

UNDERLYING FRAMEWORKS IN ACADEMIC EDUCATION

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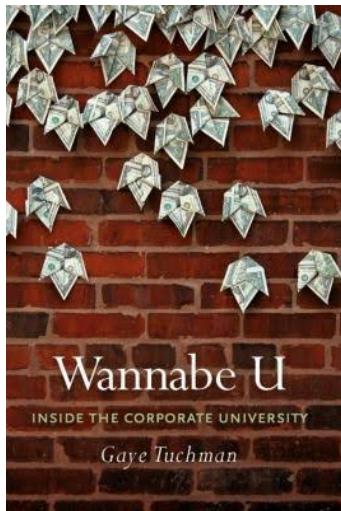
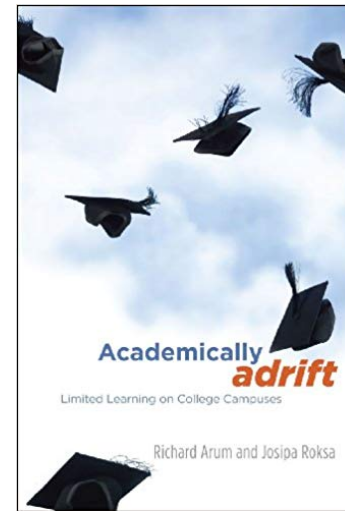
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1. Introduction

'No significant progress on skills such as critical thinking'



'Academic education invaded by economic forces'

'What are universities for?'



□ Learn students about science and how to do science (1)

□ Investing in the students' intellectual and personal development and their ethical awareness (2)

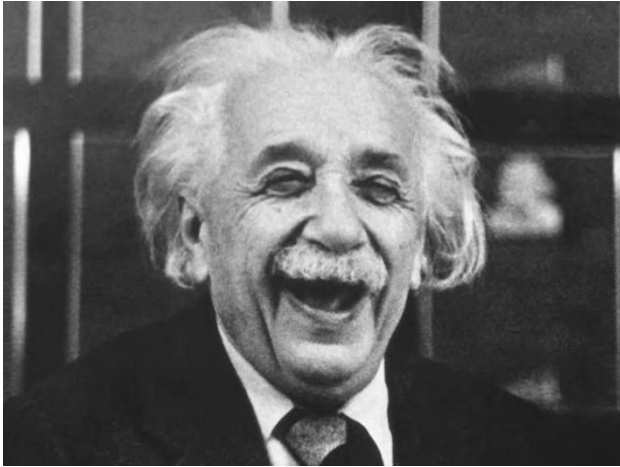


1. How to effectively educate students?

2. Is it something 'extra' next to a thorough introduction in a scientific discipline or does it belong to the heart of scientific education?



2. Science in Transition?



What makes science distinct from other human activities?



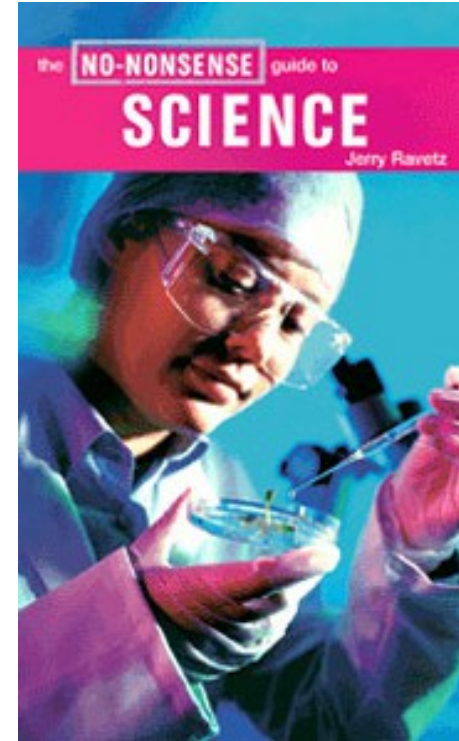
➤ Grounding knowledge in *empirical evidence*

Value-Free View of Science

‘Science is about facts, not about values’

Science in transition: characteristics

- ❑ 'Uncertainty'
- ❑ 'Open about values'
- ❑ 'Big interests'
- ❑ 'Urgent choices'
- ❑ From 'Mertonian norms' to a 'neo-liberal ethos'?



Mertonian norms

...?

- ❑ 'Communism': the results of scientific research must be publicly accessible.
- ❑ 'Universalism': the evaluation of scientific research ought to be independent of the researcher's gender, nationality, social position, religious identity, ...
- ❑ 'Disinterestedness': personal views and convictions of the scientist are not allowed to influence the results of research. **Commodification...**
- ❑ 'Organized Scepticism': systematic distrust regarding conclusions of scientific results is necessary.

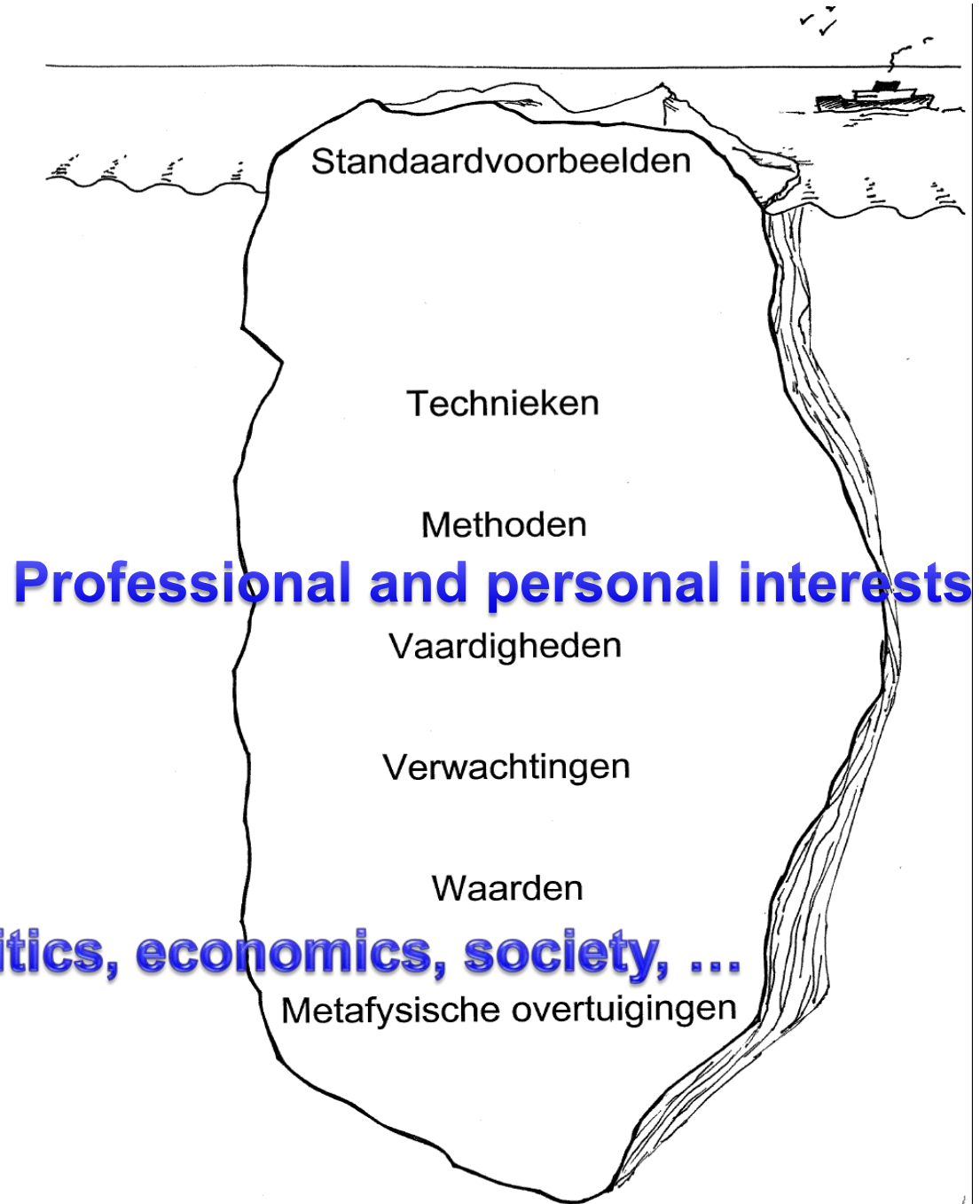
Example 1 Mertonian norms?

Studie	Resultaat	Gepubliceerd	Aantekening
1	Negatief	Neen	0 Publicaties
2	Positief	Ja	2 Publicaties
3	Negatief	Neen	0 Publicaties
4	Positief	Ja	3 Publicaties
5	Negatief	Neen	0 publicaties
6	Positief	Ja	2 Publicaties
7	Negatief	Neen	0 Publicaties
8	Negatief	Neen	0 Publicaties
9	Positief	Ja	1 Publicatie
10	Positief	Ja	1 Publicatie
			* 9 Pos. Pub. *

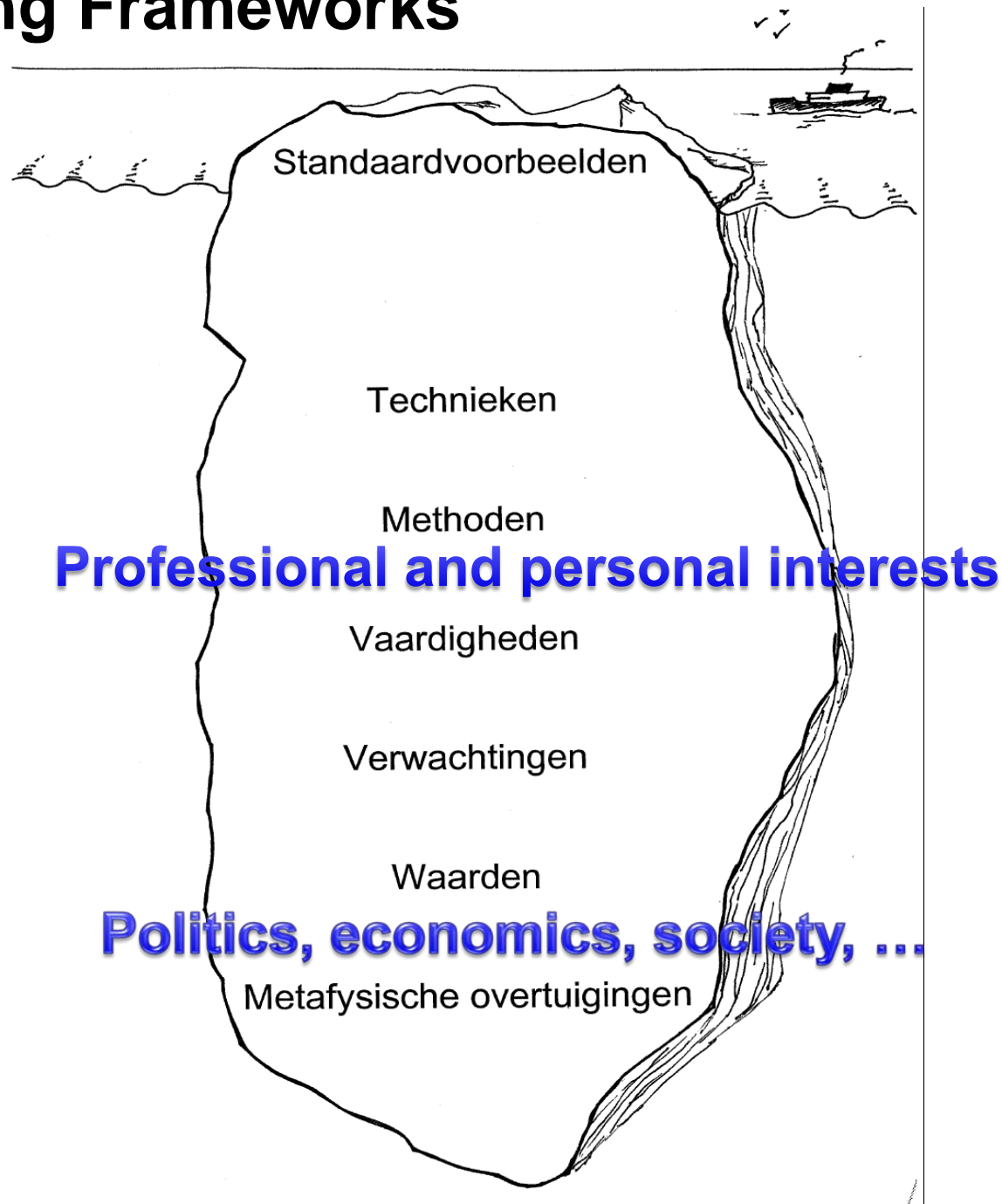
Example 2

‘ON BEING A SCIENTIST’

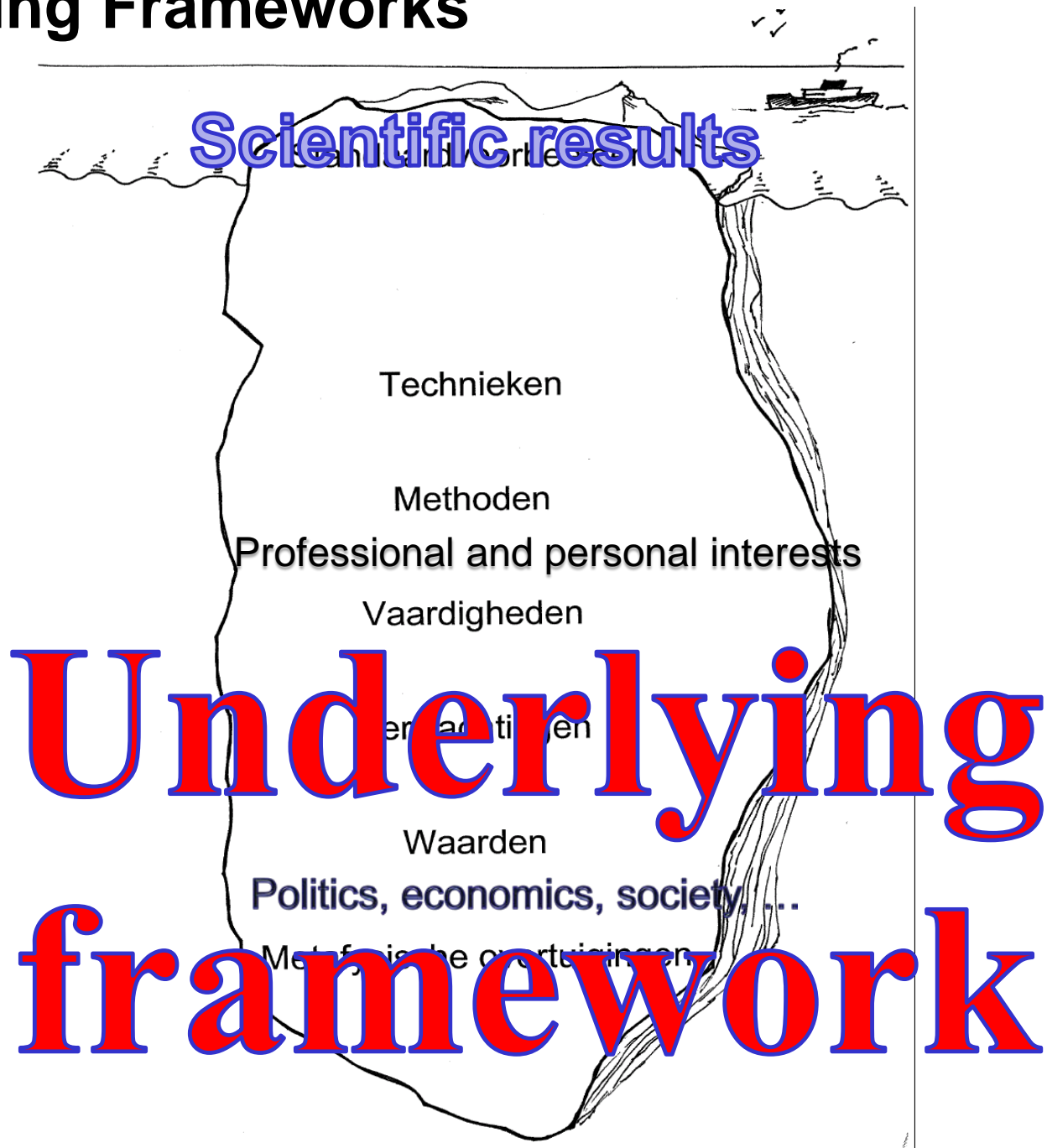
Sloppy science makes visible 'the contextualization of science': a dynamic interaction between scientific disciplines, technology, economics, politics, society,...



3. Underlying Frameworks



3. Underlying Frameworks



Controversies also make visible ‘the contextualization of science’
and give explicit understanding of the role of

‘**Underlying Frameworks**’

Example: the United States Census



One of the issues: how are people counted?

- Going door-to-door or by way of mail questionnaires
- Undercounting or overcounting the population
- Choosing a census method → deciding what kinds of errors are acceptable ↔ political values

Choice of method ↔ Underlying framework

Underlying frameworks

Various elements form part of underlying frameworks and together they give direction to scientific research: theoretical perspectives, models and methods, disciplinary principles and contextual factors, but also ideas about the structure of reality and the boundaries of science, and in addition, even moral values, views of man, normative ideas about the structure of society and ideologically determined interests.

4. Academic Education & Critical Reflection

If underlying frameworks influence scientific practices, it seems important to critically reflect upon their role in **education**.

- By way of the demonstration examples.
- But while a lecturer can use these examples to demonstrate the influence of underlying frameworks in their field of science, they say nothing about the students' *own* underlying frameworks.
- By way of stimulating reflectivity: what is the relation between my own underlying framework and my way of doing science?
- But how can we stimulate students to reflect upon their own points of view? Difficult task!

By Way of the Dilemma Oriented Learning Model

DOLM

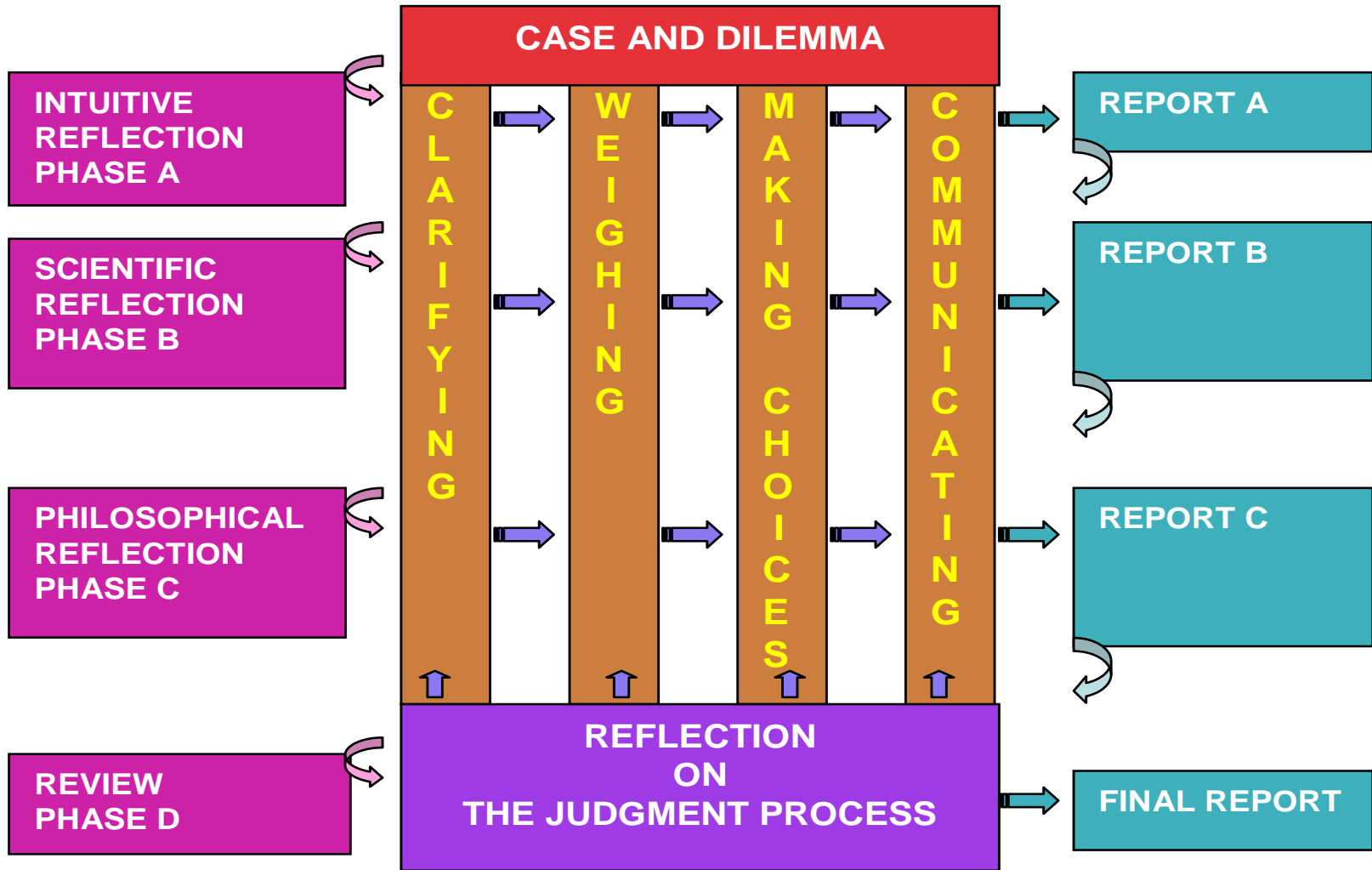
- A. Reflection on intuitive ideas
- B. Reflection on relevant social scientific knowledge
- C. Philosophical reflection
- D. Retrospective phase

Main goal of DOLM

Students are able to deal with complex problems (in the context of interrelated scientific, societal, world view, philosophical and ethical aspects) in a critical, balanced and responsible way:

- ❑ *Critical*: taking into account their own frames of reference as well as the underlying pre-scientific assumptions
- ❑ *Balanced*: taking into account a critical and thorough assessment of arguments for and against. They demonstrate sympathy and respect for opposing arguments
- ❑ *Responsible*: showing their willingness, ability and motivation to account for their choices and courses of action in their reports or communication

Diagram of the Dilemma Oriented Learning Model



Dilemma for students in Social Science

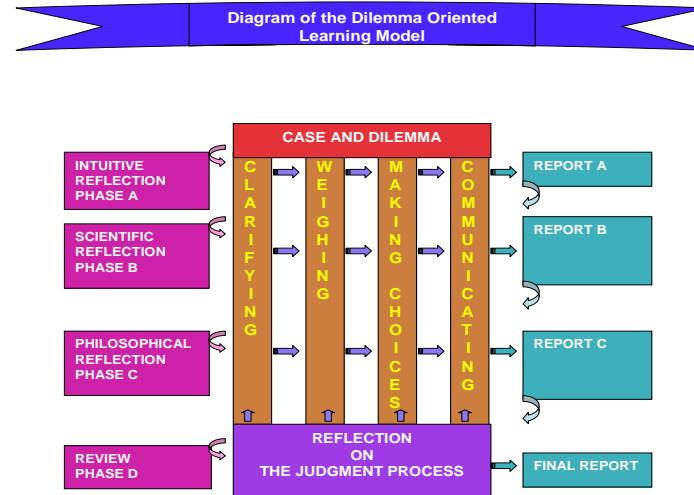
Students are asked to take on the role of a policy advisor at the 'Committee for Educational Changes', responsible for financing social scientific research into education, to the amount of EUR 500,000.

Two requests have been submitted:

- A program to improve education by way of sustaining the knowledge and skills of teachers.
- A program to improve education by way of a set of actions to optimize the educational system.

Only one of the requests can be granted. Which one is the question for the policy advisor.

DOLM 'Committee for Educational Changes



- A. Reflection on intuitive ideas
- B. Reflection on relevant social scientific knowledge on educational change
- C. Philosophical reflection on individualism (e.g. rational choice theory) and holism (system theory)
- D. Retrospective phase

Examples of DOLM courses, learning outcomes and measures for improving courses:

Joyce Aalberts, Edwin Koster & Robert Boschhuizen, 'From prejudice to reasonable judgement: integrating (moral) value discussions in university courses', *Journal of Moral Education*, Volume **41**, Issue 4, 2012, pp. 437-455.

