

Research methodology seminar

A lively introduction to Ethics (in Science)

Denis Trystram

MoSIG1
december, 2020

Objective of this presentation.

Engage current research trainees in discussions about proper and improper scientific conduct (with an emphasis on the field of Computing).

Make the students *think* about several situations and debate, each one dealing with a different facet^a.

^ainspired by the research Ethics seminar at Rice University leaded by Moshe Vardi

Objective of this presentation.

Engage current research trainees in discussions about proper and improper scientific conduct (with an emphasis on the field of Computing).

Make the students *think* about several situations and debate, each one dealing with a different facet^a.

^ainspired by the research Ethics seminar at Rice University leaded by Moshe Vardi

Why talking about Ethics?

- Because the world is not split between the world of Science and daily life...
- The modern life creates many hot controversial topics.
- Misbehavior in science may affect all of us.

It undermines public trust in the results and methods of science.
It also threatens public funding and support for scientific research.

When Science meets Society

Many people are talking about Ethics (in medicine ¹, climate changes, resource waste, practices and products issued from AI, etc.).

The concept covers several aspects

- moral
- integrity
- deontology
- the code of law
- etc.

The purpose of this talk is only to discuss them (using lively analysis of case studies).

¹like euthanasia, assisted reproduction, etc.

The Latin etymology for integrity is "integer/entier". Today, many meanings of the term retain this notion of wholeness and indivisibility, as when we speak of preserving the integrity of a nation.

The idea behind integrity is often assimilated to "be yourself" or "stay true to yourself".

Notice that for many people behaving with integrity would simply mean acting ethically.

The term deontology comes from the ancient Greek word "*deontos*", which means duty.

In its common acceptance, deontology refers to the obligations that people are required to respect in their work.

The obligations shared by a group of people reflect values and principles that are –appear to be– fundamental.

Ethics is close to moral².

Both Deontology and Ethics refer to human social activities (daily life, individual/collective, ...) while integrity is a more personal concern.

But all are more than common activities (taking the tramway for going to the classes, eating, sleeping, etc.),

There is a dimension of *sense of life* or *social rules* that should be followed.

²but it does not mean that it refers to Good and Evil

A quick comparison of the different concepts

Ethique de la recherche	Intégrité scientifique	Déontologie du fonctionnaire
<p>Les grandes questions que posent les progrès de la science et leurs répercussions sociétales</p> <p>Dimension culturelle: doit se discuter en permanence puis s'impose</p> <p>→ Tous les chercheurs</p> <p>Des comités</p>	<p>Les règles qui gouvernent la pratique de la recherche</p> <p>Dimension universelle: s'impose comme un code professionnel de « droit souple »</p> <p>→ Tous les chercheurs</p> <p>Des référents chercheurs</p>	<p>Le contrôle des liens d'intérêts & cumuls d'activité des fonctionnaires</p> <p>Loi Le Pors 1983 rév. 2016: "Le fonctionnaire exerce ses fonctions avec dignité, impartialité, intégrité et probité"</p> <p>→ Chercheurs publics</p> <p>Des référents juristes</p>

COMETS attire l'attention des personnels de recherche et de direction sur les dimensions éthiques et sociétales de toute recherche.

Il vise à éclairer l'exercice de la liberté de recherche en regard des devoirs et responsabilités que ces personnels ont vis-à-vis du CNRS et plus généralement de la société.

COMETS draws the attention of research and management staff to the ethical and societal dimensions of all kind of research.

It aims to shed light on the exercise of freedom of research with regard to the duties and responsibilities that these persons have towards the CNRS and more generally towards society.

Some (recent) concrete actions

- Since 2015, doctoral schools must ensure that PhD students receive education and training in ethics and scientific integrity
- The academic institutions have appointed referents for scientific integrity.
- A French Office of Scientific Integrity (OFIS) was installed in 2017 at HCERES.

Prepare, conduct, and report of scientific research including professional issues

Examples:

Peer review, conducting research, authorship, research fraud, conflicts of interest, working in questionable topics, right level of communication about scientific issues, ...

Let us present some of such examples by groups of students who will analyze concrete situations and deliver a clear analysis.

A preliminary example (1)

Description of the case study:

Scientific communication in relation to crisis management:

In an imaginary world, there is a pandemic that spreads a virus to all countries. Each country reacts with its own laws according to its own culture and the governments in place.

One of these countries proposes to convene a scientific council to help it take the right course of action.

The virus develops very quickly and kills especially in the population of fragile people. The authorities are faced with the dilemma of confining the entire population with a heavy impact on the economic situation.

Albert is a recognized scientist, he is belonging to the scientific advising committee composed of several specialists in different fields.

He has found a solution that he thinks is the right one, but that the authorities refuse to follow. He decides to communicate directly this solution to everyone against the government.

(3)

Analyze the situation from the view point of:

- the State
- Albert
- the other members of the committee

(3)

Analyze the situation from the view point of:

- the State
- Albert
- the other members of the committee

Questions

Do you think it is desirable to communicate the solution directly?

What can be the side effects of such a decision?

The question raised by the communications is a deontological or ethical one (or integrity one)?

A first case study (1)

Description: Falsification of results

Deborah, a M1 student works under the supervision of Kathleen, a post-doc who is looking for an academic position.

They have made a series of experiments on a new experimental platform for assessing a new (promising) model.

When they get back to their own lab and examine the data, they get the following data points.

A newly proposed theory predicts results indicated by the curve.

During the measurements, Deborah and Kathleen observed that there were power fluctuations they could not control or predict.

Furthermore, they discussed their work with another group working on similar topic, and they knew that they have results confirming the theoretical prediction.

They are writing a paper describing their results.

A first case study (2)

- 1 In writing up their own results for publication, Kathleen suggests dropping several anomalous data points from the published graph and from the related statistical analysis.
She proposes that the existence of the data points be mentioned in the paper as possibly due to power fluctuations (being outside the expected standard deviation calculated from the remaining data points).
- 2 These two runs, she argues to Deborah "were obviously wrong."

Questions

How should the data from the two suspected runs be handled?

Should the data be included in tests of statistical significance and why?
What other sources of information, in addition to their faculty advisor, can Deborah and Kathleen use to help decide?

A second case study (1)

Description: conflict of interest

Alice, a M1 student, is participating in a department-wide monthly seminar where students, postdocs, and faculty members discuss work in progress.

An assistant professor prefaces her comments by saying that the work she is about to discuss is sponsored by a private company for which she consults.

In the course of the talk Alice realizes that she has been working on a software that could make a major contribution to the work being discussed.

But her faculty advisor consults for a different, and competing, company.

A second case study (2)

Question

How should Alice participate in this seminar?

What if anything, should she say to his advisor-and when?

What implications does this case raise for the traditional openness and sharing of data that have characterized modern science?

Third case study (1)

Description: co-authoring a paper

Ben is a senior professor of computer science who serves as program chair for a conference with refereed publications.

Ben suggests to his student Alyssa to submit a paper to the conference because, even though he cannot support her trip to the conference, he will be there and can present her paper.

Alyssa writes the paper and gives several drafts to Ben, who does not comment on any of them. All the research is original work from Alyssa while she was funded by an external fellowship. She submits the paper listing herself as the sole author. Alyssa's paper gets accepted.

The conference informs her that she is required to attend to present her result.

Surprised, she asks Ben about this policy, since he had never mention it before.

Ben replies curtly that Alyssa will have to make him a co-author on her paper.

Alyssa finds this unreasonable, particularly since Ben did not provide her with any feedback on the submission.

Alyssa cannot afford to attend the conference on her own.

Third case study (2)

Description of the case from B side:

Ben is a professor of computer science. He has a promising student Alyssa to whom he suggests a timely and new problem. He encourages her to write a paper on the results to submit to a conference he will be attending whether or not he gives a paper. Thus, even though he cannot afford to send her to the conference, he can deliver their joint work if it is accepted.

She gives him a draft of the paper to read. He is pleased to see that she is solving the problem along the lines he expected would work. On the other hand, he is irritated by the fact that she has listed herself as sole author. He expects an unpleasant, or at least embarrassing, scene when they discuss this, and so he says nothing.

Other drafts follow still with Alyssa as sole author, and still Ben says nothing. He reasons that the conference is very competitive, and if the paper is not accepted, there will be no need to address the issue.

Thrid case study (3)

Question:

What should Alyssa do?

Who else they can talk not to risk a major rift with her advisor?

Considered withdrawing the paper?

Eventually adds Ben as a co-author and then, see the paper published at the conference?

Fourth case study (1)

expertise in relation to public decision-making:

A recent start-up specialized in Artificial Intelligence (AI) communicates about its new software that aims at helping the professionals of the judicial world. It proposes a product (algorithm) to assist a judge in decision making. Two friends are discussing this announcement, a retired judge named Pierre and a lawyer named Paul.

Fourth case study (2)

Paul who is younger, he said that we must adapt to new technologies.

Pierre is more skeptical about the question of control of this type of software. He said he would have preferred the State to provide its own algorithms.

Paul said that the main point is to accelerate the time of the decision that are ever too long.

Moreover, he explains that this software allows judges to choose their own criteria by looking at decisions made in similar cases.

Pierre points out that the automation of decisions is invisible to cases of discrimination.

How could we reduce bias (e.g. on the racial issue)?

Fourth case study (3)

Questions

Does this software reduce the judges' margin of discretion?
What kind of control must be taken?