Ethics of technology and science
Introduction

Iordanis Kavathatzopoulos

The course

- Lecture, seminars, group project
- **Literature**: Good research practice, links, papers
- **Examination**: Participation, group project, presentations, home exam
- Focus on ethical guidelines, research issues, and practical methods

Program

<table>
<thead>
<tr>
<th>Date, room</th>
<th>Subject</th>
<th>Presenter</th>
<th>Literature, etc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>21 Jan, 1146 09:15-12:00</td>
<td>Introduction</td>
<td>Iordanis, Thomas</td>
<td>Links, papers</td>
</tr>
<tr>
<td>28 Jan, 1111 09:15-12:00</td>
<td>General research issues</td>
<td>Groups</td>
<td>Good RP, Papers, Abstracts, Slides</td>
</tr>
<tr>
<td>11 Feb, 2115 09:15-12:00</td>
<td>Field specific issues</td>
<td>Groups</td>
<td>Slides</td>
</tr>
<tr>
<td>29 February, deadline</td>
<td>Home exam</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Problems

- Funding, conducting, applying
- Research collaboration, colleagues, supervisor
- Publishing, authorship etc.
- Methods, experimenting, laboratory animals, etc.
- Impact on society, human life, environment
- Privacy, intellectual property, etc.
- Plagiarism, handling of data
- …

Inherent contradictions

- Scientific research
- Laboratory animals
- Publishing and learning
- Privacy
- Security
- …

One example

You are leading a research project using the latest computer tools. You have gathered an enormous amount of data and a bio-informatician creates an algorithm to systematize the data. However, this operation transforms the richness of data to a few simple categories. You are convinced that if the results are presented in this simplified way there will be misinterpretations that will misguide future research. On the other hand you know that you can never get your research published unless you simplify your data.
Principles, guidelines...

From VR, Good Research Practice

*It is very important:*  
... should exhibit clarity... (p. 41)  
... create... a culture that does not tolerate research misconduct (p. 112)

*It is also very important:*  
... contribute effectively to the transmission of new knowledge ...  
... enable the scientific community to scrutinize and discuss (p. 88)

Ethics and morality

- Morality is “knowledge”, i.e. answers to choices we feel we need to make in our lives as persons or groups
- Ethics is about the process of gaining this “knowledge”

Answers or questions?

- **Content:** “Right actions are moral but wrong actions are immoral”  
  - Common sense definition based on moral content and normative aspects, focused on satisfaction with the result

- **Choice:** “Morality and ethics are related to choice”  
  - Philosophy and psychology base the definition on choice and option, focused on the quality of the process
Is it easy or difficult?
Generally we are constrained because of our nature but ethics are harder:
• Incompatible values decide right and wrong
• Contradictory cases, e.g. double standards
• Strong emotions
• Group and organizational constraints
• Authority is very important
• Focus on content not on process

Rationality?
• **Open**: There is no limit, no end, everything can be related to everything
• **No base**: Premises have to be identified and questioned
• **Logically imperfect** thinking processes work fine

(no algorithms, no computer calculations)

Ethical insecurity?
Handling of moral issues creates a big risk: *Important myths can be destroyed*
• **For persons**: Resolution of problems, personal development, but risk to lose enthusiasm, get disoriented, lost, cynical
• **For organizations, society**: Hero, e.g. whistle blowing (courageous, responsible), or offend persons and principles (show no respect, disloyalty, treason, hostility)
What do we need?

- **Ethical competence**: Know how to handle ethical issues, how to think
- **Ethical processes**: Roles, procedures, mechanisms in organizations
- **Ethical confidence**: Know that we can find good solutions and trust our ability (i.e. know that our skill and our way of handling moral issues is working)

How do we think?

- **Heteronomy**: automatic, dogmatic, constrained, authoritarian thoughts, instincts and reflexes
- **Advantages**: Quick, safe, economic, avoid responsibility
- **Disadvantages**: Bad control, chancing, difficult to explain

Could we think better?

- **Autonomy**: Critical searching, systematic thinking, supervision, holistic
- **Disadvantages**: Demands time, resources and skill, create anxiety
- **Advantages**: Good control, insight, awareness, responsibility, easy to explain
One example
You are leading a research project using the latest computer tools. You have gathered an enormous amount of data and a bio-informatician creates an algorithm to systematize the data. However, this operation transforms the richness of data to a few simple categories. You are convinced that if the results are presented in this simplified way there will be misinterpretations that will misguide future research. On the other hand you know that you can never get your research published unless you simplify your data.

### Autonomy Skill

<table>
<thead>
<tr>
<th>Autonomy thinking</th>
<th>All relevant values, interests, duties, feelings, needs, etc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scientific community</td>
<td>Relation to transformer.</td>
</tr>
<tr>
<td>Bioinformatician’s line</td>
<td>Informed, but risk for misinterpretations</td>
</tr>
</tbody>
</table>
| Negotiate more | No information, but maybe safer later | Chance to secure wealth, but risk of conflict | Delayed publication, but resistance of problems | Withholding information, but cautious and serious | ... | ...
| (cont.) | ... | ... | ... | ... | ... |

### OLE questionnaire

1. Will there be any ethical problems or conflicts in the context, in the organisation or in the group where your decision will be applied or your solution will be used (e.g. your research findings)?
2. Will your decision or solution cause any ethical problems or conflicts?
3. Are there any alternatives to your solution?
4. What groups, individuals, organisations, etc., will in any way be affected by or have a stake in the development, use, application or mere existence of your decision and solution? (Including society at large and the environment.)
5. What values, interests, duties, standpoints and attitudes are involved in the use of your solution and of the possible alternatives?
6. What effects will your solution (and the alternatives) have on each of these values? What are the strengths/possibilities and the weaknesses/risks of each solution to each value? Will these solutions fit certain values and conflict with others? What values and how?
7. What will you do to make sure that the use of the solution will be optimal with regards to ethical aspects? For instance, adapt the design of the product, use of research methods, cooperation with industry, information to stakeholders, etc? How exactly are you going to succeed with this?