

Overlooked ethical requirements in the sciences

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Today’s science ethics vs. insights from philosophy

Within ethics in science we primarily pay attention to **scientific misconduct** ^[1] like:

- the fabrication or falsification of data
- plagiarism
- reporting desired results while omitting undesired ones
- over-interpretation of data

To build awareness with respect to scientific misconduct universities and funding agencies have established instructions named, e.g., safeguarding good scientific practice. ^[2] Such guidelines should ensure that scientists follow the right course of action. However, they are contrasted by Aristotle who pointed out that this course “depends upon the details of a particular situation, rather than being generated merely by applying a law.” ^[3]

In today’s discours on proper ethical behavior we usually don’t recognize that doing the right thing is just one aspect of ethics:

Dating back to Greek philosophy, ethics essentially deals with the highest human good: **Eudaimonia**, ^[4] which means human flourishing, prosperity or blessedness.

That is, the principal aim in life is given by eudaimonia. Some authors are aware of this background of any kind of ethics, i.e. also of science ethics. ^[5] But there is danger to misunderstand the essence of eudaimonia. For example, we are used to legitimate aims via functionalities, e.g., beneficial social impacts: “Only when we act as full personalities” we will “be able to make valuable cultural contributions.” ^[5] Again, we have to remember Aristotle according to whom acting ethically has to be done *for its own sake*. ^[6]

The scientist’s ethos

Taking eudaimonia as highest human good seriously, we can derive **ethical requirements** for the sciences which are generally overlooked today: ^[8]

- 1) amazement
- 2) reverence with respect to the object of research
- 3) diligence
- 4) inner distance to one’s own work
- 5) taking one’s time

Ad 1) The questions of the individual sciences are solved by answers. In contrast, we cannot conclusively answer general questions like: Why is nature ordered rather than chaotic and why are we able to describe many of its laws mathematically? Such issues remain in a milieu characterized by *amazement*. ^[9] We should cultivate sensitivity for them because they are meaningful and delight us. ^[10]

Ad 2) *Reverence* is the basic virtue (Cicero). As scientists we have to practice reverence with respect to the object of our research. From this it follows that we need to put this object at the heart of the scientific everyday life – not ourselves. ^[11]

Ad 3) Reverence with respect to the object of research implies that we *work diligently* and that we let findings ripen before publishing. Furthermore, we have to respect the intrinsic limits of the individual sciences. Hence, we must not declare a single scientific discipline to be a kind of metaphysics.

Ad 4) If we realize *inner distance to our own work* we are less susceptible for scientific misconduct.

⇒ The ethical requirements discussed so far premise that we *take our time*. Altogether, they define the **scientist’s ethos**. ^[8, cf. 12] It is evident that it goes far beyond policies for good scientific practice.

This ethos facilitates **freedom**. In fact, freedom corresponds to eudaimonia, i.e. to the ultimate aim of Aristotle’s ethics: It has logically been derived that under the condition of being free of any intended purpose freedom is the only aim we can strive for. ^[6]

Therefore, the categorical imperative can be formulated as follows:

Act thus that you aim for the maximum possible freedom in the long run, in any matter. ^[6]

Implications for the scientist’s everyday life

The ethical requirements introduced here are not only overlooked in science ethics. More severe, many scientists themselves apparently never gained a sense to perceive and esteem them. This becomes evident when we transform the abstract requirements into **particular recommendations**. What many (or most?) researchers do supremely contrasts with what they should do:

- Instead of striving after money (e.g., third-party funds) and a high position in any kind of ranking (*b-index*, ...), ^[13–15] they should aspire toward truth. ^[16]
- Instead of devoting themselves to bustling activity and external quantities (jetting from one conference to the other, publishing numerous papers, ...), ^[13, 14] scientists are supposed to gather themselves to experience inner qualities of human life. ^{cf. [17]}

- Instead of struggling to gain public attention, scientists are to be indiffernt to fame and fortune. ^[1]
- Instead of exaggerating the own research (in funding proposals, ...) ^[11, 13] and sensationalizing one’s results (e.g., to support their dissemination in media), ^[1, 18] academics ought to confide in the self-evidence of their research. ^[11]
- Instead of naively counting on formal instructions to ensure good scientific practice, scientists should be mature humans. This implies that they understand any individual life as *just being beading* to fulfillment (remaining a task for a lifetime). ^[8]
- Instead of conforming themselves to the scientific system, researchers must campaign to win back freedom by violating borders of the established system. ^[8]

Conclusions

- Ethics essentially deals with the ultimate aim of life. Human flourishing, blessedness and especially freedom give an idea of what the highest human good is about.
- Requirements derived from this ethical insight are of fundamental importance because they address realizing a meaningful life. With respect to the professional work of scientists such requirements are, e.g., amazement, reverence with respect to the object of research and taking one’s time.
- Absurdly, our scientific system is in conflict with these requirements: It calls for the unethical attitude characterized by the first part of the sentences “Instead ...” in the box above. *Clearly spoken, the current scientific system exhibits fundamental unethical traits.* Hence, we definitively have to change it. ^[1, 13–16, 18]
- Even though, scientists are not dispensed from their personal responsibility. ^[8] They must be disobedient with respect to the established system and win back freedom.

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