

Applied Algebra: the ethics of applied vs basic research

1. Introduction

Job choice: Abid is a talented applied math student at a prestigious university. His senior thesis advisor tells him that he has the talent and work dispositions to be a successful researcher. Abid has also studied some engineering and been very successful in his internships with a company working to bring renewable energy to rural India.

What career path should Abid choose, and why?

Grant decision: Bo is the head of the NSF. A committee has recommended ten proposals for a prestigious grant. Half of the proposals are engineering, medical, and social science proposals that are likely to greatly increase human welfare, if the findings are utilized in policy or by NGO's. Half of the proposals are basic research proposals that are likely to produce significant, fundamental scientific knowledge.

What mixture of proposals should Bo fund, and why?

Big question for today: What are the ethical responsibilities of individuals and of institutions in deciding whether to pursue more applied and more basic research?

2. Individuals

The Utilitarian Answer: Individuals should choose the action that maximizes expected consequences, and the only relevant consequences are facts about human welfare.

- *Maximizing actual versus expected consequences:* The former is seen as much too demanding, while the latter is problematically subjective.
- *Welfarist:* There are many different accounts of welfare: preference-satisfaction, objective list, desire satisfaction. What is important for our purposes is that the only facts that count towards determining whether a state of affairs is the best one are facts about human welfare.

In simpler terms: the utilitarian answer is “do what is morally best.”

1. What would the utilitarian answer say about Bo's case?
2. Let's turn to the excerpt from *Strangers Drowning*. What is right about Aaron's attitude to the world? What is troubling?

The Valuable Social Roles Answer: Individuals should pursue a career where they are accomplishing a valuable social role.

- Valuable social role: One that (1) at minimum, does not typically involve harming others, and (2) contributes something of value.

This seems to be Hardy's defense of the choice to be a mathematician.

Activity: In pairs, find where Hardy discusses (1) and (2) above, and provide at least one reason that the choice to study mathematics does fulfill (1) and (2). Then, provide at least one reason against Hardy's defense of mathematics.

Hard question: How do other values weigh against moral values in choosing what to do?

- The utilitarian answer: Only moral values matter.
- Social roles answer: It is neither rational nor good for people to strive to be moral saints, i.e., people whose every action is as morally good as possible.
 - Let's go back to Aaron. Why might this be?

3. Institutions

Utilitarian Answer: Institutions should put in place policies that maximize expected welfare.

- What would this answer say about the case of the NSF?

Activity: Come up with one objection to this answer, and one reason why this answer is compelling.

Rawlsian Answer: Institutions should be designed according to these two principles of justice:

1. Each person should have the same equal basic liberties.
2. Social and economic inequalities are permissible if and only if:
 - they are attached to positions that everyone has an equal chance to compete for,
 - they are to the greatest benefit of the least-advantaged members of society.

What would the Rawlsian answer say about the case of the NSF?