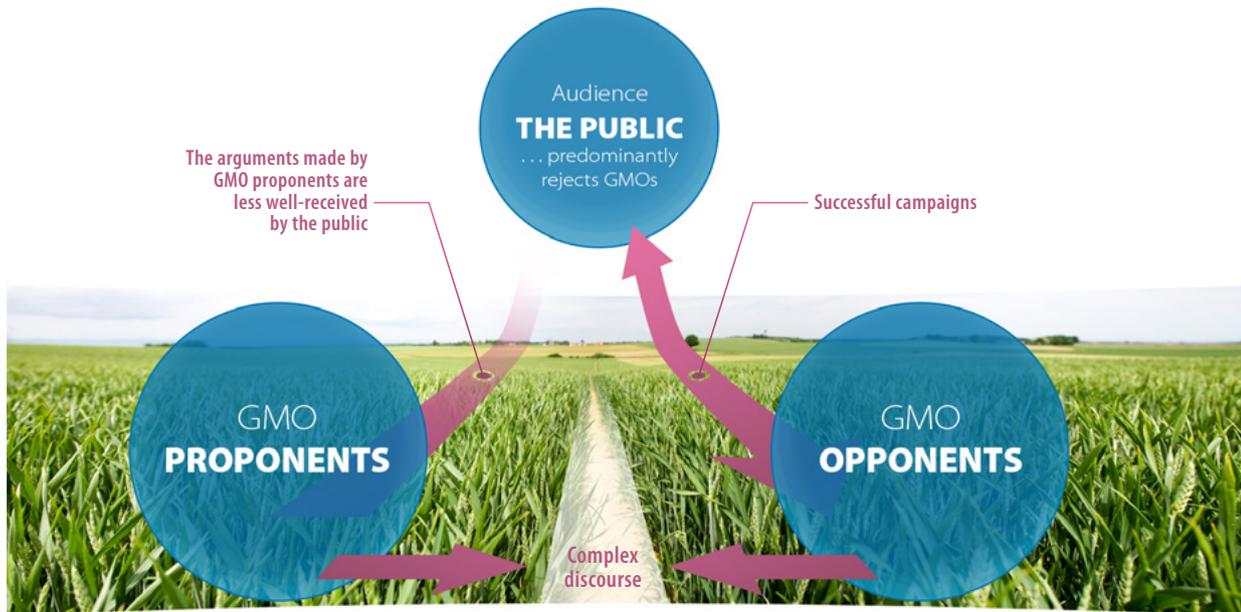


# Conflicting values in the German GMO debate?

## Why agreeing to disagree on innovative technologies sometimes seems like the only option

No other plant breeding technique in Germany has received such hot contention as the [genetic modification of crops](#) for human consumption. The arguments on both sides of the debate are diverse and often surprisingly contradictory. While opponents of genetic engineering fear the potential health risks of GM crops (e.g. TESTBIOTECH 2017), proponents praise their health benefits, for example through vitamine-enrichment (e.g. RAUNER 2017). While supporters are confident that genetic engineering will lead to higher yields and, thus, greater freedom and autonomy of agricultural workers (e.g. NÜSSLEIN-VOLHARD 2011), opponents believe that patented GMOs will threaten the livelihoods of poor smallholders in developing countries (e.g. BROT FÜR DIE WELT 2014). It could be assumed that a fact check would resolve these differences of opinion. But unfortunately the solution is not that simple. — Many different interest groups are partaking up the debate. Those with the clearest positions, however, are researchers (involved in genetic engineering)

who stand behind GM crops; and civil society organisations who oppose them. In Germany, the *German National Academy of Sciences Leopoldina*, the *German Academy of Science and Engineering*, the *Union of German Academies of Sciences and Humanities* and the *Berlin-Brandenburg Academy of Sciences and Humanities*, for example, have all published statements and reports in favour of GM technologies. On the other side are civil society organisations such as *Greenpeace*, the *Initiative for GE-free Seeds and Breeding* and the *German Nature and Biodiversity Conservation Union*. — The debate has been ongoing since the beginning of the 1990s and an end is still not in sight. It is thus a perfect example of an impeded public discourse. — Even among the German population, opinions differ greatly. Studies show that 56% of German consumers object to GMOs due to concerns about health risks (BFR 2017). What is remarkable here is that the attitudes of the German public tend to differ from those who publicly represent GMO research. As mentioned



above, German academies of sciences and humanities are against the comprehensive banning of GM crops and instead advocate the testing of individual varieties (LEOPOLDINA et al. 2015). While the numbers are not known for German researchers, a study of U.S. members of the American Association for the Advancement of Science showed that close to 90% consider GMOs to be safe (PEW RESEARCH CENTER 2015). — The image that is forming here is that civil society organisations more closely reflect the moral perceptions of the public. The arguments in favour of GM crops appear to find less resonance with public opinion.

### ————— **Moral values sometimes do not help but hinder discourses** —————

The discussion is often characterised by harsh accusations from both sides. For example, in 2015 Greenpeace accused producers of GM seeds of deliberately forcing farmers into a position of dependence, compelling them to buy ever more expensive seeds with ever more expensive pesticides, and ultimately driving them to ruin. The other side also doesn't hold back in its accusations. In 2017, 110 Nobel Prize winners sent an open letter to Greenpeace asking the organisation to reconsider its

opposition to GMOs. In the letter they spoke of a 'crime against humanity'. — The polarisation of the discourse can make it seem that the debate is not guided by moral values: the accusations thrown back and forth become increasingly harsh and each party seems to refuse to move from its position or entertain the ideas of its opponents.<sup>1</sup> But this is where it gets interesting: **it is the moral values that make the division of opinion possible in the first place!** Moral psychology has taught us that people differ in the values they consider important. The moral values that one person may be willing to neglect over others, could be of particular importance for another person (HAIDT 2012). As a result, different value systems can lead to different opinions (KAHAN 2010). Also, related to genetic engineering specifically, studies show that attitudes are based on moral values (SCOTT et al. 2016). Our text analysis provides evidence of such conflicting value systems in the GMO debate.

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### Text analysis of moral values in the GMO debate

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Within the **AgriMyths project** funded by the Science-Campus Halle, we closely examined the contents of official statements in the GMO debate to find out **why the different groups can't agree**. To do this, we extracted some 4,200 arguments (text segments) from public debates and analysed their contents for underlying

<sup>1</sup> For an explanation of the function of civil society organisations (NGOs) and the incentive systems in which they operate, see Ingo Pies and Vladislav Valentinov (2017). For simplification of the problem of conflicting moral systems, only the arguments of the actors in the GMO debate and the associated moral values were observed in this paper.

moral values. — The theoretical foundation of our value analysis was Jonathan Haidt's **moral foundations theory** (HAIDT 2012). According to this theory, six foundations—care, purity, fairness, loyalty, authority and liberty—build the moral systems of people throughout the world and across cultures. As mentioned, however, people differ in the importance they place on the individual values. — Our text analysis confirmed the expectations from the literature that the groups in the debate argue diametrically within a value category. The argument



of health risks vs. benefits has already been discussed. The infringement of liberty predicted by GMO opponents also stands diametrically opposed to the argument put forward by GMO proponents that civil liberties will increase. Some results, however, are very surprising.

### **The debate isn't about genetic engineering**

Our study shows that the debate barely even touches upon GM crops! The focus is much more on the motives, conduct, and opinions of those involved. Of the coun-

ter-arguments, 55% are criticisms of the way GMO corporations treat more vulnerable people and society at large. The main actors are also central to the arguments of GMO supporters. Around 70% revolve around GMO researchers, the conduct of NGOs and other opponents of GMOs, and the opinions of third parties. A significant difference, however, lies in the relevance of purity as a value. Opponents see technology as a violation of the purity of nature. Close to a quarter of their arguments express this moral judgement.

**Text analysis of the GMO debate**

Codesystem	2,384
CARE / HARM	0
Unterdrückung von Kleinheiten	73
GMOs sind eine Risikotechnologie	134
Nachteile für menschl. Gesundheit	47
Fehlender Beitrag zur Sicherung der Er...	28
Risiko von Schäden & Nachteilen für T...	30
FAIRNESS / CHEATING	0
Unterdrückung von Freiheitsrechten	149
LOYALTY; INGROUP / BETRAYAL	0
Innovationshindernis	16
Unfairer Verhalten im Wettbewerb dur...	107
Unfairer Einfluss auf die Politik durch K...	23

### **EXTRACTION** of approx. 4,200 text elements

Inductive development of an argument system by extracting and grouping the arguments

Deductive classification of the arguments according to Haidt's moral foundation theory

### **ANALYSIS**

Qualitative: Which arguments are being made? Which moral values are involved?  
Quantitative: What is the frequency distribution of the moral values?

GMOs gefährden Natur durch profitori...	63
Entstehung von Herbizidresistenzen	35
Gefährdung von Biodiversität	27
Gefährdung von Nachhaltigkeitsanlieg...	20
Ethische Bedenken (Entfremdung von ...)	19
GMOs nicht angepasst an lokale Bedin...	9
Risiko nicht-intendierter Mutationen (R...	7
GMOs gefährden Natur durch kapitalis...	6
LIBERTY / OPPRESSION	0
HEILÄNDER, STILMITTEL, INKONSISTENZEN	981

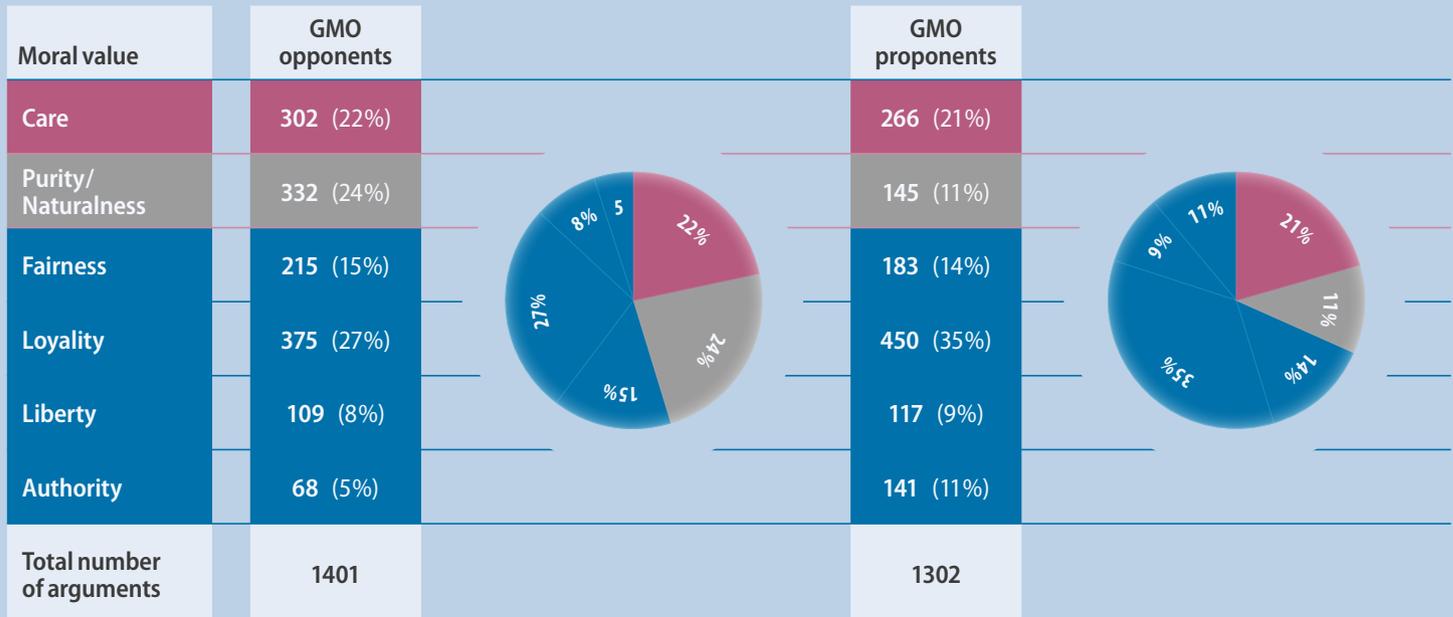
Moral Value	No. of coded arguments
Care/Harm	312 (22%)
Fairness/Cheating	149 (11%)
Loyalty/Betrayal	473 (34%)
Authority/Subversion	68 (5%)
Purity/Degradation	401 (29%)
Liberty/Oppression	0 (0%)
<b>N</b>	<b>1401</b>

## Jonathan Haidt's moral foundations theory

Moral value	Care	Purity (Naturalness)	Fairness	Loyalty	Liberty	Authority
Moral emotion	Compassion, Guilt	Disgust	Liking, Contempt	Pride, Trust	Anger	Respect, Awe
Function in the GMO debate	Addresses benefits & harms of the product	Addresses sanctity & religiosity	Addresses the (market) system, producer & process (not product)			

Own presentation according to Haidt 2012

## Distribution of values in the discussion (evaluation of the text analysis)



### —Talking past each other—

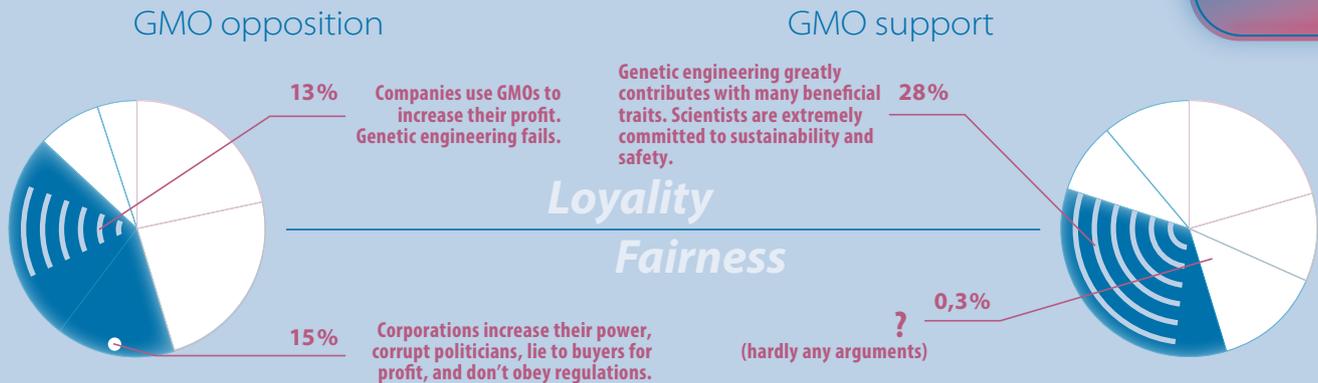
In addition to deviating from the actual subject of the debate—GMOs—the analysis also revealed that the participants neither speak within the same moral categories nor do they talk about the same actors. Opponents dedicated 15% of their arguments to accusing large corporations of *unfair conduct* (GEN-ETHISCHES NETZWERK 2017). Proponents often did not respond with a counter-argument. Rather, they tended to use the *loyalty* value by arguing that researchers' commitment to the use of GMOs is for the good of society (BMBF 2014). Moreover, even in relation to breaches of loyalty, opponents rarely speak of research but rather accuse companies of selfish conduct and profit seeking (GREENPEACE 2015). — While the opposition criticises the conduct of large corporations a remarkable

30% of the time, supporters praise the heroic commitment of researchers to the safety of GM processes around 30% of the time.

### —The debate is marked by misunderstandings—

A third remarkable result of the analysis is that the participants have different perceptions of nature. GMO opponents view nature as something sacred and pure that should remain untouched. They reject any human interference with nature (GEN-ETHISCHES NETZWERK 2015). GMO proponents, however, affirm that genetically modified plants pose no risk to nature and may even be beneficial to it (BMBF 2014). In doing so, they argue in a result-oriented way and thus neglect the opposition's process-oriented understanding of naturalness.

#### Distribution of typical arguments



### Purity (Naturalness)

GMOs contaminate nature (spread irreversibly without control); Human manipulation of genetic material.

Spreading GMOs is not harmful for nature, spreading can even have benefits for nature.

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**GMO acceptance is dependent on our moral perceptions: what does this mean for the debate?**

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Throughout the GMO debate, we can observe a phenomenon that is referred to in moral psychology and other social sciences as **wicked problems** (GALLAGHER 2019). *Wicked problems* are socially relevant issues for which there is **no (simple, universal) solution**. In addition to GMOs, all other issues of bioethics (BPB 2019), such as climate policy, biodiversity, neuroenhancement and (generally) biotechnology and biological engineering are regarded as *wicked problems*. — These problems do not have simple solutions because the different positions are based on conflicting ideologies and moral stances. These hamper the discussion in two ways. First, both sides to the debate present valid arguments that are nevertheless difficult to reconcile (WOOD 2019). There is a conflict of interest with serious objectives on either side. Second, it is difficult for the participants to view the *wicked problems* independently of their own moral values and it is impossible to evaluate the problem free of any moral values. This means that opinions are often predetermined based on a person's own values to the extent that they only look for evidence that **confirms their opinions**. In the literature this is called **motivated reasoning** (see, for example, HAIDT 2012).

**— Then how can agreement ever be reached? —**

Even if these problems in the GMO debate appear unsolvable at first sight, an ordonomic approach may provide some means of resolution (PIES 2016). The text analysis

revealed **four problematic areas in the discussion:**

- (1) diametric arguments,
  - (2) a shift in focus towards producer behaviour,
  - (3) arguments in different categories/topics, and
  - (4) a conflicting understanding of nature.
- (1) The diametric arguments mentioned previously make it clear that in many areas there is no real conflict of interest. Both sides want healthy, environmentally friendly food that can furthermore support poorer people in developing countries. The only thing that remains uncertain is whether GM crops are an appropriate means to achieving this. Unlike for most *wicked problems*, this can be resolved by means of a fact check (e.g. through risk assessments or process data).
- However, (2) and (3) complicate this approach because they are based on a general mistrust of the producers or the market system as a whole. Consequently, providing information about products, and decision-making processes within companies or markets would not be effective due to this lack of trust. However, a discussion on the conduct of companies on the market that avoids the subject of GMOs could help. Such a discussion should also deal with the role of companies and the mechanisms of the market. In addition, problematic areas could be identified and debated in a solution-oriented manner in order to develop rules that could efficiently counteract misconduct by companies. It must be stressed here that market mistrust, however, is not a sufficient reason for rejecting a technology and therefore should be assessed separately.
- (4) A true conflict of interest is present in the process-ori-

ented vs. result-oriented approach to nature. Here, win-win solutions could be developed that reconcile both interests (HIELSCHER et al. 2016). A first step towards achieving this could be to enable the co-existence of GM and non-GM crops for example by preventing outcrossing (WISSENSCHAFTLICHER BEIRAT FÜR AGRARPOLITIK 2010). However, seeing this as a solution is obstructed by the fact that, for many, opposing (or supporting) GMOs represents a value in itself. In order to find consensus, it is therefore necessary that the genetic engineering of crops is no longer seen as an *end*, but as a *means* to achieving common interests. Avoiding fundamental judgements *for* or *against* an entire technology would enable a discussion to take place on the *how* and the *why*.

These approaches offer not only a starting point for resolving the debate on genetic engineering but they are also transferable to other complex social problems, such as the transformation towards a bio-economy. As we will be faced with a large number of other *wicked problems* in the future, they might be helpful for avoiding deadlocks in discussions. However, in order to reach agreement, it remains necessary that all parties involved are willing to find a common solution and to act towards this goal.

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#### — Sources and credits —

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**p. 75** Loyalty, fairness and purity—distribution of typical arguments © Own presentation