

*GM Plants: Nature Between Science &
Bioethics*

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Ethical & social issues

- *Human and animal health & food safety*
- *Issues of justice (including Poor Farmers and Poor Countries)*
- *Future generations' welfare*
- *Intellectual property issues*
- *Consumers' choice*
- *Environmental concerns*

Environmentally relevant phenomena

- *Gene flow: the movement of genes into, or through, a population by interbreeding or by migration and interbreeding*
- *Transgene flow to:*
 - *Other crops*
 - *Wild relatives*
 - *Non-target species*

Environmentally relevant phenomena

- *Hybridization*

(the breeding between individuals belonging to two different species)

Environmentally relevant phenomena

- *Introggression*

*(the backcrossing of a hybrid with an individual
from one of its parent species)*

Associated events

- *Invasion*
- *Extinction*
- *Evolution of resistant pests*
- *Increased weediness*
- *Loss of genetic and biological diversity*
- *Threats to ecologically beneficial non-target species*
- ...

Evolutionary level

New scale

- *Phenomena of unprecedented magnitude:*
 - *Do not depend on GM in themselves*

Displacement

- *Modern age: Increase in the displacement of living organisms – not only crops – around the world*
 - *GM technologies simply added a further dimension to this phenomenon, but, so to say, no qualitative novelty occurred to what was already going on in modern times:*
- *GM techs can be considered as an increasingly precise kind of intentional displacement of biological materials*

Standard Bioethical Treatment

- *Consequences*
- *Intrinsic concerns*

Intrinsic concerns in general

- *«Some people think that certain actions are wrong, whatever the consequences would be of not doing them» (B. Hooker, p. 127). Examples:*
 - *God's commandments*
 - *Do not interfere with the course of nature, because it is good in itself*
- *It seems a very normal way to cope with our everyday morality; But in fact the notion of harm plays here too little a role.*

Intrinsic concerns in the GM debate

- *It is the GM technique itself that is ethically problematic:*
 - *it is unnatural*
 - *it crosses species boundaries*
 - *it violates the integrity (rights?) of living organisms*
 - *it is “Playing God”*

Intrinsic concerns in the GM debate

- *Manipulative attitude towards nature*
 - *Loose meaning*

It should be DISCARDED!

Consequences

- *Object of moral judgment (what we call right or wrong):*

actions

- *Not: character, principles, rights, classes of actions, ethical rules, moral codes, etc...*

Consequences

- *An action produces a state of affairs as a consequence of its being performed:*
- *Such a state of affairs can be understood as:*
 - *The outcome of the internalization of a certain set of moral rules which allows/forbids an action (rule-consequentialism); it is the action that is right or wrong, but it is the moral code that is considered the source of the good or bad consequences;*
 - *The outcome of a single action (act-consequentialism).*

Consequentialism

- *Rule-c tells us that an action is good/bad if a moral code allows/forbids it*
- *Act-c tells us if an action is good or bad*

From now on I will only be concerned with act-c.

Consequentialism

- *The consequences of an action are assessed in terms of*

WELFARE

Consequentialism

- *Welfare as:*
 - *Happiness*
 - *Well-being*
 - *Preference satisfaction*
 - *Pleasure-pain*
 - *Income*
 - ...
 - *Utility*

Welfare

- *Whose:*
 - *Only humans*
 - *All sentient beings*
 - *All living organisms*
 - ...

- *How long*

The need for predictions

- *If we do not know what are the consequences of an act, then we will not know whether that act is right or wrong;*
- *«If we cannot know which acts are wrong on [our] version of [...] Consequentialism, it falls under a dark shadow» (B. Hooker, 2000, p. 114).*
- *This normative theory needs science*

General conditions for using C

Some degree of predictability

– at least predictive models (direct evidence about the future is obviously not available)

Some actual predictions [not descriptions]

The possibility to calculate the influence of this scenarios on welfare

Consequentialism

Important!!!

No normative indications so far

- *This is an advantage of our theory over the possible alternatives:*
 - *I can evaluate on a case-by-case basis*
- *If the opposite conditions hold...*

If opposite conditions hold...

- *No predictions are available*
- *Risks are thought to be so very grave that they outweigh any possible benefit*

Principle of precaution

=

*I don't care about
predictions or
consequences after all
(intrinsic value)*

*...PP already provides a
normative position*

- *Disadvantage:*
 - *It works a priori, i.e. independently from any knowledge that might come from experience (science)*

Important!!!

- *No normative indications so far*
- *This is an advantage of our theory over the possible alternatives*
- *It is better to be in the position where conditions for C hold*
- *Let's see if it is possible to interpret the scientific literature in a way that is favourable to C*

A review is needed...

- *Scientific literature on:*
 - *predictive models*
 - *how reliable it is to infer future scenarios from descriptions about what we know has already happened*
 - *relevance of ecological predictions to (somebody's) welfare*

*Do we have the proper conditions
to say that C(GM) works?*

*Long-term field studies can «provide an
improved basis for extrapolating from
microevolution to patterns of macroevolution
[...] from evolutionary dynamics in the scale
of decades, to speciation and further adaptive
radiation on the scale of hundreds of
thousands of years.*

...continued

[...] the long term unpredictability of evolutionary change [...] is a reason for encouraging additional, continuous, long term studies of evolution in nature»

P. Grant, R. Grant (2002), Science, 296, 707-711

Increased sophistication

- *Science & moral philosophy: can collaborate to make our agency more rational*

Public acceptance

Why doesn't public acceptance follow from increased sophistication?

- *Minor role of reasons in moral judgment*

Moral judgment

- *Reasons & moral judgment*
– *Jonathan Haidt*
- *Passions & moral judgment*
– *David Hume (1711 - 1776)*

Reasons & moral judgment

«Research on moral judgment has been dominated by rationalist models, in which moral judgment is thought to be caused by moral reasoning. [...] rather, moral reasoning is usually a post-hoc construction, generated after a judgment has been reached».

J. Haidt (2001), Psychological Review. 108, 814-834

Passions & moral judgment

- *Morality entails passions*
- *Reasons alone do not produce any ethical decision:*
 - *We have no evidence from psychology that the reasoning is the cause of moral judgment and not its consequence*

David Hume (1711 – 1776)

vs..

Immanuel Kant (1724 – 1804)

Some suggestions

- *Rule out unsound concepts, principles and theories*
- *Stick to feasible solutions: philosophers must understand the contribution of science*
- *Positively motivating scenarios*

“The wise suggestion”

*«The products of plant improvement are not absolutely safe, and we cannot expect transgenic crops to be absolutely safe either. [...] If we have **advanced tools** for creating novel agricultural products, we should use the **advanced knowledge** from ecology and population genetics as well as social sciences and humanities to make mindful choices about how to create the products that are best for humans and our environment» (N. C. Ellstrand, 2001)*

Take-home messages

- 1. There is a specific weight of predictions in some ethical theories.*
- 2. However, ethical judgment and ethical decision making are not only nor primarily matters of knowledge and reasoning.*

Thank you