



Utrecht University

Broadening the debate on Breeding: on the Ethical and Societal dimensions of innovations in livestock breeding

Dr. Franck Meijboom

Centre for Sustainable Animal Stewardship (CenSAS)
Utrecht University | Faculty of Veterinary Medicine &
Ethics Institute

Wageningen University | ASG | Adaptation Physiology

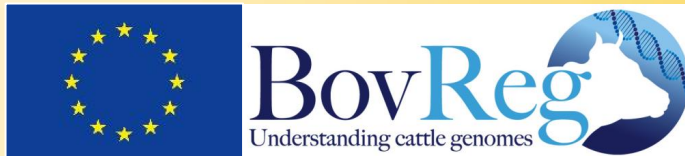


Outline

A. From “how and what” to “why and for whom”: the importance to include socio-ethical dimensions

B. Broadening the debate on socio-ethical dimensions

1. More than experts
2. More than risks
3. More than animal welfare
4. More than reflection on new issues



Just Editing? A Comparative Responsible Innovation Approach to Animal Genome Editing



From “how and what” to “why and for whom”

Without expertise in fields such as biology, veterinary and data sciences, innovations in animal breeding are not possible.

However, innovations in animal breeding are more than technical challenges.

It raises normative questions:

- What is desirable?
- What is good?
- What is right/ justified?





From “how and what” to “why and for whom”

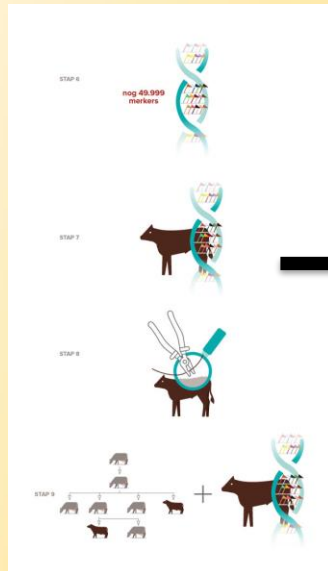
Where do these questions come from?

- **Breeding** is goal directed → What do we aim for and why is that valuable? what is the preferred direction?
- **Technology** is not neutral → (how) should it be used?, Who are allowed to use it? What is the impact in terms of power, responsibility. How to deal with uncertainty?
- **Animals** → what is the value of animals? Do we have duties towards animals? Are we allowed to change animals?

Answers are never neutral but embedded in views on what is desirable/ valuable.

From “how and what” to “why and for whom”

The ethical and societal dimensions of innovations in livestock breeding often are perceived/ discussed as an add-on.....



Attention to
ethics = part of
implementation
and ~~creating~~
acceptance



From “how and what” to “why and for whom”

The ethical and societal dimensions of innovations in livestock breeding needs to be included from start of the innovation process.





Broadening the debate on socio-ethical dimensions

1. More than experts

Experts are essential to discuss the socio-ethical dimensions of new technologies in livestock breeding. This includes experts in breeding-related disciplines + social science and ethics.



However, experts are not enough! Public engagement is essential. Only engaging with technical experts on gene-editing livestock risks ‘omitting the true breadth of these issues by limiting our perspective to dominant perspectives’ (Kayumova et al., 2019: 223).



Broadening the debate on socio-ethical dimensions



Cattle Breeding:
what should we do next?

a Democs game
to discuss how we should use our new
knowledge of genetic science to
breeding cattle for milk and meat



This Democs game has been created by Edinethics Ltd.
as part of the BovReg Project, funded by the European
Commission Horizon 2020 Research Programme



www.bovreg.eu
www.edinethics.co.uk



Democs game (H2020 BovReg, D. Bruce)



Focus Group Discussions (NWO Just Editing project, Middelveld, Macnaghten)



Broadening the debate on socio-ethical dimensions

2. More than risks

The dominant institutional debate on innovations in animal breeding has been framed in terms of measurable risks.

This suggests as if the public issues surrounding new technologies in breeding can be reduced to specific harms to health and the environment as explicable by case-by-case scientific risk assessment.

This frame is poorly equipped to think through the broad set of questions that are relevant in the context of animal breeding.





Broadening the debate on socio-ethical dimensions

Story Card 7



Hermann Anderegg : Alpine Cattle Farmer

Genomics Selection to support local breeds: **tradition, region, independence**

(H2020 BovReg, D. Bruce)

Can concerns be explained by reference to background assumptions?

- Moral status of the planet, animals and humans
- Moral view on Perfection
- Acceptability of farming and breeding practices, current and alternative
- Acceptability of genetic enhancement as such

Background assumptions play central role in evaluation of gene-editing

(NWO Just Editing project, with Middelveld, Macnaghten)



Broadening the debate on socio-ethical dimensions

3. More than animal welfare

The animal makes a difference: additional questions and concerns in comparison to plant breeding.

Animals are recognized as sentient beings: they have interests that have to be considered in the breeding process.

Mostly this is taken on board in terms of attention to **animal welfare**.

Despite the importance of animal welfare, the animal related question **cannot be reduced to welfare**.





Broadening the debate on socio-ethical dimensions

“Several authors argued that (applications of) genome editing are undesirable not because they might harm the welfare of these animals, but because they might be **harmed in other ways.**” (De Graeff et al 2019)

“The potential to change the nature of animals, sometimes referred to as **‘de-animalisation’**, i.e. to add or remove certain capacities from animals (such as cognitive capacities or the ability to feel pain), is of ethical concern.” (EGE, 2021 Ethics of Genome Editing)

“...even if breeding technologies do improve animal welfare, they might be objected to on other ethical grounds (..). The current paper applies the **concept of telos**, (...), to genomic selection and genome editing aimed at improving animal welfare.” (Kramer & Meijboom, 2021)



Broadening the debate on socio-ethical dimensions

4. It's about more than new questions: the meaning of “new”

Researchers in interviews on gene-editing: this is not new, a lot of continuity with existing technology → does not raise moral concerns

Members of the public in focus group discussions on gene-editing: this is not new, a lot of continuity with how companies already manipulate animals → does raise moral concerns



Broadening the debate on socio-ethical dimensions

4. It's about more than new questions: the *relevance* on “new”

In the project on Genomics selection, it seems that not that many new ethical concerns arise → morally neutral?

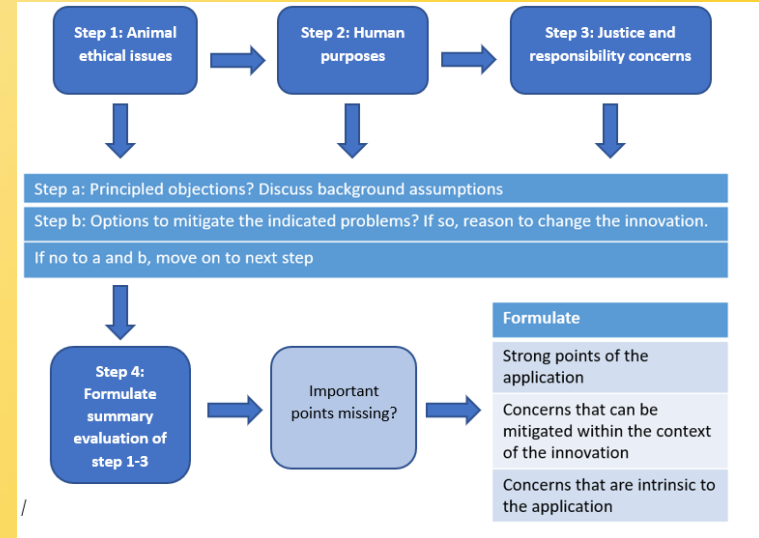
Ethical reflection it is not only about new topics

- a. The pace of the development, unclarity about responsibilities or uncertainties can raise relevant (but well-known) questions that need attention
- b. New technologies can make existing concerns explicit: e.g., instrumentalization of animals, questions about ownership of genetic material.

Broadening the debate on socio-ethical dimensions

Animal ethical issues regarding GS	Interhuman concerns regarding GS	Human objectives of GS
Impacts (positive or negative) of GS on animals <ul style="list-style-type: none"> On health? On welfare? On telos? On naturalness? 	Societal impact <ul style="list-style-type: none"> Does GS serve a legitimate societal interest? 	Wellbeing <ul style="list-style-type: none"> Food security and quality Economic prosperity
Impact of GS on human-animal relations <ul style="list-style-type: none"> Do more/different/fewer animals become 'killable' to breeders? Are animals understood reductively as determined by genetics? 	Trust <ul style="list-style-type: none"> Won't economic motives prevail when GS is used in practice? 	Autonomy/freedom <ul style="list-style-type: none"> In animal research In agricultural production In food consumption
Animal ethical issues regarding breeding more generally	Transparency and public control <ul style="list-style-type: none"> Are lay citizens aware of and able to influence directions in GS? 	Justice <ul style="list-style-type: none"> Economic equity Food sustainability Environmental sustainability
Acceptability of optimizing animal bodies and populations <ul style="list-style-type: none"> Does optimizing animals violate their integrity/dignity/moral status? 	Authority <ul style="list-style-type: none"> Does GS discredit traditional ways of knowing animals? 	Environmental objectives of GS
Acceptability of optimizing animal bodies and populations for external ends <ul style="list-style-type: none"> Are animals commodified to an objectionable extent? 	Power <ul style="list-style-type: none"> Will economically powerful breeders consolidate due to GS? Will farmers become more dependent on breeders due to GS? 	Mitigating climate change (effects) <ul style="list-style-type: none"> Improving efficiency Reducing methane emission Breeding resilient animals
		Maintaining biodiversity <ul style="list-style-type: none"> Preserving minority breeds Preserving diverse landscapes

From: Kramer & Meijboom. 2021, BovReg
 Figure 2: ethically relevant concepts and questions with respect to genomic selection



Part of concept Framework for gene-editing
 NWO Just Editing project, with Middelveld,
 Macnaghten



Broadening the debate....

Will not

- make the discussion easier
- automatically lead to answer, but

Can do justice to

- the complexity at stake
- views of all involved in livestock breeding

Enable professionals to act in a responsible way, i.e., enable to answer (societal) question about both what you are doing and why!



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www.bovregproject.eu

Dr. Koen Kramer
Dr. Ann Bruce
Dr. Donald Bruce

Just Editing? A Comparative Responsible Innovation Approach to Animal Genome Editing



www.sage-animals.com

Dr. Senna Middelveld
Prof. Phil Macnaghten

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