‘The GM-debate is not a GM-debate’

Reflections on the GM-debate in Europe from a social sciences perspective

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with the support of Linde Inghelbrecht, Michiel de Krom, Nathalie Erbout, Gert Goeminne, Guido Van Huylenbroeck, Elke Rogge and Anna Verhoeve

October 18th 2017 – Milan, Italy
iPLANTA COST Action CA15223, WG4 and WG5

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Flanders Research Institute for Agriculture, Fisheries and Food

STRUCTURE OF THE PRESENTATION

- A potato field trial, and two university debates

- GM crops in the EU as a wicked problem
  - The clash of technological determinism and technological instrumentalism
  - Mono-identity of GM-crops
  - Reinforced by policy

- A perspective of technological mediation
  - GM technology from a mediation perspective
  - The GM-debate is not a GM-debate
  - Re-politicising technology

Spring 2011 - A potato field trial, Wetteren, Belgium

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Hier groeien
de aardappelen
van de toekomst.
Met de medewerking van
UNIVERSITEIT GENT
ILVO
VIB
HOGESCHOOL GENT
Wetenschapwinkel
VIA
Vlaanderen in Actie

The ‘potatoes of the future’ are growing here.
Hier groeien de aardappelen van de toekomst.
UNIVERSITEIT GENT
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Vlaanderen in Actie

VOOR ONZE
LANDBOUW
GEEN GENTECH
WEL
EERLIJKE PRIJZEN
Gerart

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Who are the activists of the Field Liberation Movement, who destroyed a gmo potato field?

IS HE A HIPPIE? NO, HE SOMETIMES EVEN IS A SCIENTIST

Wie zijn de actievoerders van Field Liberation Movement, die een [illegible]ardappelveld in Wetteren vernielden?

Is het een hippie? Nee, het is soms zelfs een wetenschapper

BRUSSEL ● Wie zijn de actievoerders achter de Field Liberation Movement die een veldslag leverden om een ggo-aardappelveld tegen te houden? 'Wij zijn niet tegen wetenschap, verschillenden van ons zijn zelf universitaire onderzoekers', klinkt het bij de wetenschappers-activisten van drie Vlaamse universiteiten. Zowel minister-president Kris Peeters als de universiteit Gent hebben al aangekondigd harde actie te zullen ondernemen. Minister Lieten wil 250.000 euro geven om het veld te herstellen.

DOOR NATHALIE CARPENTIER

Ze wisselen voortdurend van woordvoerder en burgerlijke ongehoorzaamheid lijkt het codewoord. "Wij zijn bewust horizontaal georganiseerd, zonder hiërarchie. We werken meer als zweepactiegroep", aldus Jeroen, de woordvoerder van vandaag. "Hierna kan het debat weer gevoerd worden door de klassiekere milieubewegingen."

De aanpak van de Field Liberation Movement roept herinneringen op aan de acties tijdens de klimaattop in Kopenhagen en dat is geen toeval. Heel wat Vlaamse klimaatactivisten van toen waren ook op het ggo-aardappelveld in Wetteren aanwezig. En verschillende gezichten uit de andersglobalistische beweging die ooit actief waren tijdens de top in Genua, doken ook dit weekend op.

Daarnaast waren er mensen uit milieubewegingen en anarchistische milieus. Uit

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Conseil de Biosécurité

(Belgian Bio-safety council)

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Ghent University, March 2015

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Free University Brussels, September 2017

Viewing the movie ‘FoodEvolution’ followed by a debate on ‘the role of modern biotechnology in food production’

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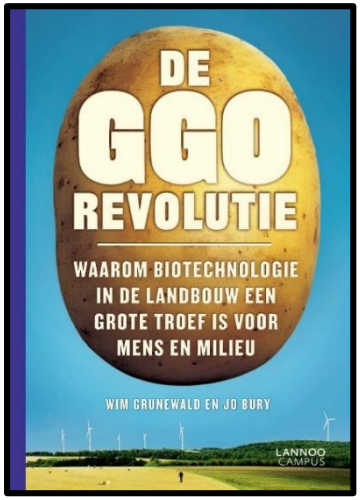
EXPLAINING THE OPPOSITION AGAINST GMO

<u>Explaining the opposition against GMOs</u>:

“It’s human nature to be anxious and to act upon intuition”.

This refers to

- Psychological essentialism (‘a tomato has to be a tomato)
- Religious intuition (‘a scientist shouldn’t be a God, interfering in nature’)
- Disgust (‘GMOs are like a contagious disease’)



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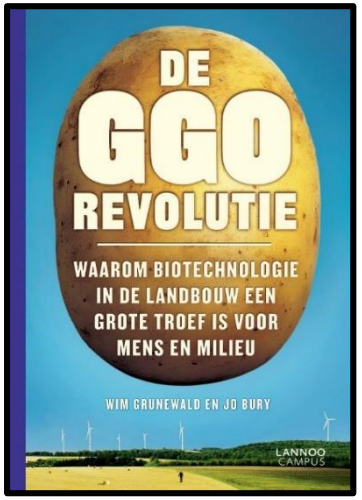

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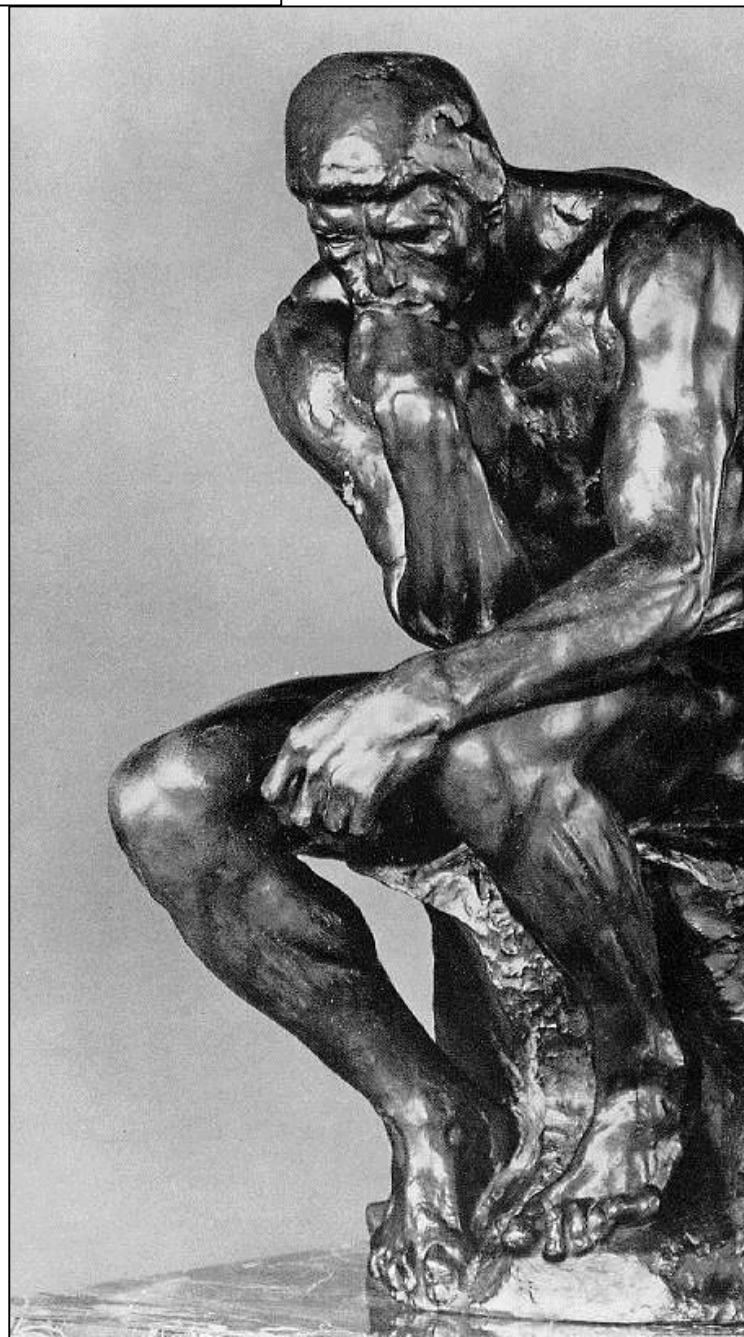
GM CROPS IN THE EU AS A WICKED PROBLEM

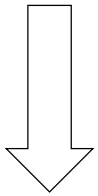
The present non-GM crop regime can be classified as a “wicked problem”:

“A problem that is difficult or impossible to solve because of incomplete, contradictory, and changing requirements that are often difficult to recognise. The term ‘wicked’ is used, not in the sense of evil, but rather its resistance to resolution. Moreover, because of complex interdependencies, the effort to solve one aspect of a wicked problem may reveal or create other problems”.



GM CROPS IN THE EU AS A WICKED PROBLEM

1. Difficult to clearly define
2. Have a multi-level actor involvement, with many interdependencies
3. Often multi-causal
4. No clear solution
5. Attempts to address them often have unforeseen consequences
6. Are not stable, the available evidence and constraints to fully understand the problem are evolving by themselves - which makes the problem even harder to solve.



A lock-inn

GM CROPS IN THE EU AS A WICKED PROBLEM

The clash of technological determinism and technological instrumentalism

Today in Europe, only one kind of agricultural biotechnology seems to exist, supported by the complex of Agribusiness, Regulatory agencies, and Agricultural research institutes; and

associated with

- Technological control
- Economy of scale
- Intellectual property rights
- Executive role for the farmer

Technological intentionality

+

Human intentionality

Determines the role and moral significance of Gm crops

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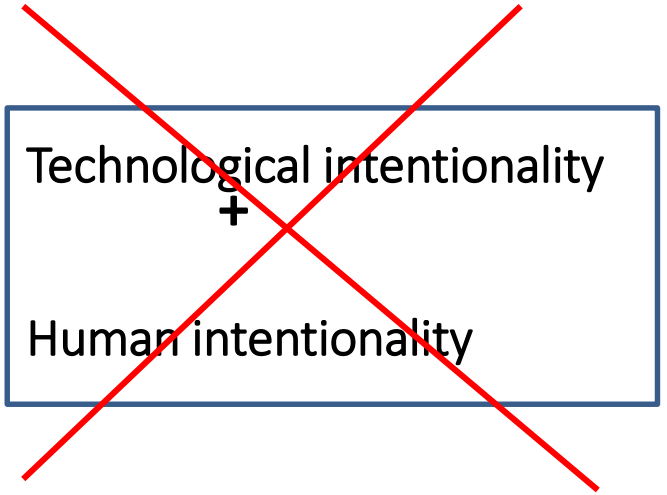

Debate based on two broad lines of thought:
technological determinism and technological instrumentalism

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GM CROPS IN THE EU AS A WICKED PROBLEM

The clash of technological determinism and technological instrumentalism

Technological instrumentalism:

Technology = inert and without operative power. All that counts is what humans do with the technology.

From this perspective, a particular technology can be embedded within any practice because of its presumed neutrality.

This is illustrated by claims that a GM crop, for example, fits into any type of farming, ranging from organic to conventional agricultural practices.

~~Technological intentionality~~ is neglected in arguments of technological instrumentalism.

GM CROPS IN THE EU AS A WICKED PROBLEM

The clash of technological determinism and technological instrumentalism

technological determinism :

technology is an actor that operates completely independent of human choice.

Technology has the 'power to act', independent of the context of use

In these arguments, GM crops are, for example, presented as Frankenstein food which overrules human autonomy. Practices such as monoculture cultivation and scale economy in crop production are systematically linked to any GM crop as an inherent characteristic.

~~Human intentionality~~ gets disregarded in views of technological determinism.

GM CROPS IN THE EU AS A WICKED PROBLEM

The clash of technological determinism and technological instrumentalism

Technological instrumentalism

technological determinism

Externalist, exogenous view on technology

- a neutral instrument (instrumentalism)
- an all-encompassing (negative) force that determines societal evolution (determinism)

⇩

a fixed identity for all GM crops:

'This is *a GM-crop*' – **a mono-identity**

Example:

a herbicide-resistant GM crop and a drought resistant GM crop

⇩ ⇩

materialises external input dependence

materialises principles of ecological modernisation

denied in the current societal and political interpretation of a GM crop

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GM CROPS IN THE EU AS A WICKED PROBLEM

The GM-debate:

- narrowed down to a YES/NO discussion
- Strong externalist view on technology by opponents and proponents

⇨ *''[agricultural] (bio)technology is seen as existing outside society, and exerting 'effects' upon it from this external position. Consequently, both proponents and critics hold the same absolutist view about the technology so that it can only be accepted or rejected tout court''* (Ruivenkamp et al. 2008, own emphasis added).

For both sides, GM crops are a matter of 'take it or leave it'

GM CROPS IN THE EU AS A WICKED PROBLEM

Political practices reinforce the mono-identity of GM crops

- Current labelling standard for products that contain or are derived from a GM crop

  The label is identical for every GM crop/trait combination and for every sociotechnical practice that embeds the production, dissemination and use of a GM crop.
  This GM label therefore does not permit a discussion beyond a Yes/No framing and reconfirms the dichotomous 'take it or leave it' attitude, as the label simply does not inform individuals about the particular GM crop practice and only offers individuals freedom of choice between two specific options (products with or without a GM label)

GM CROPS IN THE EU AS A WICKED PROBLEM

Political practices reinforce the mono-identity of GM crops

- Current labelling standard for products that contain or are derived from a GM crop
- Crop based authorisation

only the safety and risks of the technology are assessed, while the specific user practices that appropriate the technology are disregarded.

GM CROPS IN THE EU AS A WICKED PROBLEM

Political practices reinforce the mono-identity of GM crops

- Current labelling standard for products that contain or are derived from a GM crop
- Crop based authorisation
- Process based definition of GM crops

  all GM crops are treated the same under EU legislation, regardless of the particular trait or crop type

MEDIATION THEORY AS A WAY OUT ?

Verbeek

Inghelbrecht

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MEDIATION THEORY AS A WAY OUT ?

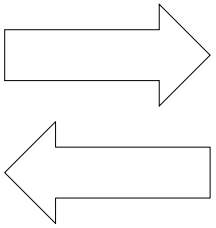
Technologies **mediate** human-world relationships:

- technologies affect how the world exists for us, through mechanisms of amplification and reduction of certain aspects.

- technologies affect how humans act in the world, through mechanisms of inviting or inhibiting certain actions over others (eg. email – instant connectivity).

MEDIATION THEORY AS A WAY OUT ?

Humans and technology **mutually constitute each other**: when technologies are being used, they give shape to *what we do* and *how we experience the world*,



Mutual influence
Technologies do what they do, because of their properties,
and because of the way users deal with them

⇩

Can make invisible moral routines (often unquestioned, even unconscious) visible again

⇩

Leads to active ethical questions

MEDIATION THEORY AS A WAY OUT ?

Confirmative mediation: reproduces the 'grammar' of a particular socio-technical system

Disruptive mediation: questions the grammar of a particular socio-technical system

HOW TO APPLY MEDIATION THEORY IN THE CONTEXT OF GM in EUROPE ?

-methodological challenge :

- dealing with 'moral imagination' ; imagining the consequences of design

- *Technologies mediate what we believe to be the case, what we believe to be possible and what we believe to be desirable*

- Based on literature review – method needs refinement !

MEDIATION THEORY AS A WAY OUT ?

	What is the case?	What is possible?	What is desirable?
WORLD/SOCIETY			
FARMER			

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MEDIATION THEORY AS A WAY OUT ?

	What is the case?	What is possible?	What is desirable?
WORLD/SOCIETY	Technology mediates perception of the world	Technology mediates opportunities and affordances	Technology mediates rights, duties, norms and responsibilities
FARMER	Technology mediates users' position in the world	Technology mediates users' role in the world	Technology mediates ideas about a virtuous life

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MEDIATION THEORY AS A WAY OUT ?

	What is the case?	What is possible?	What is desirable?
WORLD/SOCIETY	Technology mediates perception of the world	Technology mediates opportunities and affordances	Technology mediates rights, duties, norms and responsibilities
	Disruptive mediation . . Confirmative mediation . .	Disruptive mediation . . Confirmative mediation . .	Disruptive mediation . . Confirmative mediation . .
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MEDIATION THEORY AS A WAY OUT ?

	What is the situation?		What can one do?		What ought one do?	
	Technology mediates perception of the world		Technology mediates opportunities and affordances		Technology mediates rights, duties and responsibilities	
	DISRUPTIVE MEDIATION	CONFIRMATIVE MEDIATION	DISRUPTIVE MEDIATION	CONFIRMATIVE MEDIATION	DISRUPTIVE MEDIATION	CONFIRMATIVE MEDIATION
WORLD	**Interpretation of a biological species.**[1] GMOs can cross species boundaries (e.g. transgenesis), so species characteristics may no longer be defined just by a strict pattern of intersecting lines. **Presenting nature as a lego building box.**[2] GMOs bring forward an interpretation of nature 'as a lego building box'; where nature offers the bricks and pieces that can be combined along human ambition and intent. **GM 'seed plus herbicide' is a new entity.**[3] Coupled sales of GM seed together with the herbicide create a new determinant of social interaction: 'GM seed *plus* herbicide'.	**Nature as knowledgeable**[4] GMOs make us aware that nature within today's agricultural practices is conceived of as being knowledgeable, and that there is a strong (human) determinist view on nature present within these practices. **Soy imports as evident reality.**[5] GMOs increase awareness of a strong vegetable protein dependency within EU agriculture. **F1-generation seeds.**[6] GMOs increase awareness of standard usage of F1-generation seeds for certain crops; favoured for their greater fit, but segregated so no seed savings.	**Crops as patentable.**[7] GMOs are a new opportunity for private ownership in agriculture. **Genetic determinism.** GMOs present a new form of genetic determinism in crop production (where a crop is defined by its genetic constellation). **Decoupling with nature.** GMOs are a new opportunity to decouple agriculture from nature's genetic limits and to re-create nature. **Next generation technocratic solutions.**[8] GMOs create new opportunities and new affordances with regard to food security, climate change, chemical use in crop production, etc.	**Nature as a resource.** GMOs use nature as a resource for innovation (e.g. delivers resistances). **Humanist belief.**[9] GMOs confirm the (humanist) belief that nature is open to revision. **Economic growth paradigm.** GMOs present piecemeal, economically viable solutions for environmental problems. **Current affordances.**[10] The practical affordances of GMOs reinforce a focus on productivity, lowering food prices and decreasing the cost of farming within agricultural practice. GMOs also standardize scale increase and monocultures in agriculture.	**Control(ability).**[11] GMOs suggest the norm for control and controllability in crop production. **Genetic determinism.** GMOs suggest the norm for genetic determinism in crop production. **Easy-going.**[12] GMOs suggest the norm for 'how easy' farming or food production is, or can be. ***Expecting* a good harvest becomes *choosing* a good harvest.** GMOs present failed harvests more in terms of the ('wrong') technology choice by farmers. GMOs thereby decrease the right to 'bad luck' or the right not to (try to) control everything in crop production.	**Use of technology.**[13] GMOs reinforce the use of technology to obtain food security (e.g. re-present food security/hunger as a productivity-problem). **Return of investments.**[14] GMOs represent the right for a return on investments in agricultural innovation (e.g. patent). **Surpassing limits.**[15] GMOs reinforce the responsibility and duty to maximise control; and to maximise productivity.
	Technology mediates users' position in the world		Technology mediates users' role in the world		Technology mediates ideas about a virtuous life	
	DISRUPTIVE MEDIATION	CONFIRMATIVE MEDIATION	DISRUPTIVE MEDIATION	CONFIRMATIVE MEDIATION	DISRUPTIVE MEDIATION	CONFIRMATIVE MEDIATION
HUMAN (FARMER)	**Proletarianised farmer.**[16] Because of patents on GM crops the farmer is no longer the owner of the seeds, and has no direct access to the innovation knowledge.	**The farmer in a chain organisation.**[17] Actor in a globalised network of resource flows. Also actor in a network of crop innovation (buyer of seeds; specialised R&D centres).	**The farmer as a technology chooser.**[18] GMOs present farming as a practice of 'pick and choose' technology (e.g. over other farming skills). **Directing the farmer.** Many GMOs afford to change the act of farming, with specificity of traits (e.g. herbicide resistance; crop rotation).	**Farmer as executor.**[19] GMOs reinforce an executive role for farmers in crop production: no innovator role (done in R&D centre). **Farmer's replacement in the production process.** GMOs reinforce this replacement (e.g. no tillage but herbicide spraying).	**Farmers in relation to control.**[20] GMOs present a norm for increased control *by* farmers in crop production (with herbicide-resistance for example) and *over* farmers (e.g. proletarianisation).	**Entrepreneurial agriculture.** GMOs posit farming as standardisation; portrayed only as something production-related. **Farmers in a network.**[21] GMOs posit farmers as a producer of commodities and bulk products. They also posit farmers as a link in a segmented process.

MEDIATION THEORY AS A WAY OUT ?

	What is the case?	What is possible?	What is desirable?
WORLD/SOCIETY	Technology mediates perception of the world	Technology mediates opportunities and affordances	Technology mediates rights, duties, norms and responsibilities
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	What is the case?	What is possible?	What is desirable?
WORLD/SOCIETY	Technology mediates perception of the world	Technology mediates opportunities and affordances	Technology mediates rights, duties, norms and responsibilities
	Disruptive mediation • *definition of 'biological species' is challenged*. Confirmative mediation • *Increase awareness of strong protein dependency in EU agr*iculture	Disruptive mediation • *Introduce new opportunities for private ownership in agriculture (patents)* Confirmative mediation • *Reinforce a focus on productivity in agriculture* • *Reinforces humanist belief that nature is open to revision*	Disruptive mediation • *Changes the norm of 'expecting a good harvest' into 'choosing a good harvest with the right technology'; diminishes the right to bad luck in crop production* Confirmative mediation • *Reinforce the responsibility and duty to maximise control and productivity*

	What is the case?	What is possible?	What is desirable?
FARMER	Technology mediates users' position in the world	Technology mediates users' role in the world	Technology mediates ideas about a virtuous life
	Disruptive mediation • *Farmers decreased direct access to innovation knowledge* Confirmative mediation • *Confirms farmer as an actor in a globalised network of resource flows*	Disruptive mediation • *Farming becomes a practice of 'pick and choose technology' (over other farming skills)* Confirmative mediation • *Confirms role of farmer as executor in crop production, innovator role is taken up by specialised R&D*	Disruptive mediation • *Ideas about 'the good farming' and 'good agriculture' change, because of increased control by and over farmers* Confirmative mediation • *Reinforces the norm in entrepreneurial agriculture, and overall perception that agriculture is producer of commodities and bulk*

THE GM-DEBATE IS NOT A GM-DEBATE

Large parts of the GM-debate about GM crop applications within EU can be understood as an attempt to debate how we have organised EU society today.

Confirmative conduct: '*turning cold moralities into hot ethics*' (Swierstra)

Some examples :

- Private funding of agricultural innovation: since the 1970s. But became an issue with the development of GM crops
- The GM discussion makes us aware that ethical principles (to ctrictically assess products of modernisation, science and technology) are downplayed in the public sphere : scientific argumentation is prioritised as a means to objectify political decisions

THE GM-DEBATE IS NOT A GM-DEBATE

Large parts of the GM-debate about GM crop applications within EU can be understood as an attempt to debate how we have organised EU society today.

Disruptive conduct: *delivers 'new hot ethics'*

Some examples :

- Definition of a 'biological species' – cf discussion on transgenetic nd cisgenetic crops. What is 'natural'? And if it is natural, why can it be patented?

- Introduces a norm of almost complete control of nature

THE GM-DEBATE IS NOT A GM-DEBATE

Large parts of the GM-debate about GM crop applications within EU can be understood as an attempt to debate how we have organised EU society today.

⇒ Debate on/opposition against GM-crop in EU

- More than purely 'ideological arguments'
- Inspirited by ethical concerns about *agricultural practices that co-evolved with GM crop development*

⇒ The developed matrix is context specific. Eg. EU vs. USA (crop vs food; process vs product)

THE GM-DEBATE IS NOT A GM-DEBATE

'Technological mediation' cannot be fully anticipated. But when designing technology, both the script logic (A) and the user logic (B) should be considered

The impact of technology on user behaviour (which norms and values are 'materialised')

How the technology is interpreted and appropriated by its users

- Investigate A and B interatively, empirically and in a multi-actor process
- Go beyond A+B
- Consider AB

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RE-POLITICISE TECHNOLOGICAL DESIGN

Such ‘forward thinking’ (mediation thinking) might shift a dichotomous discussion on a technology (YES/NO) towards the question *how technologies can be used in a particular context*.

These are ‘Political’ questions, touching upon the questions about a good life, about EU society

Shifting the debate from a technocratic assessment of gains and losses of a technology, towards the fundamentally political question of how technology applications help to shape society.

RE-POLITICISE TECHNOLOGICAL DESIGN

Today's practice: **A+ B approach** (script logic + user logic)

1. Design of GM crop

2. EU authorisation, in terms of the A-component

3. As an add-on, B-component: guaranteeing individual freedom of choice by labelling and co-existence measures

RE-POLITICISE TECHNOLOGICAL DESIGN

Alternative: hybrid AB-approach – merge the context of design with the possible context(s) of use

Design/assess/make legislation for socio-technical practices around a GM crop, involving

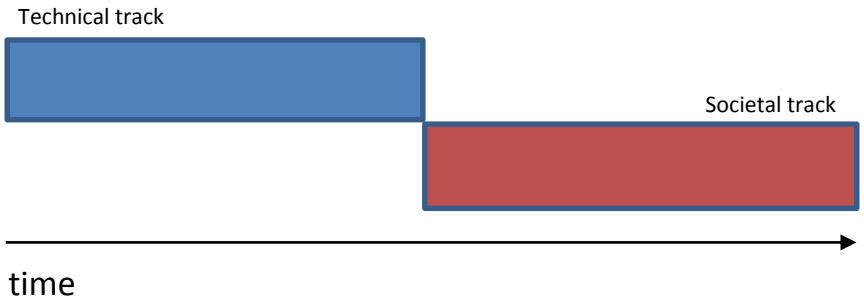
- Multi-actor processes
- Empirical tools
- Interative probing

Coincides partly with H2020 cross cutting theme of 'Responsible Research and Innovation' (although less linear)

ENGAGE IN MULTI-LEVEl, MULTI-ACTOR GOVERNANCE PROCESSES

FROM **DAD** TO **ELE**

From Develop – Announce – Defend …



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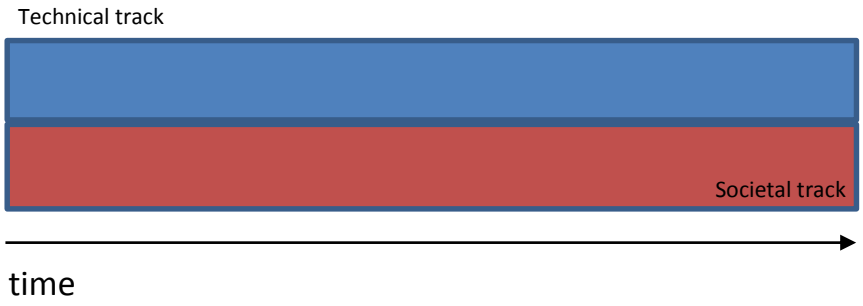
… To Engage – Learn - Enable



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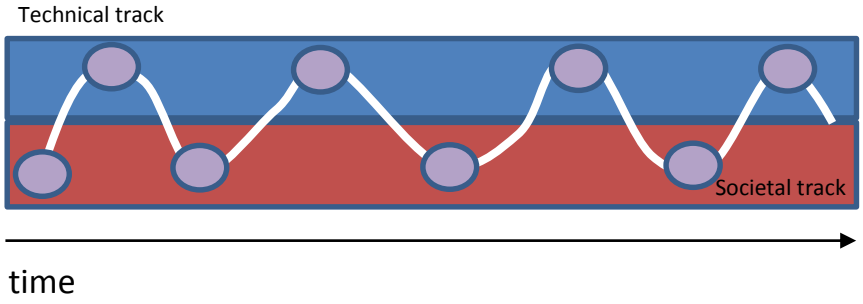

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ENGAGE IN MULTI-LEVEl, MULTI-ACTOR GOVERNANCE PROCESSES

FROM **DAD** TO **ELE**

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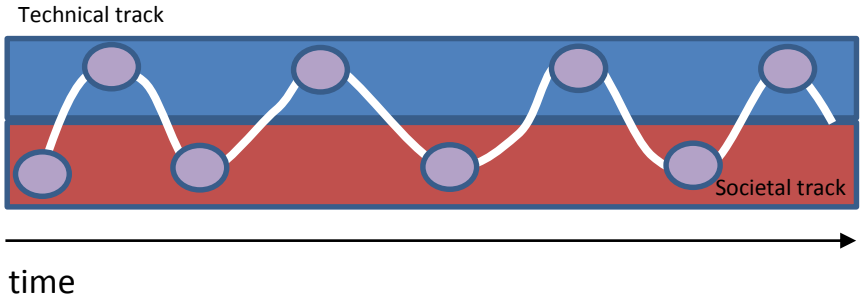
Multi-level
Multi-actor
Multi-scale



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ENGAGE IN MULTI-LEVEl, MULTI-ACTOR GOVERNANCE PROCESSES

FROM **DAD** TO **ELE**

- Define common goals
- Identify the actors
- Integrate different knowledge systems
- Design the process
- Guard transparancy, fairness and procedural justice

(Rogge et al. 2013)

RE-POLITICISE TECHNOLOGICAL DESIGN

Answer the fundamental question:

Under which circumstances can we evaluate if and how a technological innovation can contribute to a more sustainable world?

How can we recognise that these are essentially sociological and political questions, rather than mere technological questions?

RE-POLITICISE TECHNOLOGICAL DESIGN

SOME RECOMMENTATIONS :

- Much more constructive sociological and political research needed to develop such methodologies; to allow the implementation of an AB-approach.
  CALL FOR SOCIAL SCIENTISTS: INVEST IN THIS, instead of merely criticising

- (Bio-)technology students (future researchers) should be taught new insights from sociological and political sciences, on the mediating role of technology (GM, drones, big data, robotising, …).
  CALL FOR UNIVERSITIES: TEACH THE STUDENTS MORE THAN THE MERE TECHNOLOGY; EXPLAIN THE COMPLEXITY OF THE DEBATE, BEYOND "IT'S ONLY IDEOLOGY; IT'S IRRATIONAL; IT'S A LACK OF KNOWLEDGE". AND LEAVE THIS TO SOCIAL AND POLITICAL SCIENTISTS.

- In the end, proponents and opponents want the same: a more sustainable agricultural system; and a 'better world'.
  START FROM THIS COMMON GROUND.

- "It is not that we use technology. We live technology" (Godfrey Reggio)

Background research

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Thank you

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