

*Perspective***Bridging the Gap between Social Acceptance and Ethical Acceptability****Behnam Taebi^{1,2,*}**

New technology brings great benefits, but it can also create new and significant risks. When evaluating those risks in policymaking, there is a tendency to focus on social acceptance. By solely focusing on social acceptance, we could, however, overlook important ethical aspects of technological risk, particularly when we evaluate technologies with transnational and inter-generational risks. I argue that good governance of risky technology requires analyzing both social acceptance and ethical acceptability. Conceptually, these two notions are mostly complementary. Social acceptance studies are not capable of sufficiently capturing all the morally relevant features of risky technologies; ethical analyses do not typically include stakeholders' opinions, and they therefore lack the relevant empirical input for a thorough ethical evaluation. Only when carried out in conjunction are these two types of analysis relevant to national and international governance of risky technology. I discuss the Rawlsian wide reflective equilibrium as a method for marrying social acceptance and ethical acceptability. Although the rationale of my argument is broadly applicable, I will examine the case of multinational nuclear waste repositories in particular. This example will show how ethical issues may be overlooked if we focus only on social acceptance, and will provide a test case for demonstrating how the wide reflective equilibrium can help to bridge the proverbial acceptance-acceptability gap.

KEY WORDS: Ethical acceptability; multinational nuclear waste repository; reasonable consensus; social acceptance; wide reflective equilibrium

1. INTRODUCTION

Introducing new technology into society often brings great benefits, but it can also create new and significant risks. Serious efforts have been made to assess, map, understand, and manage these risks. For instance, in the chemical industry, risk assessment methods have been proposed for describing and quantifying “the risks associated with hazardous

substances, processes, actions, or events.”^(1,p.3) Perhaps the most notable example is probabilistic risk assessment, originally developed in order to systematically understand and reduce the risk of meltdown in nuclear reactors,⁽²⁾ and to evaluate aviation risks. However, these and other risk assessment methods have been criticized for neglecting social aspects of risk and, more specifically, overlooking the issue of risk acceptance on the part of the public.³ This in turn has initiated a new yet powerful strand of social science scholarship devoted to developing the concept of “social acceptance” of technological risk.^(4,5) During the last three decades, social acceptance studies have gained more relevance for major

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³These methods have also been criticized for other reasons, such as their inability to assign objective probabilities due to uncertainties.⁽³⁾

technologies, most notably large energy projects such as sizable wind parks and nuclear energy technologies.^(6–11) This has been due to controversies and public opposition that emerge from the introduction or implementation of such technologies. Unfortunately, to many decisionmakers and private investors, public opposition is simply considered an obstacle to technological development—and hence as something that should be overcome. There have even been proposals to “use marketing methods [in order to] maximize the likelihood of a successful introduction” of technologies, by investigating people’s attitudes.^(12, p. 677) This is disconcerting because it shifts the focus from asking why a technology is not accepted to asking how to ensure its acceptance.

Lack of social acceptance can sometimes be attributed to the fact that important ethical issues that new technologies engender are overlooked in the decision making. For instance, public opposition to siting issues may stem from an unfair distribution of risk and benefit between a local community (which will be exposed to additional risks) and a larger region or even nation (which will enjoy the benefits). Fittingly, many humanities researchers are now considering methods for assessing the ethics of technological risk, and consequently the ethical acceptability of risky technology.^(e.g., 13,14) These assessments often involve conceptual philosophical contemplations.

In this article, I argue that only in conjunction are the concepts of social acceptance and ethical acceptability relevant to the governance of risky technology. Conceptually, it makes sense to marry these two notions because they are mostly complementary. Social acceptance studies are often incapable of capturing all the morally relevant features of risky technologies; ethical analyses do not typically include stakeholders’ opinions, and they therefore lack the relevant empirical input for a thorough ethical evaluation.⁴

The article is organized as follows. In the following section, I will discuss a number of ethical issues that social acceptance studies cannot sufficiently cover. Section 3 will present the case of multinational nuclear waste repositories in order to illustrate the insufficiency of social acceptance studies when assessing the broader ethical impacts of new technolo-

gies or technological projects. In Section 4, I will consider the existing philosophical discussions of ethical acceptability, arguing that most of these studies are conceptual and lack empirical input. In Section 5, I will present the Rawlsian wide reflective equilibrium as one possible method for merging empirical social science studies on acceptance with conceptual ethical acceptability analyses. Section 6 will propose ways in which the wide reflective equilibrium (WRE) might be used to bridge the acceptance-acceptability gap for multinational repositories. In Section 7, I will offer my conclusions.

2. SOCIAL ACCEPTANCE AND NEGLECTED ETHICAL ISSUES

The terms acceptance and acceptability have been used in different senses throughout the literature in the social sciences and humanities. In this article, I make the following distinction between social acceptance and ethical acceptability:

Social acceptance refers to the fact that a new technology is accepted—or merely tolerated—by a community.

Ethical acceptability refers to a reflection on a new technology that takes into account the moral issues that emerge from its introduction.

The former concept largely aligns with studies in social psychology that assess the level of acceptance of a new technology and identify potential hurdles, whereas the latter concept best aligns with the literature on ethics of technology. In discussion of risky technologies, a distinction is often made between the actual acceptance of technology and the normative questions concerning which levels of risk should be acceptable to the public; I make the same distinction in this article.^(13–16) Many authors have emphasized the interrelatedness of these two concepts where various technologies are concerned. Cowell *et al.*, for instance, argue that acceptance is affected by perceptions of ethical concepts such as distributive and procedural justice.⁽¹⁷⁾ Huijts *et al.* reiterate the latter conclusion by empirically showing that in the case of sustainable energy technologies, the acceptance of individual members of the community is affected by those members’ social norms, as well as by their feelings about distributive and procedural justice.⁽¹⁰⁾ Oosterlaken argues that for major wind energy projects, what matters is “not only mere acceptance, but the ethical question of acceptability.”⁽¹⁸⁾ Van de

⁴It should be mentioned that some ethical theories such as different forms of preferentialism do consider people’s actual preferences and wishes as necessary input for ethical decision making. These theories are, however, not very influential in applied ethics or in the ethics of risk, which is the primary focus of this article.

Poel points to “the danger of equating acceptance with acceptability” and argues that we need to account for how both notions may be related.^(19,p. 191) Here I build on the same line of reasoning, arguing that good governance of risky technology requires the two concepts of acceptance and acceptability to be addressed in conjunction; I present a method for bridging this gap in Section 5.

The remainder of this section identifies several issues that current studies on social acceptance do not usually take into account, as well as cases that remain problematic even in light of the social acceptance that supposedly already pertains to them. Generally speaking, one could distinguish between two categories of problem, namely, principal problems and instrumental problems of acceptance through the participatory process. The former relates to the fundamental ethical issues that a participatory process cannot address such as intergenerational justice. The latter is about instrumental problems associated with the participatory process, such recognition and fair representation of stakeholders, full transparency, access to information, acknowledging the differences in power, etc. In the following paragraphs, both categories of problems are discussed in more details. I distinguish between six main issues.

First, acceptance is sometimes based on incomplete or even faulty information. Wigley and Shrader-Frechette present a case study of a uranium enrichment facility in Louisiana that asked local communities to “nominate potential sites for a proposed chemical facility.”⁵ Although the communities did apparently nominate host sites, there were several inherent ethical problems with this situation. For one, the company never informed the local communities about the exact nature of these “chemical plants”; enrichment facilities are indeed chemical plants, but they are very specific types with radiological risks. In addition, the company never presented probabilistic risk assessment or a quantitative determination of the impacts. Thus “it [was] impossible to know, reliably, the actual risks associated with the plant” when accepting those risks.^(20,p. 72)

Second, there is the question of which public(s) should accept a new technology. In the last case study, concerning the site-application process, Wigley and Shrader-Frechette argue that the opinions of host communities located very close to the

proposed facilities were not considered; instead, communities located farther away from the facilities were consulted.^(20,p. 73) Walker presents examples of local communities opposing wind parks whereas the broader public endorsed this same energy technology.⁽⁷⁾

Third, distributional issues underlie new technologies, both spatially and temporally. When siting risky facilities, there are several fundamental ethical issues that need to be addressed in the realm of the spatial, including questions about how the environmental burdens and benefits should be distributed. In addition, there are also more practical questions with ethical relevance, such as the matter of how to establish an acceptable distance between potential major accidents with risky technology and exposed residents.^(21–23)

In addition, there are the more ethically complex issues surrounding temporal distributions, alternatively known as intergenerational issues.⁶ For instance, at what pace we should consume nonrenewable resources, and what level of change in the climatic system will be acceptable to future generations. These questions become especially intricate when new technology that could help us safeguard future interests would compromise the interests of people alive today. Such a situation gives rise to moral questions that are not easy to address in public acceptance studies. For example, do we have a moral obligation to provide benefits for or prevent losses to future generations, if that comes at a cost to ourselves?^{(24–28),7}

Fourth, a risky technology might be accepted for reasons that are morally wrong. This issue regularly arises in discussions of siting, and in connection with the issue of compensating local communities. Compensation is legitimate and uncontroversial when a host community is exposed to additional risks and burdens, whereas the benefits of new technologies (or facilities) are more widely dispersed; in such

⁶Strictly speaking, we must distinguish between temporal and intergenerational issues because not all temporal issues are also intergenerational. The question of how to distribute tax burdens over a period of a few years does have a temporal component, but it is not intergenerational.

⁷There are some studies that have explicitly addressed these future effects in the course of public deliberation. There are two examples of the deliberations of mini-publics in the areas of fishery decision making and Canadian nuclear waste management; see Refs. 29 and 30. Another example involves evolutionary game theory in economics; see, for instance, Ref. 31. These are, however, exceptions to the rule.

⁵This is a quotation from the draft Environmental Impact Statement of the U.S. Nuclear Regulatory Commission (NRC). It is quoted here from page 71 of Ref. 20.

cases compensation, also referred to as community benefit, is meant to address the unequal distribution of burdens and benefits.^(32,33) But Hannis and Rawles correctly argue that, without sound ethical guidelines regarding “who decides [or should decide] whether, or at what point, it is reasonable to expect a host community to accept [it],” compensation might well become an “exploitative, misleading or manipulative” instrument. These authors warn of situations in which compensation could be abused to “bribe” local communities.^(34,p. 348)

Fifth, a technological project could be accepted on the basis of a faulty or unfair procedure. It has been widely acknowledged and empirically shown that, in addition to having a fair outcome (as, e.g., in the distribution of burdens and benefits), what very much matters is having a fair procedure in decision making.^(35–37) In social acceptance studies, the relevance of “procedural justice” issues has also been acknowledged, leading to a growing body of work on the participatory approach to decision making in regard to new technologies.^(38–42) Indeed, it is now common practice to recognize a normative rationale for participation as a political right for citizens;^(e.g., 41) “the case for participation should begin with a normative argument that a purely technocratic orientation is incompatible with democratic ideals.”^(38,p. 239) However, the normativity of new technology is not to be approached only via participation. As discussed in this section, there are various other important ethical issues that a fair procedure for participation does not necessarily solve. It is crucial, however, to explicitly acknowledge procedural justice as a relevant moral issue that needs to be addressed. In addition to participation, at the very least the two other key issues of recognition and power must be considered.⁽⁴³⁾ Those who will potentially be affected by a decision must be identified and recognized; they must be able to fully and freely participate in the decision-making process, which means we need to acknowledge that some stakeholders may have fewer available opportunities to take part in such a process.⁽⁴⁴⁾ Achieving procedural justice is more problematic when it comes to projects with transnational consequences, which brings me to the last issue.

Sixth, some technological projects engender international risks. For instance, some of the technological solutions presented for dealing with climate change, such as geoengineering (i.e., intentional climate change designed to reverse undesired change), raise serious international procedural and distribu-

tive justice issues as well as questions regarding international governance and responsibility.^(e.g., 45) The multinational character of such proposals makes it virtually impossible to address their desirability only in social acceptance studies.

This list is naturally not exhaustive. More importantly, the issues mentioned should not be viewed in isolation because at times it is the convergence of different issues that makes a case particularly relevant from an ethical perspective. In the next section, I will present an example that shows how crucial moral aspects of a situation can easily be overlooked if we focus exclusively on “social acceptance.”

3. WHEN PUBLIC ACCEPTANCE ALONE MIGHT FAIL: MULTINATIONAL NUCLEAR WASTE REPOSITORIES

Despite international consensus that any country producing nuclear waste is responsible for its disposal, policymakers are increasingly considering the possibility of multinational repositories for the joint disposal of nuclear waste. This is especially true in Europe, where the European Parliament and the European Commission have already expressed interest in multinational repositories.⁽⁴⁶⁾ A group of waste management organizations in several E.U. member states is currently exploring the feasibility of creating such repositories in Europe.⁸

Multinational repositories have serious advantages where safety, security, and economics are concerned,⁽⁴⁷⁾ but they also give rise to a range of institutional, legal, financial, and political issues. Furthermore, it has been widely acknowledged that they raise several ethical issues that need to be addressed.^(48,49) In tackling these ethical issues, scholars have argued that it will be absolutely essential to establish national and local acceptance.^(49,50) That is undoubtedly a necessary requirement, but it is not a sufficient criterion, as I argue in Section 2. The associated ethical issues revolve around intergenerational and international justice. Let me elaborate on these two issues.

As regards intergenerational justice, multinational repositories could well be beneficial from the point of view of justice to posterity; they would give us access to a larger variety of geologic host sites, allowing us to choose the geological formations that best guarantee long-term protection. Moreover, the

⁸See the website of the European Repository Development Organization for more information: <http://erdo-wg.eu/>.

number of risky facilities would thus be reduced. This would decrease the risk of human intrusion in the far future, if knowledge about the location of the repositories were to be lost.⁹

Multinational repositories are therefore to be preferred from the perspective of compliance with intergenerational justice. However, they inevitably give rise to international injustice because one nation is always expected to accept another nation's waste. This injustice might not be evident at first glance, especially when the host country willingly takes the waste (or, in other words, when the criterion of social acceptance has been met). While this acceptance among communities and nations is necessary, it might turn out to be morally problematic. The consent of the host country could, for instance, stem from an imbalance in the economic or political power of the two countries.^(52, pp. 68–69) If social acceptance is taken as the sole criterion for choosing host sites, then we could easily end up with situations in which waste is regularly transferred from richer to poorer countries, as the latter are likely to be more receptive to economic incentives.

The issue of international justice can be divided into procedural and distributive subtopics. As regards procedural justice, the issues of recognition, participation, and power need to be carefully considered in the international setting. The distributive justice issue will raise questions about how to compensate and whom to compensate when we are dealing with different communities and regions in different countries.

These are just a few ethical issues that multinational nuclear waste repositories could engender, and they are not typically addressed in social acceptance studies. Similar issues are also associated with other technologies that have international and intergenerational significance, such as geoengineering.

4. ETHICAL ACCEPTABILITY AND THE LACK OF STAKEHOLDERS' OPINIONS

In the sections above, I argue that social acceptance studies do not typically address all the morally relevant features of risky technologies. Therefore, a single-minded focus on social acceptance can easily obscure more fundamental ethical issues. In this section, I will consider the notion of ethical acceptability as it has been used in ethics of technology.

There is a growing body of literature in applied ethics that takes up the issue of the ethical acceptability of risky technologies.^(e.g., 13,14,27) Inspired by biomedical ethics, philosophers have proposed several criteria for evaluating the ethical acceptability of technological risk, such as voluntariness, informed consent, and fair compensation. The existing ethical analyses of technological risk are predominantly conceptual, and do not usually include stakeholders' opinions. I argue that a sound ethical evaluation needs empirical input; it should therefore take the opinions of stakeholders into account, for the following three reasons.

First and foremost, whenever risk is being imposed on an individual, that individual has the (moral) right to be informed about and to consent to the risk. The moral right to be informed has been formalized in environmental law with the Aarhus Convention, which grants a number of rights to the public; it mentions (i) "access to environmental information" and (ii) "public participation in environmental decisionmaking."¹⁰ Consenting to this risk is an additional criterion from the *informed consent* principle. Although this principle is straightforwardly applicable in biomedical ethics, where the interest of just one individual patient is usually at stake, extending it to include collective technological risk can be rather problematic. As Hansson argues, informed consent is "associated with individual veto power, but it does not appear realistic to give veto power to all individuals who are affected for instance by an engineering project."^(53, p. 149) In the same vein, although we must respect the rights of each sovereign individual who is exposed to risk, modern societies would not be able to operate if all risk imposition were prohibited.^(54, p. 21) Stakeholders' differing and sometimes diverging values make such an arrangement not only practically but also morally problematic.⁽⁵⁵⁾¹¹ Yet, it is important to acknowledge the plurality of opinions among the

⁹Elsewhere I defend this claim in detail.⁽⁵¹⁾

¹⁰Although this convention primarily refers to "the state of the environment," it also includes "the state of human health and safety where this can be affected by the state of the environment." This quotation is from the website of the U.N. Economic Commission for Europe; see <http://ec.europa.eu/environment/aarhus/> (retrieved on February 1, 2016).

¹¹Doorn puts forward this argument for different conceptions of responsibility among different team members in R&D networks, but the rationale of the argument applies to any situation in which "acceptance" will depend on diverging and sometimes conflicting values.

stakeholders and to account for those opinions in decision making as much as possible.^(56,57) Second, and at a more fundamental level, one could argue that stakeholders' opinions ought to be included for the sake of pluralism—which is “a cornerstone of democracy because it features multiple centers of power, counters authoritarianism, and provides the basic grist for political debate.”^(58, p. 635) In the context of the acceptability of technological risk, pluralism means acknowledging the diversity of cultural and moral values.^(59,60) This issue will be discussed in the next section, where I argue that diverging moral values does not necessarily mean that people cannot agree.

Third, on a more practical note, stakeholders' opinions should be included because those stakeholders have unique local and contextual knowledge.^(61,62) Against the popular belief that laypeople's understanding of risk is emotional and hence irrational, Roeser argues that emotional responses to risk—especially the responses of those who are exposed to such risk—can be an invaluable source of insight into risk-related ethical issues.^(63,64) So, instead of being dismissed, those emotions should be taken seriously in the ethical contemplation.¹²

5. HOW TO BRIDGE THE GAP WITH THE WIDE REFLECTIVE EQUILIBRIUM

So far, I have argued that social acceptance studies do not typically take the ethical issues surrounding risky technology into account (Section 3), although ethical acceptability analyses of technological risk are predominantly conceptual and do not include stakeholders' opinions (Section 4). One possible tool for marrying the two concepts is the WRE, as introduced by Rawls^(67,68) and developed by Daniels.^(69–71) This iterative method alternates between analyzing the lower levels considered judgments of individuals about specific situations and analyzing the top level of theoretical moral considerations; between these two levels of judgment and theory, there is a mid-level of principles or rules that we believe govern our intuition. Ideally, the WRE iterations continue until we arrive at a coherence or an equilibrium among the three levels.

In principle, the WRE was developed as a model of moral thinking meant to consider “a given individual at a given time.”^(69, p. 281) But earlier studies also proposed that it could, for instance, be used

to analyze and organize public debates surrounding a specific topic.⁽⁷²⁾ Particularly in biomedical ethics, it has proven to be a suitable method for dealing with practical moral problems.⁽⁷³⁾ For instance, it has helped to integrate the moral judgments of health-care professionals with insights from ethical theories.^(74,75) In the context of technological development, the WRE has been used to account for the moral judgments of the actors involved in R&D networks⁽⁷⁶⁾ and to organize moral deliberation on the topic of responsibility distribution in the research setting.⁽⁵⁵⁾

I argue that the process of reaching an equilibrium via the WRE can be understood as a way of bridging the proverbial gap between acceptance and acceptability. Building on Van de Poel,⁽¹⁹⁾ I argue that public acceptance studies most resemble the lower level of considered moral judgments, whereas ethical acceptability analysis occurs mostly at the top level of moral theory.¹³ For this process to be feasible, we need to assume that people who have different interests and value systems can in principle agree about what is best for everybody. Acknowledging the plurality of moral frameworks in a democratic society,⁽⁷⁷⁾ Rawls claims that people with different worldviews do at least share some common elements of their individual wide reflective equilibria that pertain to an overlapping consensus. Reasonableness has an important place in this argument because only reasonable citizens will weigh their own and others' considered convictions, as a result of which a reasonable overlapping consensus can emerge.¹⁴

¹³Although I follow Van de Poel⁽¹⁹⁾ in applying the coherentist (Rawlsian) approach for relating the two concepts of acceptance and acceptability, our conceptualizations of the notions and the relation between them are slightly different. Van de Poel conceives of acceptance as “an equilibrium in which moral principles and background theories are adjusted to given considered judgments” whereas acceptability should “also critically scrutinizes considered judgements from a variety of moral theories and background principles.”^(19, p. 191) In this conceptualization, acceptability is the more comprehensive notion that inherently encompasses acceptance. I argue that acceptance takes place at the level of considered judgement about a specific situation, while acceptability occurs at the top level of applying moral theory to that specific situations. So, I conceive of them as two distinct concepts that could be connected through the WRE and should ideally culminate in the mid-level guiding principles with sufficient bearing on both moral theory and stakeholders' judgements.

¹⁴Reasonable citizens, in Rawls's understanding, are those who have the “willingness to propose and to abide by, if accepted, what they think others as equal citizens with them might reasonably accept as fair terms of social cooperation.”^(78, p. 149)

¹²See also Refs. 65 and 66.

As stressed above, the WRE approach is based on several assumptions and it is not unthinkable that a coherence between the three levels might not be achievable in specific situation (and a consensus would be completely out of reach). Moreover, the WRE is certainly no panacea for resolving moral conflicts. Yet, as rightfully argued by Van de Poel, a lack of consensus could also be a “source of debate, argumentation and reflection.”^(19, p. 191) In other words, one might argue that establishing a complete coherence between the three levels is the *ideal* (perhaps often unfeasible) solution while we are seeking for the best approximation of that ideal. More precisely, we want to investigate if an acceptable approximation of the ideal is achievable. When there is no consensus, this endeavor could lay bare the reasons of dissensus both with regard to social acceptance and to fundamental moral questions. So, while the WRE cannot give a decisive answer to moral dilemmas, it could help us identify those dilemmas. Moreover, including stakeholders’ judgment in moral dilemmas could help us formulate an informed response to such dilemmas; in the following section, I will give an example of such situations.

In sum, reflecting on the expressed judgment is an inherent part of this method, both reflections from a technical point of view (and when it comes to the issues of technological risks and uncertainties) and from a moral point of view. In social practice, this requires that the person involved in the judgment must have both the ability and the willingness to engage in reflection and, again, this is an assumption that needs empirical substantiation,¹⁵ but in general the purpose of the WRE method is to facilitate a reflection and to investigate if the acceptance-acceptability gap can be sufficiently bridged.¹⁶

¹⁵The literature on “Reflective learning” provides part of this substantiation. Most notably, Van de Poel and Zwart have empirically tested this claim by applying it to the R&D Network and to achieving overlapping consensus about the moral issues associated with a sewage treatment technology.⁽⁷⁶⁾

¹⁶Let me reiterate that the WRE is only one possible method for doing this. Another method is discourse ethics, as most prominently defended by Jürgen Habermas. Discourse ethics rests on the assumption that it is the engagement in communicative action that helps us recognize the normative rightness of an argument and it was presented by Habermas for structuring the deliberation between different stakeholders that do not necessarily subscribe to the same values. In this way, Habermas’s discourse ethics claims to be able to assess the moral rightness of a judgment by ensuring the impartiality of the process of making judgments, unlike Rawls, who focuses on the impartiality of the individuals involved in making a moral judgment. It is not my inten-

6. HOW TO BRIDGE THE ACCEPTANCE-ACCEPTABILITY GAP FOR MULTINATIONAL REPOSITORIES

Let me elaborate on how the framework of WRE could be used to bridge the acceptance-acceptability gap in the earlier discussed case of multinational repositories. In other words, how can we discover whether a reasonable overlapping consensus can be reached in such a case?¹⁷ As mentioned in Section 3, the ethical issues associated with multinational repositories revolve around international (procedural) and intergenerational justice. Following the WRE analogy, these justice notions must therefore be placed at the top level of abstract moral theory. The bottom level is connected to the considered opinions of stakeholders in the different countries involved. The top and bottom level should then resonate with the mid-level of principles, which should guide and govern the development of such repositories. So the first question is whether the notions of justice that are discussed in the philosophy literature have any bearing on the mid-level principles. Such analysis does not have to start from scratch because issues of justice surrounding nuclear energy production and waste management have been discussed for at least three decades. The very idea of disposing of nuclear waste deep underground stems from an interpretation of the notion of intergenerational justice: “Radioactive waste shall be managed in such a way that will not impose undue burdens on future generations.”^(82, p. 7) Likewise, various procedural justice principles have played a role in shaping nuclear waste management policies. One might think of the principles of transparency and openness in nuclear waste management, or the principle of early and inclusive participation.^(83, p. 16–17) All these considerations are, however, mainly about national radioactive waste management policies; To what extent would they apply to multinational repositories? Considering the international risk and the requirements of international decision making, new or

tion to compare the Rawlsian and Habermasian approach here. My aim in this article is only to show the potential and difficulties of the WRE method, as a method that has been used in other areas of applied ethics too. Indeed, these very short accounts do not do justice to Rawls’s and Habermas’s sophisticated and extensive discussions. Interested readers should consider original sources by Rawls^(68,77) and Habermas^(79,80) and their exchange on the WRE and other related issue.^(78,81)

¹⁷It goes without saying that this endeavour does not imply that such a reasonable overlapping consensus exists. The outcome of the analysis could very well be that consensus is impossible.

modified principles may be needed to govern multinational repositories.

The aim of applying the WRE method is, therefore, to determine whether there is an overlapping consensus to be found regarding the principles for good governance of multinational repositories. The key questions here are whether the existing national principles (i) sufficiently encompass the transnational and intergenerational risk of multinational repositories, and (ii) sufficiently reflect stakeholders' opinions in the different countries involved.

As mentioned earlier, one aim of bridging the acceptance-acceptability gap is to explicitly address the ethical issues at hand. This conceptual analysis, however, can sometimes only lay bare certain ethical dilemmas. Section 3 gives an example of this phenomenon, showing that although multinational repositories are to be preferred from the perspective of justice to future generations, they can create intragenerational/international injustice. Indeed, this dilemma could be addressed in a conceptual normative analysis, but also at this level, the plurality of the opinions of those who are performing such analysis will become relevant; it is likely that there would be different ethically defensible solutions to this dilemmas. In a sense, the bottom-up analysis of the considered judgments of stakeholders might validate different moral judgments. One could argue that, other things being equal, the ethical analysis of risky technology that counts on the support of those who are exposed to those risks is the most defensible one. This shows how the two concepts of social acceptance and ethical acceptability could be best complementary.

Finally, for facilitating the WRE process, learning among the stakeholders should be incentivized. This will allow them to reflect on the existing principles, the existing theories of justice, and each other's opinions. Ideally, we want stakeholders in different countries to answer questions regarding the governance of these multinational repositories without knowing whether waste will be disposed of in their country (or even their local community) or elsewhere.¹⁸ Establishing such an ideal situation, however, will prove very difficult if not impossible; we should therefore find the best approximation of this state of affairs. For instance, stakeholders could be

asked to answer all questions as if they were in the position of hosting the waste repository. This might generate the most risk-averse answers, but in this way we could ensure that a possible consensus would be fair to all participants.

7. CONCLUSION

In this article, I have argued that concentrating solely on social acceptance of risky technology threatens to obscure several important moral issues, especially when it comes to technologies with international and intergenerational risks. Good governance of risky technology must involve addressing both social acceptance and ethical acceptability. Conceptually, it is helpful to combine these notions because they are mostly complementary; social acceptance studies are often in need of an ethical addendum, while existing ethical analysis would very much benefit from including stakeholders' opinions. One method for bridging this gap is the wide reflective equilibrium, which aims to establish a coherence among the three levels of ethical theory, guiding principles and stakeholders' considered moral judgments. Although complete coherence seems to be the ideal (perhaps unrealistic) solution, we must be seeking for the best approximation of that ideal. More precisely, we want to investigate if an acceptable approximation of that ideal, or a reasonable overlapping consensus, is achievable.

Reflecting on an expressed judgment is an inherent part of this method, which means that people should have the ability and the willingness to engage in reflection. Hence, according to this framework, reaching a shared opinion does not necessarily require all stakeholders to have the same moral framework or the same value system. What it does require is that all stakeholders be reasonable citizens—in the Rawlsian sense—who are willing to reflect on their opinions and consider the opinions of others.

Section 6 elaborates on how the WRE analysis could be applied to the case of multinational nuclear waste repositories. My aim has been to show several steps for implementing the WRE in a hypothetical situation. In so doing, there are several potential problems and difficulties, such as how to deal with different (and diverging) resolutions of moral dilemmas and how to incentivize the learning process (and thereby arrive at considered moral judgments). I have argued that, at the minimum, the WRE method could help identify the underlying reasons for consensus both with regard to social acceptance and

¹⁸Rawls refers to decisions made behind a veil of ignorance when participants "do not know how the various alternatives will affect their own particular case and they are obliged to evaluate cases solely on the basis of general considerations."^(67, p. 118)

ethical acceptability. Moreover, although the WRE cannot give a decisive answer to moral dilemmas, including stakeholders' judgment in moral dilemmas could help us formulate an informed response to such dilemmas.

Indeed, the usability of WRE for bridging the acceptance-acceptability gap needs to be empirically tested, but if successful, the proposed approach in this article could enrich conceptual ethical analysis by adding stakeholders' moral judgments. At the same time, it could broaden social science studies by adding an explicit analysis of the moral aspects of technology. This endeavor is worthwhile because only when they are discussed in conjunction, are social acceptance and ethical acceptability analyses relevant for good governance of risky technologies.

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