

# Criteria for Writing a Thesis

## from a Reader's Point of View

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Vienna University of Technology, founded 1815

# Vienna University of Technology



- 25000 students, 8 faculties
- Faculty of Informatics:
  - ~ 6000 students (5 Bachelor, 7 Master, PhD)
  - ~ 1000 beginners per year

# Who reads my PhD thesis?

- Thesis1: most of the dissertations are read just by the dissertation committees
- Thesis2: dissertations do have just a few further readers that may benefit from reading the thesis

# Knowledge Transfer

**How can a reader of my thesis benefit?**

## **Specific transfer**

Reader has to solve a similar problem

Same solving strategy, only minor adjustments necessary

## **Unspecific transfer**

Reader has to solve a different problem

But some basic ideas are relevant for solution

# Why your dissertation should be easy to read?

To which statement do you agree?

- A scientific text is never easy to read
- My thesis is read only by my supervisors. They know already the main points of my thesis. I do not need to write my thesis readable for other readers.
- My thesis is published in the web. It will have thousands of readers. It should be understandable to a larger readership.

# How can a scientific text be easy to read?

- Readability metrics?

- Flesch–Kincaid grade level:

$$0.39 \left( \frac{\text{total words}}{\text{total sentences}} \right) + 11.8 \left( \frac{\text{total syllables}}{\text{total words}} \right) - 15.59$$

- Coleman–Liau index:

$$CLI = 0.0588L - 0.296S - 15.8$$

$L$  is the average number of letters per 100 words

$S$  is the average number of sentences per 100 words.

# Criteria for Readability

- What do you think is necessary/important to support readability of a scientific text?
  - Coherency / consistency
  - Golden (common) thread from problem description to findings/outcomes



# Main contents of a dissertation

- Problem description & related work
- Used scientific methods
- Description of application of scientific methods
- Description of outcomes

# Can a thesis be thrilling like a good crime movie?

- Readers are eager to read your thesis
- After reading your abstract/introduction they cannot stop reading
- Even complex formulas don't frighten off the readers

# Main contents of a dissertation

- Problem description & related work
  - Make the reader curious to your topic
  - Motivate them to read your thesis
  - Argue why you use your specific research questions and why they are important.
  - Argue why the scientific grounded answers to the questions will help specific groups of people better fulfil their work
- Used scientific methods
  - Argue why you apply specific research methods and why you do not apply other methods
- Description of application of scientific methods
  - Argue why your used methods are applicable
- Description of outcomes
  - Argue relevance and shortcomings of your outcomes

# Problem Descriptions in your DC Summaries

	number	outcomes	Research question
First year	3	1	2
Second year	11	5	6
Third&Fourth year	2	1	2
Unknown year	3	2	2

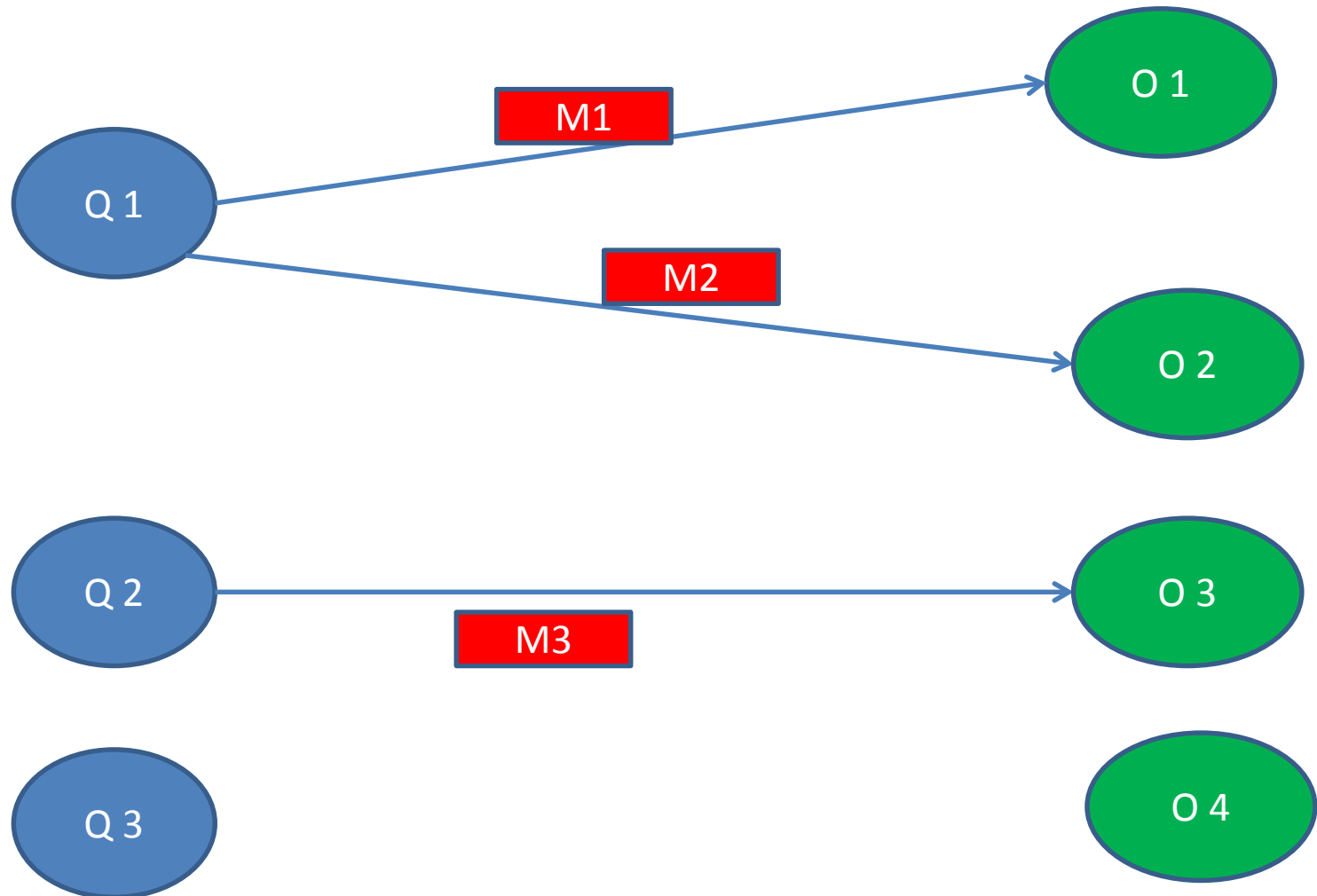
# Elements of a dissertation

- Goal/aim of dissertation
  - What should be achieved
  - Examples: solved problems, more knowledge
- Title of dissertation
  - The main aspect of the dissertation
- Research questions
  - Should be answered by the dissertation
- Outcomes of dissertation
  - Results of dissertation, answers to the research questions
- Hypothesis
  - A possible answer to a research question, that should be verified or falsified

# Research Questions, Methods and Outcomes

- Research Questions
  - What should be answered by the dissertation?
  - Open Problems to be solved
- Research Methods
  - How to find answers to the questions
- Research Outcomes (results)
  - The answers to the research questions

# Questions, Methods and Outcomes (QMO)



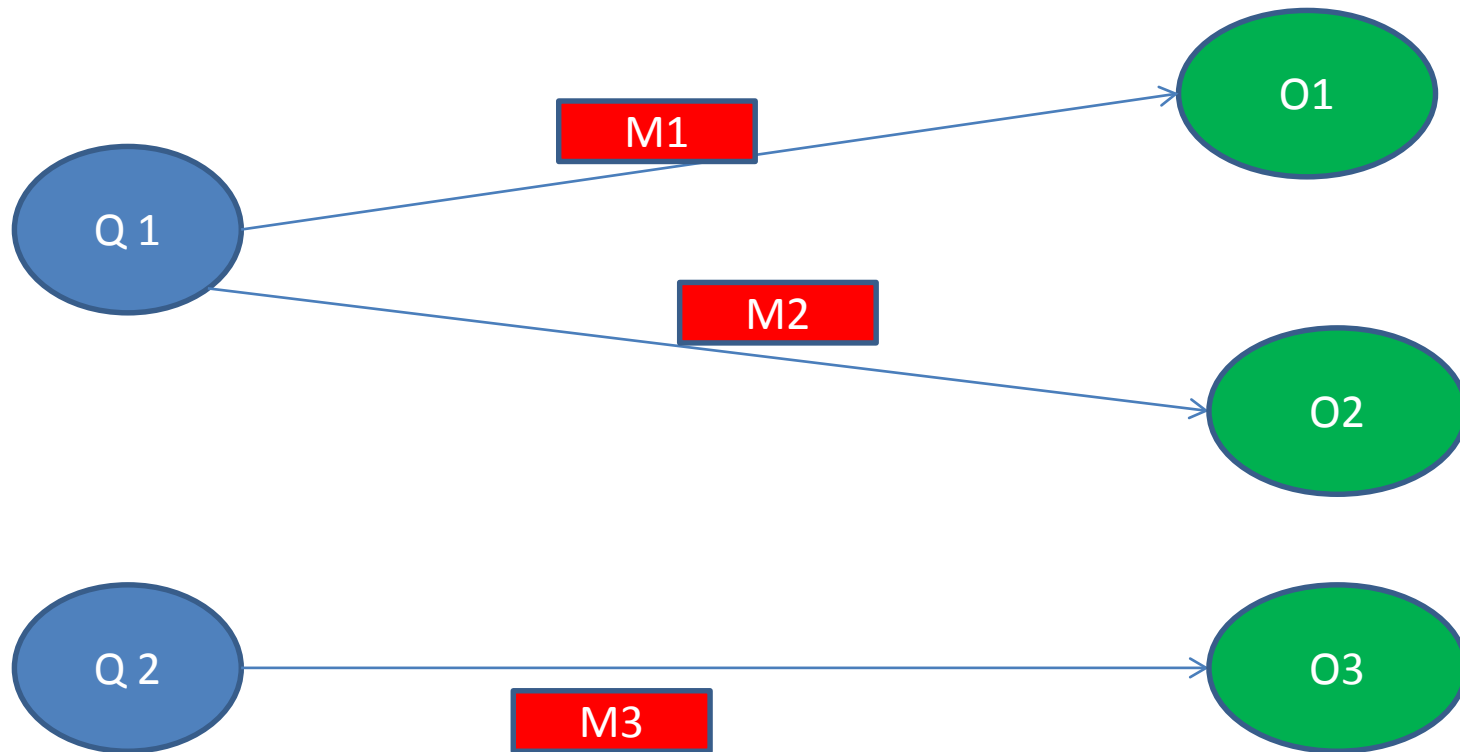
# Consistency and Completeness of QMO

- Each Outcome must be related to a Question
- Each Question must be related to an Outcome
- Each of these relations is associated with a Method



# Task 1

- Describe your Research Plan using QMO !



# Task 2

Test the soundness of the model:

- Are the Outcomes really the expected answers to the Questions?
- Are the Methods adequate to the Questions and able to produce the Outcomes?

# What attitudes are important?

- Openness
- Clarity
- Fairness
- Objectivity
- Rigour (care)
- Honesty

**Thank you for your attention!**