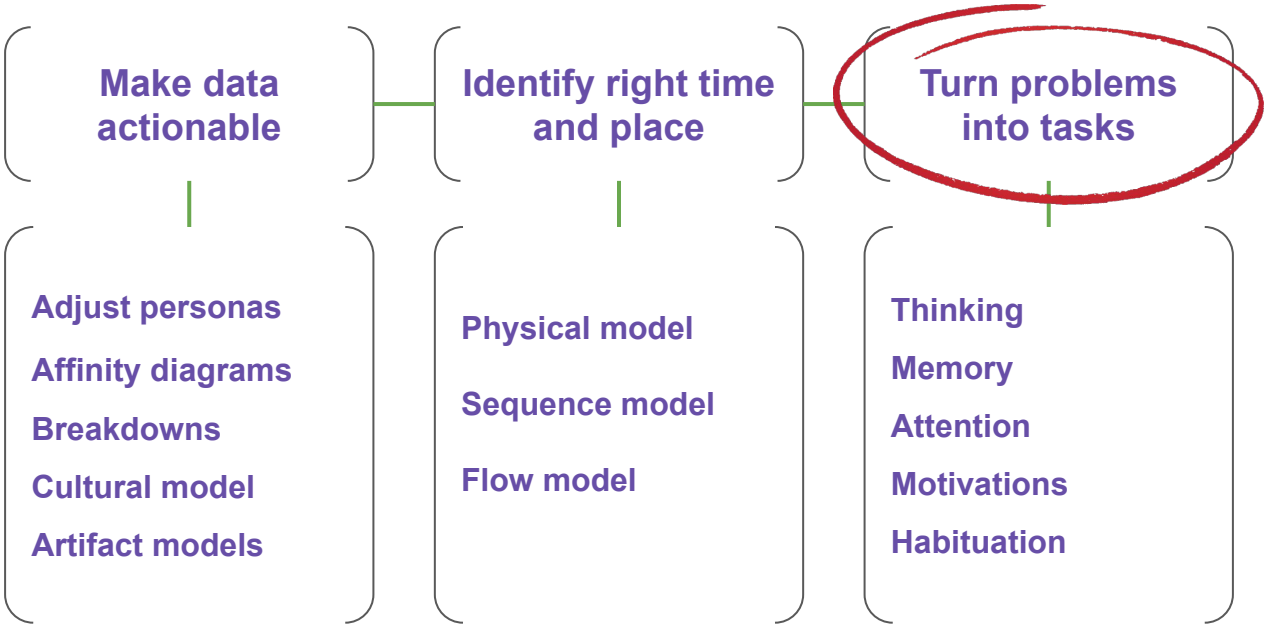
Spring 2019

Lecture IX

Anastasia Kuzminykh and Edward Lank


Understand your users
Translate needs into functionalities
Create design ideas
Prototype design
Test & Evaluate
Build final version

Translating Needs Into Functionalities



Translating Needs Into Functionalities

Turn problems into tasks

Thinking

Memory

Attention

Motivations

Habituation

Dual process theory

Translating Needs Into Functionalities

Fast

Effortless

Emotional

Stereotypic

System 1

Can do:

- Roughly assess distance
- Localize the source of a specific sound
- Complete famous expressions
- Do 2+2 sort of calculations
- Well-automated activities in easy conditions (drive a car on an empty road)
- Read and understand simple sentences

System 2

Can do:

- Roughly assess distance
- Point your attention where needed
- Dig into your memory
- Determine the desired behaviour in a social setting
- Tedious cognitive tasks
- Activities in unusual conditions
- Complex logical reasoning

Slow

Effortful

Logical

Calculating

Translating Needs Into Functionalities


Psychonomic Bulletin & Review
2006, 13 (3), 378-395

The heuristic-analytic theory of reasoning: Extension and evaluation

JONATHAN ST. B. T. EVANS
University of Plymouth, Plymouth, England

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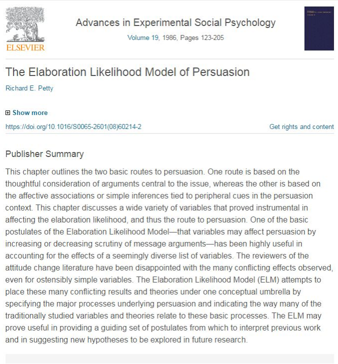
Advances in Experimental Social Psychology
Volume 19, 1986, Pages 123-205

The Elaboration Likelihood Model of Persuasion

Richard E. Petty

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https://doi.org/10.1016/S0065-2601(08)60214-2

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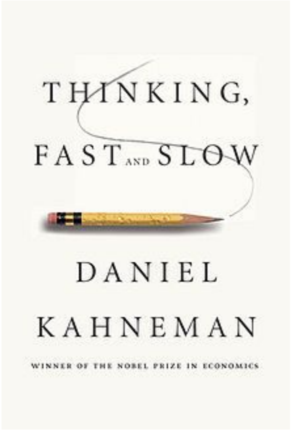
Publisher Summary

This chapter outlines the two basic routes to persuasion. One route is based on the thoughtful consideration of arguments central to the issue, whereas the other is based on the affective associations or simple inferences tied to peripheral cues in the persuasion context. This chapter discusses a wide variety of variables that proved instrumental in affecting the elaboration likelihood, and thus the route to persuasion. One of the basic postulates of the Elaboration Likelihood Model—that variables may affect persuasion by increasing or decreasing scrutiny of message arguments—has been highly useful in accounting for the effects of a seemingly diverse list of variables. The reviewers of the attitude change literature have been disappointed with the many conflicting effects observed, even for ostensibly simple variables. The Elaboration Likelihood Model (ELM) attempts to place these many conflicting results and theories under one conceptual umbrella by specifying the major processes underlying persuasion and indicating the way many of the traditionally studied variables and theories relate to these basic processes. The ELM may prove useful in providing a guiding set of postulates from which to interpret previous work and in suggesting new hypotheses to be explored in future research.




Personality and Social Psychology Review
2004, Vol. 8, No. 3, 220–247

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Lawrence Erlbaum Associates, Inc.

Reflective and Impulsive Determinants of Social Behavior

Fritz Strack and Roland Deutsch
Department of Psychology
University of Würzburg

220

The heuristic-analytic theory of reasoning,
Jonathan St. B. T. Evans, 1975

The elaboration likelihood model,
Richard E. Petty, John Cacioppo,
1986

The intuition-reasoning theory,
Daniel Kahneman,
2003

The reflective and impulsive determinants theory,
Fritz Strack, Roland Deutsch, 2004

Translating Needs Into Functionalities

Turn problems into tasks

Thinking

Memory

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Habituation

Dual process theory

Cognitive load

Translating Needs Into Functionalities

Cognitive load

Steps

- Least amount of work possible
- Homogeneous
- People can’t multitask!
- Break error-prone tasks into smaller steps.

Choices

- Clear differences
- Limit number of choices
- Support with information

Information

- Progressive disclosure
- Provide examples
- Make it easy to scan
- Presentation matters (hard to read = hard to do)

Translating Needs Into Functionalities

Cognitive load

Steps

Least amount of work possible

Homogeneous

People can’t multitask!

Break error-prone tasks into smaller steps.

Choices

Clear differences

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Information

Progressive disclosure

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Anticipate mistakes
(should be easy to undo, avoid error-prompt tasks)

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Anticipate mistakes
(should be easy to undo, avoid error-prompt tasks)

Perception biases
(expectations determine perception)

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Cognitive load

Anticipate mistakes
(should be easy to undo, avoid error-prompt tasks)

Perception biases
(expectations determine perception)

Age, socioeconomic status, cognitive abilities influence decision making

Translating Needs Into Functionalities

Turn problems into tasks

- Thinking
- **Memory**
- Attention
- Motivations
- Habituation

Perception - storage - retrieval

Translating Needs Into Functionalities

Turn problems into tasks

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Perception - storage - retrieval

Recognition rather than recall

Translating Needs Into Functionalities

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Perception - storage - retrieval

Recognition rather than recall

People can remember ~3-4 items at a time.

Translating Needs Into Functionalities

Turn problems into tasks

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Perception - storage - retrieval

Recognition rather than recall

People can remember ~3-4 items at a time.

Zeigarnik effect - interrupted tasks are easier to remember (depends on the importance of the interrupted task for the person)

Translating Needs Into Functionalities

Turn problems into tasks

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Habituation

Focused attention is limited and selective

Translating Needs Into Functionalities

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Focused attention is limited and selective

Inattentional blindness

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Focused attention is limited and selective

Inattentional blindness

Surface (awareness of features) **and content attention** (awareness of information)

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Focused attention is limited and selective

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Surface (awareness of features) **and content attention** (awareness of information)

Attention is dynamic - allow hierarchy