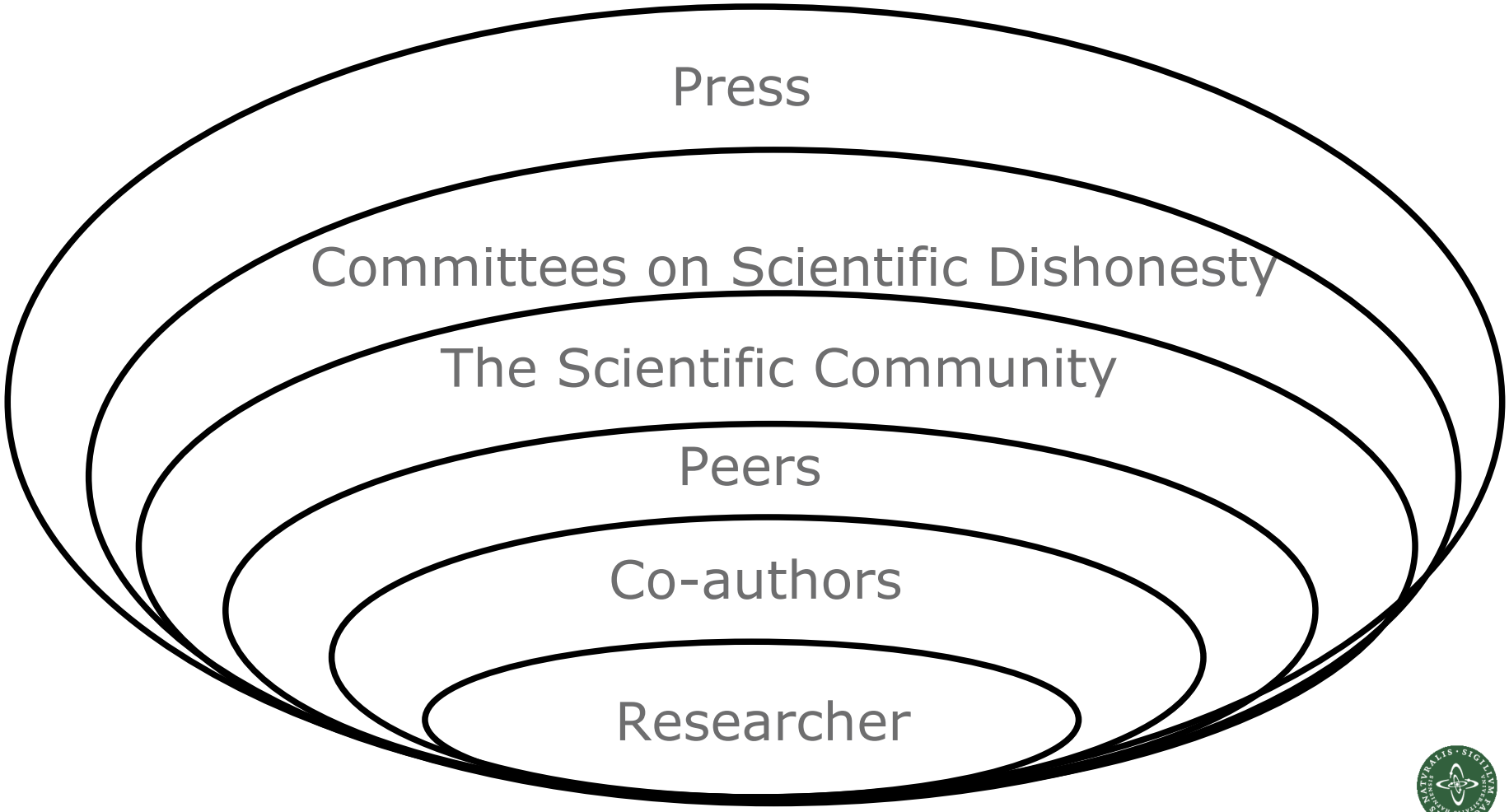
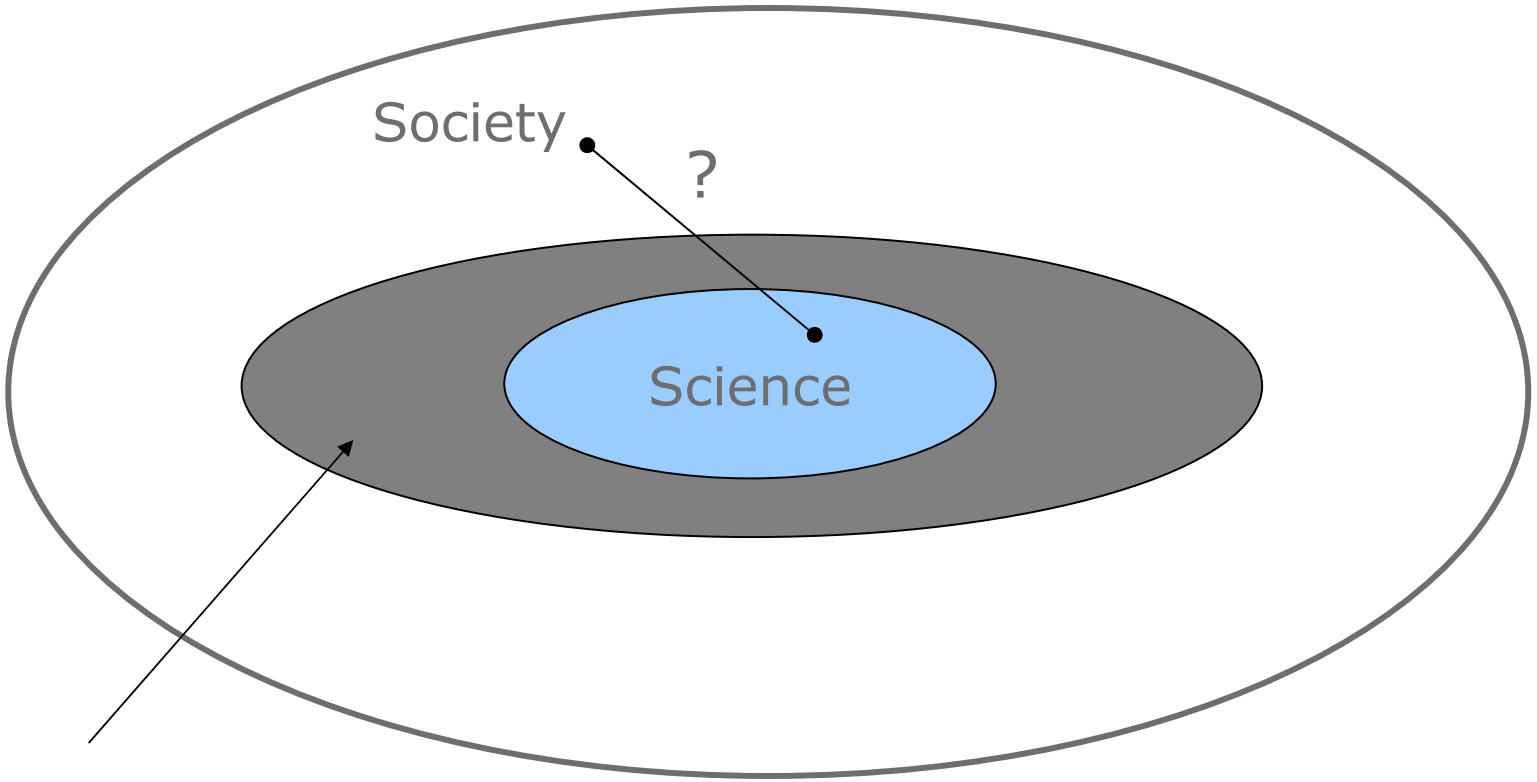
Teaching Ethics to Science Students

Tom Børsen
Center for the Philosophy of Nature and Science Studies
November 17, 2007

Five levels of quality control

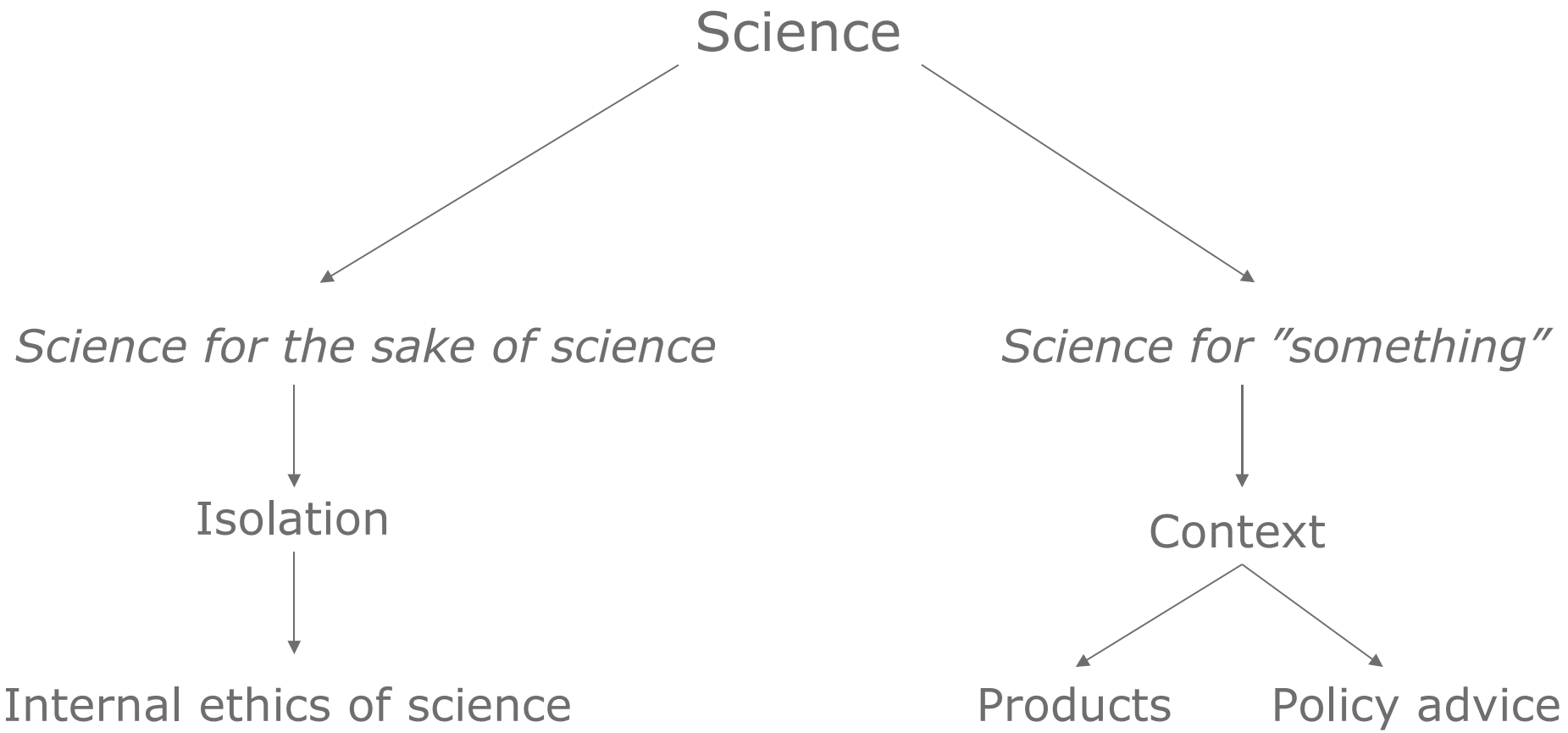


Science and Society



Immediate interface

Science is manifold!



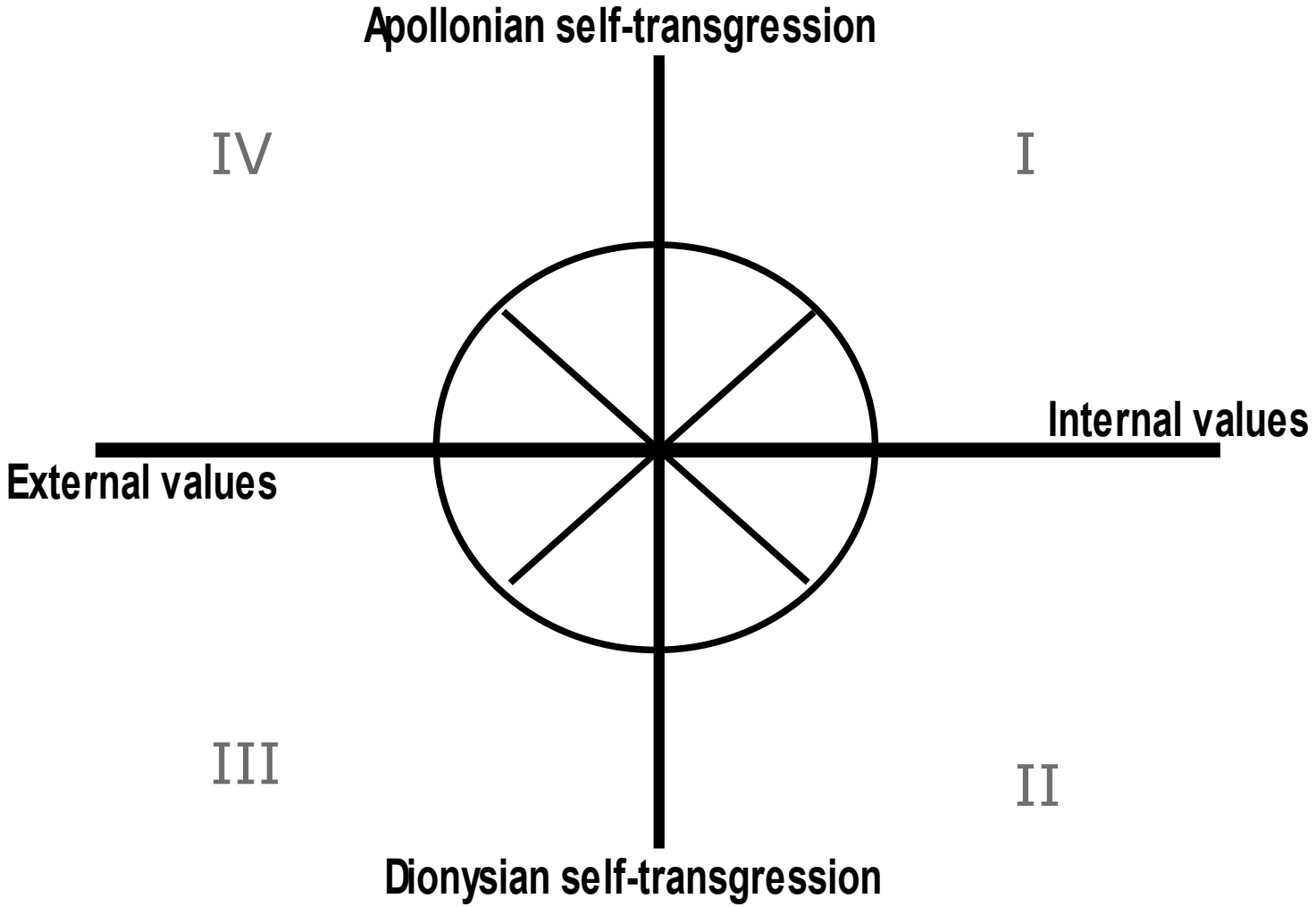
How to relate to norms, rules, laws...

Apollonian Transgression of the Self: *corresponds to the mind raising from the roots through a tree's trunk – the individuality – for thereafter to transcend the tree via the top. The top forms, together with other tree tops, a forest. The trees are interconnected.*

Dionysian Transgression of the Self: Here one does not wipe out (part of) oneself. The self slips out – momentarily and horizontally. This is a movement where the self is forgotten. *There is not forest, but a line of single trees that hold hands, when they feel like it.*

(Lars-Henrik Schmidt, 1999)

The idea behind the course



Skills needed in today

The well-formed post-normal scientific expert must:

II. Master normal scientific puzzle-solving, and be competent in applying the standard methods of his / her discipline.

III. Be able to identify the consequences of extra-scientific influences on the normal scientific practise, and be involved in methodological debates regarding the scientific treatment of 'soft' facts.

IV. Be able to react appropriately when ones ethical orientation system is violated (e.g. say no to involvement in unethical research projects, have the courage to blow the whistle if suspicious activities are identified, engage politically when structures prevent ethical research, and continuously challenge legislation as well as public understanding).

V. Internalize traits of international law and the interests of humanity as such in ones ethical orientation system, be willing to address research questions that need be investigated to legislate on the local, national, regional and international levels, and disseminate ones findings to politicians and the public.

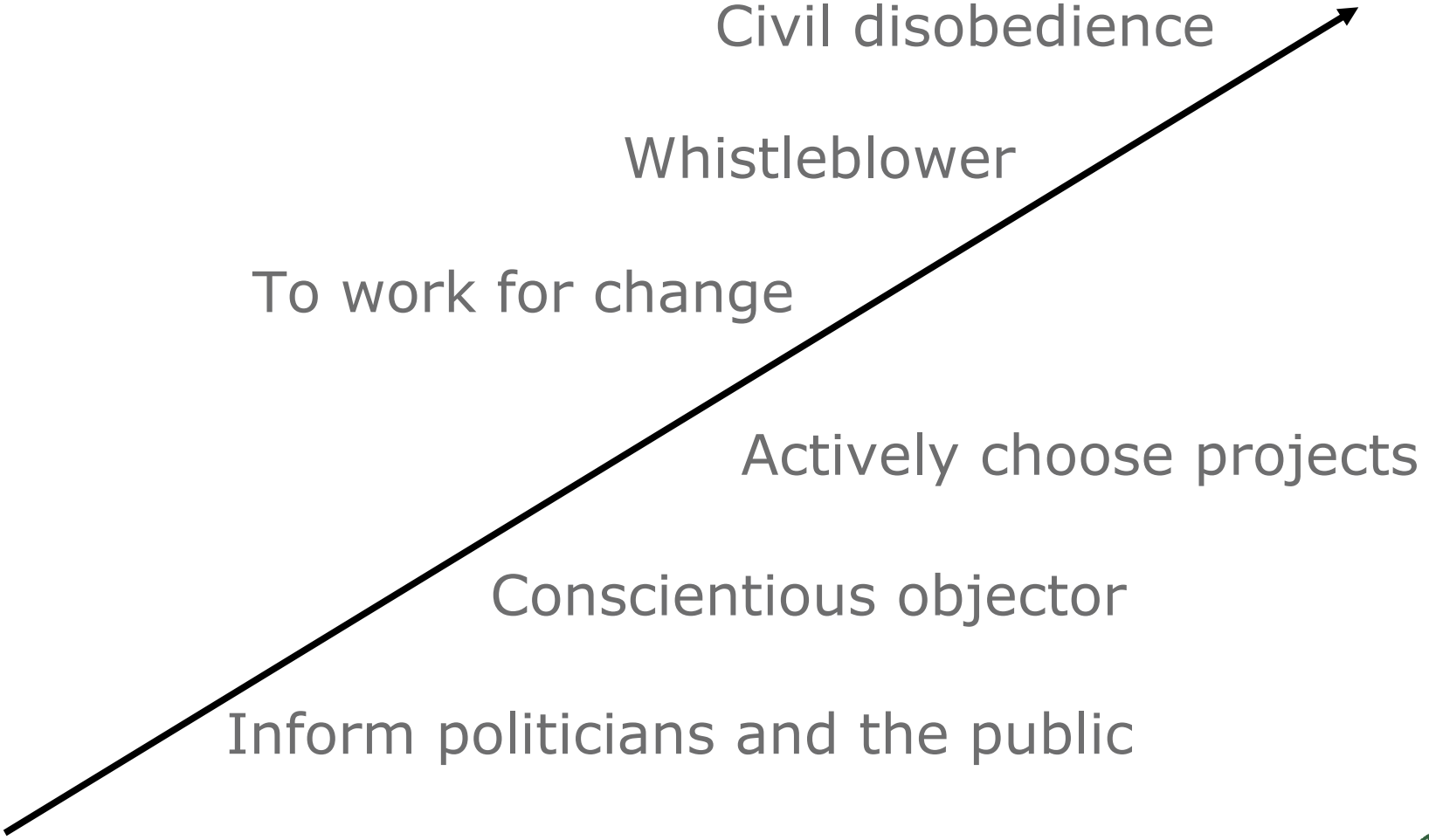
Course format

Time	***Wednesday***	***Monday***
9-10		Case presentation
10-11	Lecture	Case presentation
11-12	Lecture	Case presentation
12-13	Lunch	Lunch
13-14	Group work in class	
14-15	Group work in class	

Cases and central concepts of the course

Dilemma, controversy, conflict	***Analytical tools***
1/ Was Jan Hendrik Schön dishonest? If so, why?	I/ The ethos of science. II/ Scientific misconduct.
2/ Who deserves credit for the discovery of the structure of the DNA double-helix?	III/ Scientific methods. IV/ Feminist philosophy of science.
3/ The story of cold fusion: How to interpret ambiguous experimental results.	V/ The role of experiments in science. VI/ The narratives of science.
4/ The experiences of Ignacio Chapela: Uncertainty, scientific integrity and external pressures.	VII/ Post-academic science. VIII/ Entrepreneurial Science. IX/ Junk science.
5/ Fritz Haber: Man of genius or war criminal?	X/ Ethical theories. XI/ Social responsibility.
6/ Ethical reflections and your [i.e. the students'] future professional carriers	XII/ Ethical dilemmas related to new technology

The broader social responsibility



The Nuremberg Trials – just following orders

We were just following orders

WWII: German doctors carried out experiments on humans.

During the trails the doctors said that they were just following orders, and that their results had been proven beneficial.

Conscientious objector

Joseph Rotblat (1908-2005)

Physicist, born in Poland

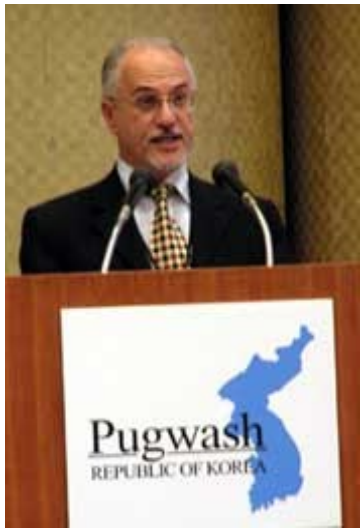
1939 moves to UK, and does research in radioactivity. Becomes aware of the destruction potential in fission.

WWII decides to work on the A-bomb, and joins the Manhattan project.

1944 leaves Los Alamos, as he realises that the Germans have no (serious) bomb project (officially of personal reasons).

Is accused of being a spy.

Joseph Rotblat



Al Shahristani

His colleagues at Los Alamos stays and works on the project.

Influence legislation and public opinion

Rotblat:

Co-signer of the Russell-Einstein Manifesto (1955).

Co-founder of Pugwash (1957) and INES (1991).

1988 President of Pugwash

1995 Nobel's Peace Prize.

Remember your humanity and forget the rest.

Nuclear Weapons

Asilomar Conference (1975):

Conference regarding recombinant DNA and risks regarding the new techniques. 140 biologists, medical doctors and lawyers attended.

Aim: to formulate guidelines to secure nature / society. Before the conference had the scientific community voluntarily enforced a moratorium regarding experiments with DNA.

Whistleblower

Mordechai Vanunu

- Technician at Israel's Dimona Facilities
- 1986: Leeks photos that proves that Israel has a nuclear weapons programme to The Sunday Times
- Kidapped by Mossad.
- Trialed and convicted for treason.

Jeffrey Wigand

Head of Research Lab. at Brown and Williamson Tobacco Corporation

Reveals info stating that tobacco companies do know that nicotine is addictive, and that they enhance the addictive effect.

Is fired and harassed.

Civil disobedience

Bertrand Russell:

British Mathematician and philosopher.

Behind the Russell-Einstein Manifesto.

1957 Co-founder of Pugwash

1958 President of Campaign for Nuclear Disarmament.

1960 Left CND as they decided not to support civil disobedience.

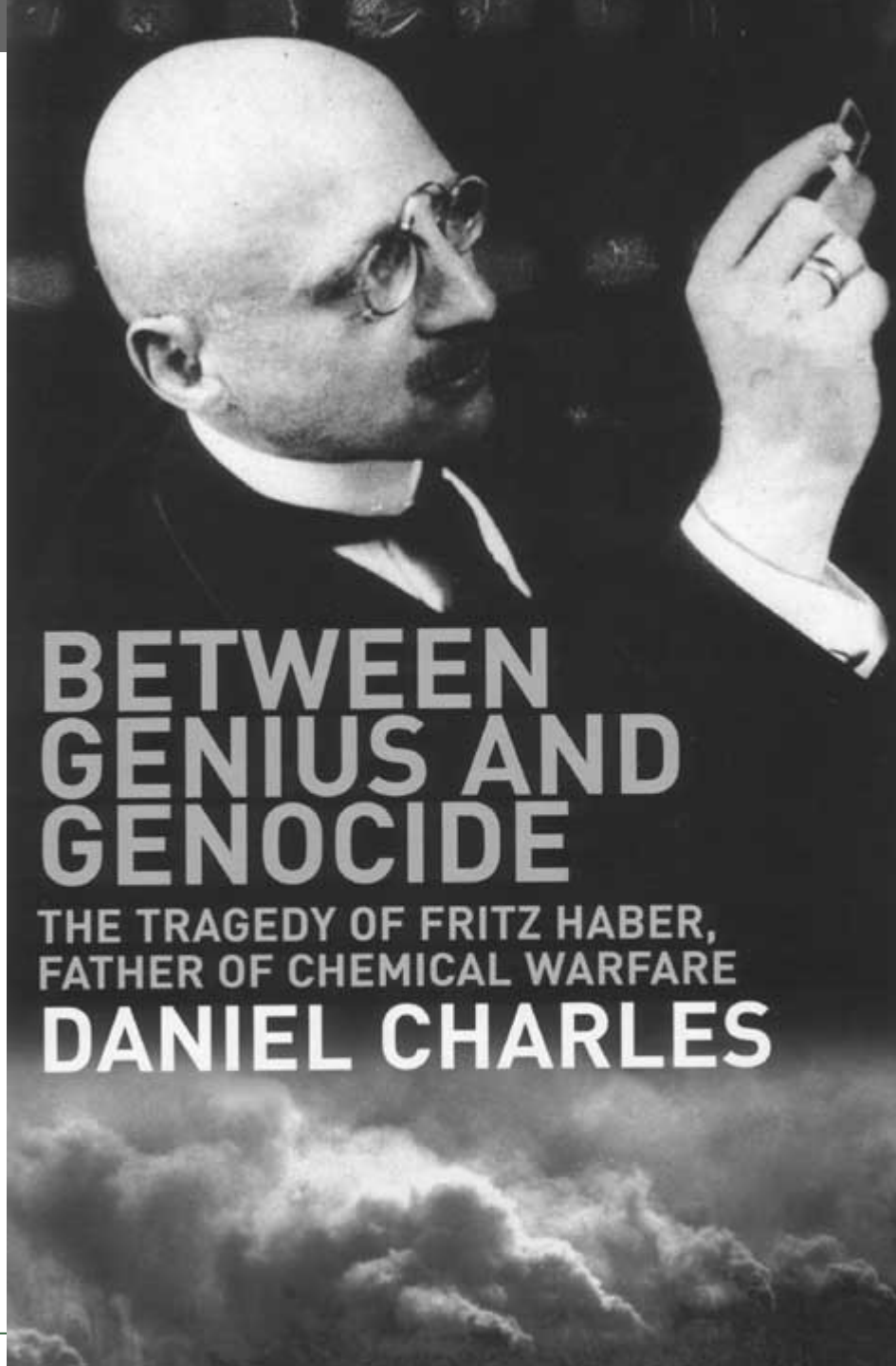
1961 Imprisoned for civil disobedience in connection with a demonstration against nuclear weapons.

Fritz Haber

How did Haber justify his work with chemical warfare?

Do you think Haber behaved socially responsible?

Could he had acted differently? Would it have made a difference?



Does the course make a difference?

Skill	***2005***			***2006***		
	before	*after*	*diff.*	*before*	*after*	*diff.*
Be able to evaluate the quality of the work of other researcher	12	3	9 ↑	4	3	1 ↑
Be able to work together with scholars from other disciplines	10	5	5 ↑	9	6	3 ↑
Be efficient when solving work tasks	5	10	5 ↓	11	10	1 ↑
Be able to evaluate whether research or development projects are unethical	15	13	2↑	13	7	6 ↑
Be able to use recognised scientific theories	11	15	4 ↓	3	12	9 ↓