

# Animal Experimentation: Working Towards a Paradigm Change

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# Beyond Plausibility Checks: A Case for Moral Doubt in Review Processes of Animal Experimentation

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## 1 Introduction: “Don’t Be Emotional, Let’s Focus on the Facts”

The fact that countries all over the world continue to develop new regulations for experimentation on non-human animals testament that this practice raises many doubts. Our aim in this chapter is to show that one important type of doubt should receive more attention: a particular type of *moral doubt* that could play a pivotal role in the ethical review of animal experiments. We assume that there are a range of emotions that indicate morally complex or problematic situations. When one or all of these emotions are experienced, we say that someone is experiencing moral doubt. To illustrate this point, we introduce the concept of *moral doubt* in the context of review processes, as they are legally required in the European Union (EU). Independent evaluation committees review animal research proposals to advise competent authorities whether applications for animal experiments comply with the legal standards. We chose the case of Germany as an example to explain what these committees decide upon and the degree to which their decisions may be influenced by emotions. We develop the argument that acknowledging emotional moral doubt throughout the review process, in specific ways, may have the positive effect of fostering paradigm change in animal experimentation, as envisioned in Directive 2010/63/EU (European Parliament, 2010).

## 2 Review Processes between Technical Checks and Ethical Advice: Lessons Learned from the German Practice

European animal welfare and protection laws regulate ethical conflict surrounding animal experimentation in the following way: They require that experiments be authorized based on a harm-benefit analysis and that the principles of the 3Rs (replacement, reduction, and refinement) be implemented, as outlined in Directive 2010/63/EU (European Parliament, 2010, Recital 11 and Article 4). Moreover, “animals should always be treated as sentient creatures and their use in procedures should be restricted to areas which may ultimately benefit human or animal health, or the environment” (European Parliament, 2010, Article 12). This is the *extant* ethical consensus, which is reflected in national legislations. We argue that review processes have two functions: a technical function to ensure that this consensus is implemented (*technical function*); and a normative function to identify new reasons for ethical concern (*ethical function*).

### 2.1 *Evaluation Committees as Legal Advisors in European Animal Law*

Under European Union legal harmonization, EU Member States have introduced review processes (RPs) to evaluate whether applications comply with legal standards. Since information on the many different RPs is scarce, we must rely on Silva et al. (2015), who collected and confirmed data from 20 Member States. However, all Member States have implemented some form of RP. In cases where information is available, Member States require that the opinion of an external evaluation committee must be taken into account by the competent authorities (Silva et al., 2015). The required expertise in such committees varies: most EU Member States require knowledge in technical, medical, or natural sciences as well as veterinary health and welfare. Some Member States require legal expertise (e.g., Finland, Poland, Denmark); others require expertise in ethics (e.g., Belgium, Estonia, Netherlands) or alternatives to animal experimentation (e.g., Latvia, Netherlands). In some states, representatives of interest groups are nominated, such as animal protection (e.g., Poland, Croatia, Sweden); patients (e.g., Denmark and Poland); or general society, as represented by lay persons (e.g., Portugal and the United Kingdom) (see Silva et al., 2015).

Despite the differences in expertise, any RP fulfills two functions. First, to evaluate what applicants describe as the scientific purpose of their experiments, with regards to their plausibility. Part of this plausibility check is an evaluation of whether common means to reduce suffering (refinement) are in place; and whether the smallest necessary number of non-human animals is used (reduction). We call this the *technical function*. However, it is widely

acknowledged that the implementation of Directive 2010/63/EU expects RPs to do more, namely to provide an ethical evaluation independent from the applicant (Hirt, Maisack and Moritz, 2016; Maisack, 2016; Peters and Stucki, 2014). This includes weighing alternatives, including animal-free alternatives (replacement). Indeed, if technical or science-based checks were the only function, there would be no need to include representatives of interest groups or ethical expertise in the committees. Hence, the second *ethical function* of independent committees is to advise the respective authority on a compelling harm-benefit analysis, including the “indispensability” of a planned experiment. We return to this point below because, given the way committees actually work and applicants approach them, the issue is more complex. In theory, at least in cases of severe harm to non-human animals, authorities have to be “satisfied” with the “sufficient importance” of an experiment in order to allow it, as specified in the European Treaty Series (ETS 123) (1986, Article 9).

In cases of substantial conflict of interest, pluralist democracies enable representatives of interest groups to negotiate in parliament in order to achieve compromises that benefit the common good (Fraenkel, 2011). The outcome of such discussions usually leads to a normative decision, in the form of a law, to be enforced by executive forces (e.g., competent authorities). The institutional approach implicit in Article 9 of the ETS (1986) is different because enforcement and normative decisions go hand in hand. Competent authorities in EU countries have to weigh the interests of non-human animals and researchers on a case-by-case basis and, by doing so, implement the law, while allowing for different interpretations. Hence, the weighing process is transferred from the legislative to the executive power. Since this can be problematic, external evaluation committees were introduced to include the contributions of experts and representatives of interest groups, as mentioned above (Silva et al. 2015). For example, in Germany and the United Kingdom, RPs were introduced in 1986 (Biedermann, 2009).

The ethical RP is important when it comes to research competition within the EU. Member states have “a certain flexibility to maintain national rules aimed at more extensive protection of animals” if the functioning of the internal market is not affected (see European Parliament, 2010, Directive 2010/63/EU, Article 7). Presumably, an economized medical and pharmaceutical sector will allocate its research where regulation is low and animal protection measures are least costly. Consequently, if a country uses the right to impose more extensive animal protection measures than those agreed upon at EU level, applicant institutions (e.g. international pharmaceutical companies) may look for other countries where regulations are less extensive. This is why the work of RPs is an important instrument in working towards a paradigm

change in animal experimentation, as requested by EU law; and this is why a harmonization of RPs, as a means to secure implementation of EU regulations, may be desirable as well. In what follows, we discuss some of the shortcomings of the German RP in order to draw conclusions for improving RPs in general.

## 2.2 *The German “Ethics Committees”: Ethical Review or Technical Plausibility Checks?*

According to most recent reports, over 2.8 million non-human vertebrates were used for scientific purposes in 2017 (Bundesministerium für Landwirtschaft und Ernährung, 2018) which makes Germany Europe’s second highest user of non-human animals for research purposes (Cruelty Free International, 2016). We now turn to the situation of the RP in this country to see how the ethical and technical functions are implemented and to understand some of its complicating factors. The German animal protection law, Tierschutzgesetz (TierSchG 2006, last amended in 2017), requires that competent authorities assess the indispensability of experiments (Section 7a); and that they be assisted by external *committees* (TierSchG 2006, Section 15) in reviewing the animal research proposals. These are the German RPs. The declared intent was that these committees would support authorities with *expert knowledge*, and that animal protection organizations would be given the opportunity to propose members (Deutscher Bundestag Drucksache 10/3158, 1985). The majority of the members have to possess expertise in medicine, veterinary medicine, or natural sciences (Tierschutz-Versuchstierverordnung, TierSchVersV 2013, Section 42(1)). These members may conduct or may have conducted animal experiments themselves; and one third of the members should represent animal protection organizations (TierSchVersV 2013, Section 42(2)). Therefore, committee members from animal protection organizations are the minority (Hirt, Maisack and Moritz, 2016). Moreover, although the law makes reference to the need for *ethical* justification (TierSchG 2006, Section 7a(2)(3)) and for *ethical* expertise (TierSchG 2006, Section 9(1)), what it means is unclear. The fact that members of the committee work under strict confidentiality (presumably in order to protect personnel involved in the research, their families, and the animals themselves) adds to the lack of transparency; the public cannot be consulted on questions where the normative consensus is, arguably, in flux. Efforts have been made, *post factum*, to make basic information regarding authorized experiments easily accessible to the interested public (see <https://www.animaltestinfo.de>); however, the public, who are increasingly willing to stop certain experiments to protect animals (Eurobarometer, 2005; European Citizens’ Initiative, 2016; Greenpeace Magazin, 2003), have no say in the matter. Another complicating factor is the potential tension between animal advocates

and scientists in the committees, which makes an open-minded examination of individual cases difficult. As noted above, unresolved conflicts over animal experimentation at the legal level are, in part, decided on a case-by-case-basis in the committees. At the same time, committee work is supposed to be based on objective standards of evaluation. In practice, it is often unclear who adheres to what standards of debate; and, as a result, work in the committees can oscillate between the search for ethical truth and the quest for political compromise. The final decision on the approval of an application does not have to be unanimous. Six members (normally) have to vote for the decision to be considered by the authorities, who eventually decide whether to grant or prohibit the research. Committee work is voluntary, with little reimbursement for time invested. While medical or veterinary researchers may be permitted to work on applications during working hours, other members are not always able to do so and are thus clearly disadvantaged.

Finally, the problem of finding animal-free alternatives to a proposed experiment remains. While it is incumbent upon the applicant to show that no such alternatives exist, this is often done by a simply stating that that is the case. While committee members are not supposed to be co-researchers, they will do what they can to find out whether that is true. At the same time, they can hardly be experts in all relevant animal research fields. For example, a research consortium proposed to test inequity aversion in mammals, including humans (Bundesinstitut für Risikobewertung, 2015). Not entirely without irony, the idea was to use rats (next to marmosets and tamarins) because of their highly social nature; and it was explicitly stipulated that, in the long run, results from this experiment would allow adaptations in human society that increase prosocial behavior and cooperation. It was also expected that the experiment would promote better protection for non-human animals who, socially, can prove to be much more complex creatures than expected. Six-hundred and four rats were to be confined in standard laboratory cages, and they would be killed at the end of the experiment. Harms inflicted on the non-human animals further included separation of individuals from their group (fear); injection of hormones; and handling. The applicant had to show that there were no non-animal alternatives for the experiment, and that results could not be obtained through observance of the behavior of free living non-human animals. However, one would need to be an expert in behavioral animal sciences and animal cognition to prove this assumption right or wrong. Given that committees do not specialize in certain themes or research topics, it would be a coincidence if a committee member knew the issues involved well enough. And even if such an expert happened to be a member of the group, they would need sufficient time to establish a compelling, suitable alternative to refuse the application.

Note that emotions arguably play a role in the assessment of this experiment; anger and incredulity regarding the supposed transferability of results or the disregard for research in the social, political, and/or economic sciences would likely have occurred. After all, humans are not 70kg rats, in terms of their metabolism, and certainly the complex conditions of inequity present in human societies and the ways in which they can be dealt with cannot be modelled using rats in a cage.

Thus, we can see how the fact that it is often difficult to prove that alternatives exist practically reduces the application of the 3Rs to two, namely, *reduction* of animals involved and *refinement*, i.e., applying all methods and means to reduce pain, distress, harm, and suffering (see Herrmann, 2019, Chapter 1 in this Volume). However, simply living under laboratory conditions is distressing for the animals and raises ethical questions. Hence, we argue that such a reduced evaluation does not meet the ethical principle of the German animal protection law, which states that “experiments on vertebrates and cephalopods may only be conducted, if the expected pain, suffering and harm is ethically justifiable regarding the purpose of the experiment.” (TierSchG 2006, Section 7a(2)(3)). There is, then, a serious tension at the heart of the RP. Although the public is led to believe that ethical justification plays an important role in committee work—colloquially known as *ethics committees* in Germany (Hirt, Maisack, and Moritz, 2016)—the RP practically disregards real ethical alternatives and focuses on minor technical adaptations. Convincing RPs would necessarily involve a much more careful evaluation of the intended infliction of harm on animals, in light of the expected benefits of and possible alternatives to the experiment. In order to achieve this, we propose careful consideration of emotional sensitivities surrounding animal experiments.

There are good reasons to assume that emotions are important in identifying and clarifying ethical questions. Instead of singling out one emotion in particular, we suggest calling the experience of a range of potentially conflicting emotions when confronted with animal experiments *moral doubt*. While we explain this idea in more detail below, we emphasize that the distinction between ethical and technical assessment is not always straightforward. Consider, for example, the so called, *severity assessment* of animal suffering. The estimated individual condition of animals during an experiment can hardly be conducted without an empathetic understanding of the animals' minds; for it is the empathetic engagement with a suffering animal that motivates the individual to alleviate the harm done to them (Aaltola, 2012; Gruen, 2015). Therefore, one cannot assess the urgency to alleviate the suffering—and that precisely must be the idea of a severity assessment—without any empathetic engagement. However, despite their obvious importance in moral and political

life, the role of emotions in ethical inquiry surrounding animal experiments has not been clarified. In the tradition of animal protection in Germany, emotions have been ignored and even treated as unprofessional, non-scientific threats. Calls for more *sobriety* include the explicit demand that emotions ought to be suppressed (see von Gall, 2016). A similar culture of debate can be assumed to surround the current RP in Germany. This shows that, in order to assess the potential of RP to foster paradigm change, the connection between genuine ethical review and mere technical checks is highly relevant.

In 2012, the administrative court in Bremen ruled that competent authorities only need to ensure “qualified plausibility checks” of the experiments and may refrain from ethical assessment of harms and benefits (Higher Administrative Court Bremen, 2012, p. 16). Although this ruling has come under juridical critique and does not meet the requirements of Directive 2010/63/EU (Maisack, 2016; Peters and Stucki, 2014), it mirrors a tendency to focus on technical checks and to neglect more extensive ethical review in current RP practice. This tendency is reinforced by institutional factors, including, but not limited to, the dominance of life scientists in the committees, no proper compensation, lack of time, and the unresolved question of how to better include expertise on non-animal alternatives. Nevertheless, the public is under the impression that competent authorities do everything to seek ethical advice, and that no animal is killed without compelling reason.

### 3 Emotions in Inquiry and the Case for Moral Doubt in Ethical Review Processes

Now that we have highlighted the tensions surrounding the RP, what is the role of emotions here? Why should a particular form of emotional experience, namely what we term *moral doubt*, be at the heart of a well-functioning ethical review? And how can we achieve concrete improvements of the committees—such as, integrating committee work with the political process, or greater transparency of animal testing where committee members are allowed to voice their concerns publicly—if we take moral doubt seriously?

Emotions, in general, suffer from the stigma of being irrational (Midgley, 1983, Chapter 3). This is true in the context of the RP as well. If committee members show *too much* empathy for animals, they are at risk of being charged with anthropomorphism; they may be accused of being *unprofessional* if they get angry about something that may very well deserve an angry response, such as the general sloppiness of an application; the lack of standard forms of refinement (Herrmann, 2019, Chapter 1 in this Volume); or even the presence

of a palpable contempt for the RP itself. For members who are asked to repress or ignore such emotional responses, this can lead to self-censorship and alienation from the process. While we know of no official qualitative study of committee work, our own experience and unofficial reports substantiate the suspicion that the dynamics of these committees may be analogous to dynamics that have been problematized under the concept of *epistemic injustice* (Fricker, 2007). Epistemic injustice occurs when prejudice operates in ways that lead some knowers to discard the testimony of others for epistemically irrelevant reasons, as in the case of a *white* jury not believing the testimony of a *black* person or a man not believing a woman. In both cases, the individual's epistemic competence is doubted because of a problematic prejudice: that people of color/women are not trustworthy. Experiencing this injustice is considered a harm that can have alienating effects. We argue that something very similar can occur when people who express their moral doubts in emotional terms are regarded as less reliable because of the prejudice that emotions are necessarily irrational. Moreover, in the committee as a whole, it may lead to polarization, and, importantly, to an incomplete grasp of the problem at hand. In what follows, we suggest a more constructive role for emotions in such inquiries. Although, at times, disturbing and difficult to experience, emotions are both important *sources of information* about moral values and intellectual *virtues* (Hookway, 1993), i.e., dispositions to react to information with hope, interpret them charitably, or experience the proverbial love of truth. All of these are easily dismissed and ignored to the detriment of the RP.

### 3.1 *Emotions, Value Recognition, and the Framework of Directive 2016/63/EU*

While precise philosophical reconstruction is a matter of debate, an important connection is often assumed between emotions and values and our motivations to do something about values (e.g., Deonna and Teroni, 2015; Tappolet, 2016; Kriegel, 2015). To *doubt*, for example, by shaking your head and calling *x* *unbelievable*, crucially involves a hesitation to continue business as usual and a refusal to accept *x* as normal, good evidence, or appropriate; to say that *x* is *disgusting* or *abhorrent* is to identify *x* as predicated by a negative value that motivates a range of actions aimed at changing the situation. Emotions can also act as signals to others (van Kleef, 2009), about what you think or what you are likely to do next, a warning to others or a request for them to attend to a situation more closely. Such evaluations and suggestions regarding what to do are, of course, preliminary and are, at times, affected by other emotions. Your trust in the good intentions of other committee members may lead you to drop

an issue that angered you. Emotions still need to be taken seriously for inquiries to go well, since they help create a complete picture of the circumstances of the inquiry you find yourself in (Hookway, 2003; Szigetzi 2013). To suppress all emotions, such as disgust, shame, or fear when entering a committee meeting (or a laboratory, for that matter) on account of *professionalism* is irresponsible because you may fail to notice things that are indeed disgusting, shameful, or scary. These evaluations are not projected upon a supposedly value-neutral, factual situation. Rather, they are part of human practices and objects of inquiry that people must eventually agree upon. To the extent that science, by virtue of being a practice as well, is far from being value neutral (Douglas, 2009; Longino, 1990), it is desirable that a sense of moral integrity is restored at the heart of the highly problematic practice of animal research. Such integrity is minimally defined by the fact that it operates with meaningful moral concepts and value judgments, a core tenet of pragmatism (Putnam, 2010).

Thus, there is a factual component to the question of whether something is, for example, *cruel* or not; and to rid oneself of emotional sensitivity makes it unlikely to discover this. It is important to mention that such sensitivity is already numbed at the level of the analytical terms at the committee members' disposal. This is symptomatic of the misleading, objectifying language that surrounds animal testing (Crary, 2016). To give an example, committee work relies on a severity classification that defines categories of animal suffering, ranging from low to high: non-recovery, mild, moderate, and severe. However, the allegedly lowest category of severity, which most experiments imply, is the killing of animals at the end of the experiment, despite the fact that many of them could live much longer. At the same time, Directive 2016/63/EU requests an acknowledgement of the "intrinsic value of life" of animals (see European Parliament, 2010, Annex v). Similar knowledge of value and commitments are expected by the German animal protection law (TierSchG 2006, Section 1; TierSchVersV 2013, Annexes 2.2, 3.2). The tension between ethical rhetoric and reality provokes emotions and calls for intense debate about cruelty. The same is true for many other cases. For example, the deprivation of social partners for up to 24 hours is classified as *mild*. While most companion dogs are not left to endure prolonged separation from their social partners, why should it be okay for a rat not to know where her cagemates are for a much longer period of time? These examples only scratch the surface of the issue at hand, and we are not even close to evaluating questions involving intentional pain and suffering inflicted on animals. However, the fact that legitimate doubts already appear at this point supports the claim that more ethical inquiries are needed to foster change in the current system.

### 3.2 *Exercising Moral Doubt in the Context of Animal Testing*

We have discussed the disruptive nature of doubt, disgust, anger, and the like. Here, we illustrate the moral doubt that can arise concerning animal experiments. We follow the tradition of philosophical pragmatism, in that we propose a problem-driven, generally science-friendly approach to reasoning that subscribes to fallibilism and contextualism and maintains that there is no fundamental dichotomy between facts and values (Putnam, 1994), to name the pragmatist tenets that are important to our topic. Accordingly, we suppose that problems occur when our habits to think and to act break down, i.e. when we experience inconsistencies. If, for example, I experience distress from the use of an animal for the purpose of *x*, believing that *x* is unproblematic, *my* doubt by virtue of experiencing the creature's distress is a sign that the practice is *not* unproblematic. Ideally, I would pause and reflect. My goal is to establish a belief that will not be easily questioned by future experience, for instance: "I shall not use any an animal for purpose *x*" or "Purpose *x* is unproblematic, but I need to change the situation for the animal in ways that eliminate the distress." Emotions that occur in the context of animal experimentation include disgust, anger, compassion, and hope (to name but a few). When we experience one of these emotions, or a mix of them, in ways that demand that we pause and reflect, we experience *moral doubt* that can help us evaluate issues of animal experimentation.

It is important to note that doubts also need to be taken seriously when someone else expresses them, i.e. if I fail to find anything problematic in what I am doing, but someone else alerts to me to potential ethical problems that I may not have noticed (Trout, 2010). This reinforces the issue of diversity in sensitivities within the committees. If I have had to train myself to ignore moral doubts that I may otherwise experience, in order to pursue my career by experimenting on animals, I must rely on someone else's emotional sensitivity whose moral doubt is intact. This is needed at multiple stages, assuming that any inquiry includes acknowledgement of a problematic situation, clarification of what the problem really is, determination of possible solutions, and (hypothetical) reasoning and the testing of the solution (Dewey, 1938, Chapter 6). Moral doubt is relevant because it functions as a sign *that* there is a problem. Moreover, it can entail suggestions as to *what* the problem may be. Finally, emotions are involved in suggesting solutions that are deemed morally appropriate (Fesmire, 2003). They can act as intellectual virtues, such as courage or conscientiousness; and they will play a role both in the hypothetical reasoning and, ideally, in the evaluation of whether the problem has been solved well.

However, emotions are not necessarily constructive. While, for example, *empathy* and *anger* over injustice done to rats, which are part of testing

inequity aversion, are appropriate, it is easy to see how high *hopes* regarding the research proposal or feelings of *loyalty* towards the applicant can lead the RP astray. It is also important to note that the secrecy surrounding committee work can lead to *cowardice* in addressing the concerns that arise in the committees, or in public, for fear of risk to one's career. We have already noted the desirability of restoring moral integrity at the heart of science and addressing the values and value conflicts that arise in inquiry, for which we currently lack appropriate concepts. We propose that committees need to be sensitive to the way in which language surrounding animal experiments obstructs ethical complexities. Committee members need to approach rhetoric within applications cautiously, evaluate experiments at face value, and ensure that the ethical function of the RP is taken seriously. In this, the so-called pragmatic maxim can be of help. It asks us to elucidate concepts in terms of their conceivable effects, which in ethics should be understood as *finding the right words* (Cojocaru, under review). This can help criticize the emptiness of the word *ethics* used in legal documents as well as describe the problems committees are actually dealing with. Systematically applying the pragmatic maxim can help steer through a sea of jargon and euphemisms and render the specific context under evaluation more precise. Emphasizing that the language we use to speak about animals and their suffering matters, because it habituates us to think and act in certain ways, shows that the application of the 3Rs touches upon more than *simple technicalities*; and that they are about scientific *and* moral integrity much more than about plausibility based on the assumption that science is value-free.

In summary, we suggest that the integration of *moral doubt* into RPs can achieve two things. First, it may lead to a more conscientious adaptation of animal protection, already envisioned in Directive 2010/63/EU, by challenging both the relative neglect of the ethical dimension of the RP compared to technical checks and the moral numbness of people planning, conducting, evaluating, and overseeing the experiments. Since the pragmatist methodology emphasizes the importance of learning from errors and insists on the evaluation of tested solutions, a retrospective evaluation of projects that have been granted authorization would be highly desirable as part of the RP. Second, it is likely that some questions of animal testing will not be resolved within the RP, specifically those that are already unanswerable within the existing framework or those that arise when a regulatory framework itself is questionable. When doubt cannot be resolved, the practice should not proceed, so that important opportunities to inquire into value conflicts are not missed. While this may not sound very pragmatic, the principle of *living doubt* may provide a moral compass whenever a, so-called, dilemma between erring on the side of caution

and scientific progress is construed. Any such rhetoric, which, it should be noted, manipulates emotion, should be held in check; and where doubts prevail, members of the RP must suspend judgment; integrate all possible sources of information to get a clear picture of the problem at hand; and engage in public debate, not as moral experts who explain supposed necessities to a sentimental public, but with an intellectually honest request for help.

#### 4 Concluding Comments

Competent authorities throughout the EU face the challenge of ethically evaluating animal experiments, and Directive 2010/63/EU demands that applications be evaluated by third parties other than the applicant. Expert committees may be a suitable model for this purpose, as long as the basic principles of their work are submitted to democratic control. One way or another, experts will have to deal with emotions when deciding on the life and death of countless, sentient animals. The way in which experts deal with their own emotions and those of others is likely to impact their decisions. The question, then, is not *whether* but *how* this influence occurs. While we stress that no comprehensive study of experts' actual emotional regulation has been conducted, in this chapter, we provide an answer to the normative question, whether competent authorities and experts have good reason to articulate and acknowledge clearly their emotional moral concerns and consider them as relevant for decision-making. The answer is, *yes*. We base this answer on a philosophical account of emotional functioning. Moral doubts signal problems in particular situations, say something about the nature of the problem, and push for solutions. In our case, the problem is the suffering of millions of animals subjected to experiments that will hypothetically improve human life—a definitive moral cost for an uncertain benefit. If the RP does not provide room to *find the right words* when articulating these emotional signs, the problem-solving potential is lost. We argue that acknowledging, and not suppressing and ignoring, moral doubts can foster the envisioned paradigm change in animal experimentation. In order to enable such an optimistic perspective, a variety of conditions need to be fulfilled.

In cases where a substantial debate cannot resolve a conflict, the RP should be able to communicate concrete, open-questions to political or legal decision makers. RPs are impeded by lack of clarity in the implementation of vague legal norms, such as the prohibition of *unnecessary* suffering. The public and the legislator need to know about the unanswered questions that follow from these impediments and push for solutions. Interaction should also exist at the

academic level. In cases where doubts about suitable alternatives to an animal experiment exist, applications need to be forwarded to experts on the topic in question, even if they are not part of the committees. Given the variety of research topics, even a medical scientist cannot evaluate any topic in medicine. Aware of such problems in the RP, educational bodies can also take on pivotal issues in moral training. Evaluation committees may not be the only institutions to inform the RP. Non-governmental organizations (NGOs) traditionally play a central role in informing public decision-making about the plurality of different interests, and this work has to be transparent. It is questionable whether scientists in evaluation committees really are independent from special interests and solely rely in their decisions on objective and ethical accounts. A clarification of the vested interests involved in legal decisions can be stipulated by NGOs. Moreover, in order to *evaluate* the evaluations, it is important to review systematically all the research projects that were granted authorization; for example, did they achieve what they had promised, and what happened to the animals involved? More direct monitoring and publication of this data could also help assess whether, for example, the severity classifications help in practice. Such post-hoc evaluations may be both the source and legitimization of moral doubts regarding similar projects in the future.

The tension between the current practice of animal experimentation and the ethical value of unnecessary suffering, hopefully, provokes emotions. Indeed, ethical review must be based on facts. However, given the many uncertainties and problems surrounding the RP, above all, one thing is clear: there is a strongly felt sense that we need non-animal alternatives in research. Ignoring this and continuing to participate in an inherently dubitable practice impedes reasonable solutions. Finding the right words when expressing moral doubts is a technical skill to inform legal decision making, and we currently disregard this skill at the expense of our moral *and* scientific integrity.

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