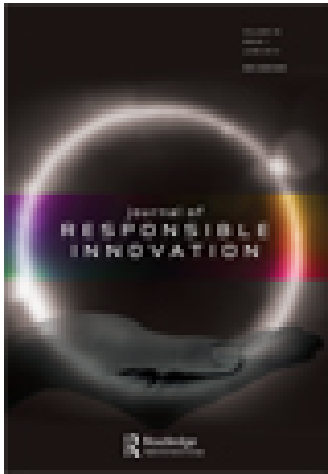


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RESEARCH ARTICLE

Look who's talking: responsible innovation, the paradox of dialogue and the voice of the other in communication and negotiation processes

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In this article, we develop a concept of stakeholder dialogue in responsible innovation (RI) processes. The problem with most concepts of communication is that they rely on ideals of openness, alignment and harmony, even while these ideals are rarely realized in practice. Based on the work of Burke, Habermas, Deetz and Levinas, we develop a concept of stakeholder dialogue that is able to deal with fundamentally different interests and value frames of actors involved in RI processes. We distinguish four main characteristics of stakeholder dialogue. Dialogical responsiveness (1) enhances self-criticism, (2) is characterized by the constitution and the destruction of the self or identity of the actors involved, (3) consists only in the actual enactment of the dialogue and (4) is primarily responsive to the grand challenges of our time. Based on our findings, we provide a novel conceptualization of the central notion of responsiveness in the RI literature.

Keywords: communication; responsiveness; responsible innovation; stakeholder dialogue; wicked problems

There is a growing recognition that the grand challenges of our time – climate change, poverty alleviation, ageing societies, etc. – require the active involvement of public actors and stakeholders in research and innovation processes (European Commission 2011). The general idea is that more desirable and responsible outcomes of innovation processes can be expected if stakeholders actively participate and become ‘mutual[ly] responsive to each other’ (von Schomberg 2013; cf. Matter 2011). This engagement not only involves extensive reflections on the future impact of innovations, but also deliberations on the different purposes of and motivations behind these innovations; responsible innovation (RI)

compels us to reflect on what sort of future(s) we want science and technology to bring into the world, what futures we care about, what challenges we want these to meet, what values these are anchored in, and whether the negotiations of such technologically enabled futures are democratic. (Owen et al. 2013, 34–35)

The importance of public or stakeholder engagement¹ in innovation processes is widely acknowledged. First, because of the high complexity of grand challenges and the high uncertainty of the future impact of innovations such as those in biotechnology and nanotechnology, the active

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involvement of stakeholders with conflicting interests and value frames is demanded in order to better understand these challenges and the risks and uncertainties involved (cf. Belucci et al. 2002; Bulkeley and Mol 2003; Chilvers 2008). Second, stakeholder engagement enables stakeholders to learn from each other and enhances the development of collaboration among multiple stakeholders. This learning enables them to achieve shared objectives and decisions, and set desired directions for future technology developments (cf. Andriof and Waddock 2002; Bulkeley and Mol 2003; Chilvers 2008; Gould 2012). Third, because the responsibility and resources to deal with the grand challenges are allocated to different societal spheres – government, civil society and the private sector – the solution of these grand challenges requires the active involvement of multiple stakeholders. Stakeholder engagement helps to better understand the different roles and interests of stakeholders in solving the problem and to set collectively the future direction of science and technology. Stakeholder engagement is therefore seen as an important approach to discuss, assess and set priorities, directions, implications and consequences of innovations (Jackson, Barbagallo, and Haste 2005).

Stakeholder engagement is based on discursive exchanges among stakeholders, like the exchange of information, communicative interaction and negotiation processes. Kaptein and van Tulder (2003) distinguish between stakeholder dialogue and stakeholder debate. For them, instead of stakeholder debate, in which the focus is on competition, self-interest and confrontation, stakeholder dialogue is characterized by cooperation in order to achieve collective goals, openness to other viewpoints and mutual understanding and respect. Stakeholder dialogue can thus be a driver for effective public and stakeholder engagement in RI processes; it enables a better understanding of the different roles and interests of different stakeholders, a more balanced assessment of the challenges and risks involved in innovation processes, the achievement of consensus with regard to the desired directions of future technology developments and finally collective action of all societal spheres to find acceptable solutions for the grand challenges of our time.

There are, however, also several limitations of stakeholder dialogue in RI processes. Grand challenges are also called ‘wicked problems’ (Rittel and Webber 1973). Wicked problems are difficult to pin down, highly complex and not amenable to definitive solutions because they concern complex systems in which cause and effect relations are uncertain or unknown. Wicked problems are also characterized by the lack of a definitive formulation as well as the lack of true/false solutions (Rittel and Webber 1973; Blok and Lemmens 2014). The complexity of grand challenges is partly related to the fact that multiple stakeholders are involved in solving these problems, because different stakeholders have different ideas about what the ‘real’ problems and solutions are (Kreuter et al. 2004). In other words, while relatively ‘simple’ problems can be solved by governmental processes of command and control or by market forces, the solution of wicked problems is always based on ‘judgements’ of multiple stakeholders, which can differ widely and are not always based on shared interests and value frames (Bryson, Crosby, and Middleton Stone 2006). These differences are due to conflicts with regard to the *content* of the grand challenges and the risks involved in innovation processes to address these challenges, but also due to different agendas and divergent motives of researchers, non-governmental organizations (NGOs), governments and the private sector (cf. Yaziji and Doh 2009). For example, while non-profit organizations are mainly motivated by altruistic motives (Milne, Iyer, and Gooding-Williams 1996), profit organizations are primarily self-interested (Iyer 2003).

In this context, it is conceivable that stakeholders will still be oriented towards stakeholder debate, primarily focussing on their own interests instead of mutual understanding and consensus (in fact, the history of humankind can be seen as a history of debate, conflict and war, rather than a history of dialogue and consensus) (cf. Kaptein and van Tulder 2003). We identify four specific limitations of stakeholder dialogue:

- (1) Limitations of stakeholder dialogue already appear when stakeholders attempt to strategically influence the values and interests of other stakeholders for their own purposes (Genus and Coles 2005). Stirling (2008), for instance, has argued that the rationale for public participation in technology development has to be found in the societal acceptance of the technology, rather than in efforts to define shared objectives and to achieve common goals. Deetz (1996) has argued that the invention of *forums for discussion* with stakeholders is more often undertaken by companies to increase the compliance, commitment and loyalty of stakeholders, than to broaden the debate about their different interests and value frames or to broaden perspectives on innovative solutions.
- (2) Discursive exchanges involve political processes in defining the grand challenges and the risks and uncertainties involved in the proposed innovations to address these challenges (cf. Hardy, Lawrence, and Grant 2005). Political processes are important, because the specific formulation of the grand challenges already determines what potential innovative solutions are sought for and who are legitimate stakeholders in realizing these innovations. If we conceive a grand challenge like global food security in such a way that it affords a systems change towards smallholder inclusion in the global food value chain, a wholly different set of innovations is at stake than if it is defined at a product level and only involves biotechnological innovations at the level of seeds and fertilizers. In other words, the precise framing of a problem is critical for the way it has to be solved (cf. Johnson 1993).² This example shows that stakeholders have an interest in the specific way the ‘right impact’ of innovations is defined, because it has consequences for the shared objectives of the innovation process (cf. Lezaun and Soneryd 2007; Blok and Lemmens 2014).
- (3) Some stakeholders are more powerful than others in defining the challenges and risks involved in RI, for instance, because of the professional power of engineers or the poor understanding of new technological developments by the public (cf. Wynne 2006). Power imbalances may especially be at stake in the case of grand challenges, exactly because of the different problem definition and different value frames of the different stakeholders (Blok 2014). Lezaun and Soneryd for instance report about stakeholder meetings on genetic modification (GM), from which so-called extra-ordinary actors were systematically excluded in order to involve the ‘general’ public (Lezaun and Soneryd 2007; cf. Rip 1986).
- (4) Stakeholders can experience a ‘lack of voice’ because a ‘social construction’ of their values and interests stands in the place of their real interests and value frames. Since this construction is taken to be true by other stakeholders, the complexity and dynamics of their interests and values are reduced and neutralized on the one hand and the dialogue about these interests is *a priori* flawed on the other (Deetz 1996; cf. Lezaun and Soneryd 2007). A naïve version of this lack of voice can be found in cases in which actors do not recognize the concerns of stakeholders. Macnaghten and Chilvers (2013), for instance, report about science and policy institutions that did not recognize the public concerns about the real motives behind developments like nanotechnology and biotechnology (serving scientific, public or merely economic interests). But lack of voice is also at stake in cases in which it is difficult to find stakeholders for emerging technologies. A more malicious example of a lack of voice is involved when opposing stakeholders are undermined by labelling their interests and value frames as ‘ideological’ or as ‘biased’ (cf. Rip 1986).³

Based on his research of several cases of public participation in technology design, Hansen (2006) therefore concludes that the deliberate ideals of stakeholder engagement are difficult to implement in real life and fail to settle the fundamental controversies among stakeholders.

From a philosophical perspective, we can understand the self-interest, political processes, power imbalances and lack of voice in terms of the self-referentiality of actors involved in communication processes: actors involved in stakeholder dialogue will always select stakeholders who are at least compatible with and preferably complementary with their self-interest. When actors were *completely* open to other stakeholders without any self-referentiality, there would not be a 'self' at all which is open to the interests of 'other' stakeholders (cf. van der Ven Working paper, 12). It is clear that this self-referentiality of actors involved in stakeholder dialogue limits the possibility of openness to radically different viewpoints and value frames. As I have shown elsewhere, it is either assumed that the other is like them (in this case, the other will be *included* in the dialogue as a compatible and complementary stakeholder), or that the other is radically opposed to their interests and value frames (in this case, they will be *excluded* because a dialogue with them is impossible) (Blok 2014)⁴ – and therefore limits the possibility of consensus among stakeholders.

With this, we encounter the paradox of stakeholder dialogue: in order to be open and respectful to other stakeholders during the dialogue, I have first to be *not* open to dialogue and to be *dis*-respectful of other stakeholders in favour of the self-referentiality of the actors involved. Again, this paradox of stakeholder dialogue is due to the complexity of grand challenges, in which multiple stakeholders with different power, vision, goals, sectors, status and motives are involved: on the one hand, exactly the complexity of grand challenges forces us to start a dialogue with multiple stakeholders. On the other hand, exactly the complexity of the grand challenges and the fundamental different interests and value frames involved forces us to give priority to our own definition of the problem and its solution (self) over the other *before* we start the dialogue.⁵

This paradox of dialogue in RI processes raises the first question we would like to address in this article: What then is the role of stakeholder dialogue in the assessment of the grand challenges and the risks and uncertainties involved in RI processes to address these challenges? It will become clear that current concepts of communication processes show an ideal of openness towards the other, alignment and harmony. Although this concept of communication can be seen as a driver of effective collaboration, it will also become clear that it cannot solve the fundamental differences among stakeholders involved in RI processes in order to deal with the grand challenges. On the one hand, this ideal of alignment and harmony has to be tempered by the recognition of the fundamentally different interests and value frames of the stakeholders involved in RI processes. On the other hand, the philosophical question arises about the consequences these fundamental differences have for our concept of stakeholder dialogue. This raises the second question we would like to address in this article: What concept of communication processes is able to respect both the necessity of openness towards other stakeholders and finding a 'common ground' in RI processes *and* the fundamentally different interests and value frames of the actors involved? In order to answer this question, we will develop a concept of stakeholder dialogue based on Emmanuel Levinas' concept of communication as *conversation*. It will be argued that 'respectful' communication has specific consequences for the input, throughput and output of the communication and negotiation processes in RI, i.e. the motives of individual stakeholders (input), the characteristics of conversation and negotiation in RI processes itself (throughput), and the outcomes of the communication (output). With this, we open a new perspective on communication and negotiation processes in RI processes.

1. Setting the stage: theories of dialogue

1.1. *The ideal of unity and harmony in stakeholder dialogue: Kaptein and van Tulder, and Burke and Habermas*

Kaptein and van Tulder (2003) developed a concept of stakeholder dialogue characterized by cooperation in order to achieve collective goals, openness towards other viewpoints and

mutual understanding and respect. Although they acknowledge that it is impossible to satisfy every interest of every stakeholder, stakeholder dialogue increases transparency, information sharing and collaboration with society, according to their research. In this way, they conclude that stakeholder dialogue among companies and other societal actors ‘can be the beginning of a new “social contract”’ between them and society (Kaptein and van Tulder 2003, 221).

On the one hand, this concept of stakeholder dialogue seems to be presupposed in the literature on stakeholder engagement in RI processes. Based on the sharing of knowledge and values among stakeholders (von Schomberg 2013) and open interaction in order to reach consensus about the shared objectives of the RI processes (Flipse 2012; Owen et al. 2013), stakeholders become mutually responsive and share co-responsibility for the outcomes of the innovation process (Owen et al. 2013). On the other hand, the ideal of alignment and harmony is prominent in this concept of stakeholder dialogue. According to Kaptein and van Tulder, the engagement in stakeholder dialogue makes a *win–win* possible for all stakeholders (instead of a win–lose situation), takes *mutual understanding* and respect as point of departure (instead of the weaknesses and wrongs of the other), stresses our looking for *similarities* (instead of differences) and enables *shared* responsibilities (instead of separated responsibilities). The same focus on alignment and harmony among stakeholders can be found in the literature on RI.

The theoretical background of Kaptein and van Tulder’s distinction between stakeholder debate and stakeholder dialogue can be found in the distinction between rhetoric as persuasion and rhetoric as identification. This distinction was made by the famous rhetoric theorist Kenneth Burke. Traditionally, rhetoric was seen as agonistic, as polemic and strife (Burke 1969a). According to Burke, however, rhetoric is not limited to the ability to persuade others, but has to be understood as *identification*; he points to the simple fact that whenever I try to persuade another person, I always try to reduce the differences between us and to *identify* with him or her; the difference between my and his or her interests disappears in my efforts to persuade the other. In a successful effort to persuade the other, I become ‘substantially one’ or ‘consubstantial’ with that other (Burke 1969a). In this respect, rhetoric does not have to be understood solely as differentiation (polemic, persuasion, debate, etc.) but also as identification; it enables cooperation among different actors and helps to build communities (Burke 1969a; Crusius 1999; Zappen 2009). This principle of identification does not imply that all differences between actors are completely lifted in the dialogue. At the same time, each actor remains differentiated from the other, i.e. a *unique* substance: ‘to begin with “identification” is, by the same token, though roundabout, to confront the implications of division’ (Burke 1969a, 22).

In the context of stakeholder dialogue regarding new and controversial technologies, an example of such a principle of identification can be found in the concept of moral imagination (cf. Werhane 1999). According to Gorman, Werhane, and Swami (2009, 190), moral imagination

entails the ability to understand the context or set of activities from a number of different perspectives, the evaluation of these activities from a normative point of view, the actualizing of new possibilities that are not context-dependent, and the instigation of the process of evaluating those outcomes, again from a moral point of view.

If we acknowledge fundamental differences among multiple stakeholders, moral imagination can help us become aware of our own problem definition, interests and objectives and that of other stakeholders, to reflect on these values and engage in imaginative thinking. Thus, moral imagination converges towards a ‘common ground or a set of goals to which all those involved would agree, despite differing points of view’ (Gorman Werhane, and Swami 2009, 191). Such a common ground was at least the intention of recent governmental initiatives to engage stakeholders in a public dialogue regarding shale gas in the EU.

Can we perceive Burke's concept of rhetoric as a concept of dialogue that is able to respect both the necessity of finding a common ground in RI processes (consubstantiality) and the fundamentally different interests and value frames (unique substance) of the actors involved?

One can argue that identification as a 'means of inducing cooperation is inherently limited since any identification necessarily also entails a division: every "us" requires a "them"' (Zappen 2009, 280). We can think here of political divisions or differences of gender for instance, but also of differences between the interests and value frames of stakeholders. According to Mouffe (2009), this antagonist dimension is inherent in human societies and is presupposed in the constitution of political and societal identities. Do we have to conclude then, contrary to Burke's argument, that differentiation (debate, agonism, competition and polemics) *precedes* identification in stakeholder dialogue?

Burke's defence consists in the concept of *dialectic-rhetoric transcendence*. Identification is seen here 'as a merger of opposite ideas at higher levels of generalisation ... that respects a diversity of individual interests, even as it seeks to transcend them in large unities' (Zappen 2009, 280–281; cf. Burke 1969b, 254–255). This concept of dialogue enables cooperation among different actors at a higher level by transcending the individual interest of the actors involved in the 'ultimate identification' of a common ground for actors with different interests (Wolin 2001). The actors have shared interests at a *higher* level – identification with regard to a shared problem definition or objective – but different interests at a lower level; a different approach to solving the problem by a company (focus on economic value creation for instance) compared with an NGO (focus on social value creation for instance).

In the context of new and controversial technologies, an example of this approach can be found in moral imagination in so-called trading zones. Trading zones are areas where stakeholders can exchange knowledge, time, resources and credit in order to achieve common goals (Gorman Werhane, and Swami 2009). Gorman et al. argue that in the case of fundamental conflicts among multiple stakeholders, actors can find a common ground in imagining 'superordinate goals'. An example of such a superordinate goal can be found in the collaboration between an NGO for animal protection and the meat industry to co-create a market for animal friendly meat products in the Netherlands. Originally, the meat industry was seen as 'part of the problem' by the NGO; they did not take sufficient responsibility for animal welfare in the meat production process because of their single focus on economic interests. Later on, the NGO saw the meat industry as 'part of the solution' of the problem. To this end, both the NGO and the meat industry had to adjust their conception of the problem and its solution in relation to the other. The new product brand of animal friendly meat had to meet both the objectives of the industry (focus on animal welfare attributes which can be communicated to consumers, a maximum of 20% above the mainstream product price, etc.) and the NGO (significant increase of welfare in the meat supply chain) (Bos, Blok, and van Tulder 2013; cf. Blok 2014).⁶ In such a process of moral imagination in trading zones, different partners can find a common ground in a superordinated goal, without the necessity to embrace the values and interests of the other actors completely.

At the same time, it becomes clear that Burke's concept of dialogue is dominated by an ideal of harmony and alignment; harmony and alignment at a 'higher level' is the ultimate goal of dialogue. The differences between actors are in the end only respected *in the light of* the overarching ideal of an 'ultimate identification' (Burke 1969a). This becomes clear as soon as we realize that the differences among actors are understood in a dialectical way in Burke's concept of dialogue. In dialectics, differences are understood as oppositions which have the intrinsic disposition to be sublimated (*Aufhebung*) in an overarching universality or identity. This means that the difference is *a priori* understood as a difference *within* the same (see Section 2 for further details). In this respect, we have to conclude that the ideal of harmony and alignment prevails in Burke's concept of dialogue.

This ideal of harmony and alignment is not or not only due to the dialectical nature of Burke's concept of dialogue. A comparable ideal can be found in Habermas' discourse theory of moral validity. According to Habermas, the validity of ethical norms is the product of a dialogue in which the norms and their validity are challenged, adjusted, tested and sophisticated by different stakeholders. Such a dialogue among stakeholders with different interests and value frames prevents actors seeing the interests of other stakeholders as the same (compatible or comparable) with their own interests, according to Habermas, and safeguards that they have an eye for the *otherness* of other stakeholders involved in the dialogue (cf. Mackin 1997). This ambition of the dialogue can be found at least in the intention of public dialogues regarding environmental issues (cf. Bulkeley and Mol 2003), synthetic biology, GM, etc. (cf. Macnaghten and Chilvers 2013).

From a Habermasian perspective, a common ground among stakeholders can be found during the process of dialogue. A norm – or in our case, agreements on the problem definition, the risks and uncertainties involved and the superordinated goals of the innovation process – is valid if the stakeholders who are affected by the innovation could agree to it as partners engaged in the dialogue (Habermas 1990a, 1993; Mackin 2011, 63). This concept of dialogue presupposes that stakeholders engage in an 'ideal speech situation' (cf. Bohman and Rehg 2011), in which 'each participant [...] projects himself into the perspective of all others' (Habermas 1993, 52). According to Habermas, there are four preconditions that constitute such an ideal speech situation: (1) all relevant stakeholders should be included in the dialogue, (2) all stakeholders have an equal voice, (3) all can contribute to the dialogue freely and (4) there is no external pressure or coercion on the process of the dialogue (Habermas 2005; Bohman and Rehg 2011). Although Habermas acknowledges that an ideal speech situation is difficult to realize in practice, these requirements form a standard for such an ideal speech situation.

In the context of RI, an example of such a dialogue can be found in the moral imagination of superordinated goals in trading zones. Trading zones can be seen as ideal speech situations in which resources and knowledge are exchanged among stakeholders in order to achieve consensus about a superordinate goal, like a new product brand of animal friendly meat or an innovative solution for the killing of day-old male chicks in the laying hen sector (Bruijnjs et al. forthcoming).

The tendency to harmony and alignment in Habermas' concept of dialogue does not only show itself in the ideal to achieve 'consensual' or 'universal' norms during the process of practical discourse (cf. Bohmer and Rehg 2011). Mackin has shown that this 'common ground' is not only the product of the Habermasian dialogue but is also *a priori presupposed* during the dialogue:

Given Habermas' starting point [only actors capable of speech and action can be moral because only they are the ones who are capable of dialogue, VB] all moral actors share some point of commonality, some baseline of communicative competency and a legitimately ordered dialogue is simply one that embodies that commonality. It does so by requiring that each participant pay due respect to each other by hearing and responding to another's claims. To be sure, the commonality that they respect is not any substantive position and certainly not a form of cultural, ethnic or religious homogeneity; rather moral agents share, and know that they share, a set of communicative competencies. (Mackin 2011, 66)

What is *a priori* presupposed in Habermas' concept of dialogue is a symmetry between moral agents and moral addressees. Only because stakeholders can hear the voice of the other and can take the perspective of the other, can they become mutually responsive (cf. Blok and Lemmens 2014). Or framed in terms of the concept of trading zones: only because stakeholders are *willing* to challenge their own understanding of the problem and its solution and because they are *willing* to embrace the viewpoint of other stakeholders, are they able to achieve superordinated goals

together. This symmetry between moral agents and moral addressees means that the differences among the stakeholders are preceded by a primordial communicative *connection* between the actors and thus that these differences are *a priori* understood as differences *within* the same (compatibility, complementarity, etc.), within a homogeneity that allows the coding and decoding of speech acts, a mutual understanding of the equivocal meaning of the communication, etc. (cf. Pinchevski 2005).⁷

Just like Kaptein and van Tulder and Burke's theory of dialogue, Habermas' theory of practical discourse also shows a tendency to harmony and alignment (consensus), conceptualizes the differences among stakeholders as a difference within the same, and is therefore not able to deal with fundamentally different interests and value frames that are at stake in RI processes in order to deal with the grand challenges of our time.

1.2. *The ideal of difference in stakeholder dialogue: Deetz and Levinas*

Other communication theorists have pointed to the importance of difference and otherness among stakeholders as a driver of stakeholder dialogue. Deetz for instance argued that the ideal of harmony and alignment is deeply rooted in our fear of otherness and insecurity:

Communication and other social processes have been driven by an attempt to control rather than to be responsive to difference. The drive for sameness and certainty manifest in the desire for control, the presence of attempts to routinize life, and the activities of normalization lead to a colonized present and future. In this, the attention in the present and the options for the future are narrowed and we fear that the world is out of our control. Confidence in making decisions together allows world openness, responsiveness to changes, and the capacity to shape the future responsibly (Deetz 1996, 25).

For this reason, Deetz develops a concept of dialogue that no longer takes the human subject as point of departure to understand the nature of dialogue – dialogue as the self-expression of the (internal) will to convince the other – but the dialogical *responsiveness* to (external) others. For an example in the context of RI, we can think of innovations for more animal friendly meat products again. In its dialogue, the meat industry does not only try to persuade the other stakeholders. In its co-creation of a brand of animal friendly meat products, the industry also tries to become *responsive* to the public concerns regarding animal welfare in their business operations.

This responsiveness presupposes that the focus of the dialogue is no longer to convince the other stakeholders but to become critical with regard to my routine responses; the self-evidence of my *identity* – my own interests and my own value frames – begins to waver in such a dialogue with the other. Deetz (1996, 29) argues:

In opposition to the common sense view, dialogic communication is not for self-expression but self-destruction. The point of communication as a social act is to overcome one's fixed subjectivity, one's conceptions, one's strategies, to be opened to the indeterminacy of people and the external environment. Communication in its dialogic form is productive rather than reproductive. It produces what self and other can experience, rather than reproduces what either has.

In our example of RI in the meat industry, responsiveness means that the 'business as usual' of the meat industry is destroyed and that the actors involved have to change their business operations and core values as a consequence of the dialogue with the NGO for animal protection.⁸

Framed in more philosophical language, we can understand the role of dialogue as the *deconstruction* of the fixed 'self' by the 'other'. In this framing, Deetz follows Habermas to imply that the self is primarily destroyed and constructed in our dialogical responsiveness to others. Also for Habermas, my 'self' is constituted in my confrontation with the other during the dialogue, namely

as the one who is responsive to others' vulnerability (Habermas 1990a). But contrary to Habermas' ideal of consensus (harmony, alignment, common ground, etc.) in practical discourse, Deetz points to the fundamental role of differences among stakeholders in the deconstruction of the self in its responsiveness to the other. In order to enhance the deconstruction of the self in our dialogical responsiveness to others, Deetz argues that conflicts with regard to the interests and value frames of stakeholders should be enhanced, dialogical encounters with others should be promoted and degrees of management control should be decreased.

A comparable argument can be found in the work of the political theorist Chantal Mouffe, who holds that 'the creation of an identity implies the establishment of a difference' (Mouffe 2009, 550). Like Burke, she argues that every identification of an 'us' necessarily entails a demarcation from a 'them'. But contrary to Burke, she argues that this antagonism cannot be transcended in a consensus, harmony or identity:

[T]here is always the possibility of this relation us/them becoming one of friend/enemy. This happens when the others, who up to now had been considered as simply different, start to be perceived as putting into question our identity and threatening our existence. From that moment on, any form of us/them relation, be it religious, ethnic or economic, becomes the locus of an antagonism. What is important here is to acknowledge that the very condition of possibility for the formation of political identities is at the same time the condition of impossibility of a society from which antagonism would have been eliminated. Antagonism is therefore an ever present possibility. (Mouffe 2009, 550–551)

According to Mouffe, the self is produced in the confrontation with the other and that implies that self and other will never achieve alignment and harmony.

The philosophical background of Deetz' concept of dialogue can be found in the work of philosophers of difference like Emmanuel Levinas.⁹ Also for Levinas (1969), discourse is primarily a relation with otherness, i.e. with the exteriority of the other. Why is difference stressed over identity in Levinas' concept of discourse? An 'ideal speech situation' (Habermas) or 'consubstantiality' (Burke) among stakeholders 'ought to have made language as a relation between beings impossible' (Levinas 1969, 72). Why? What is already one does not have to communicate any longer according to Levinas. Only because there is a fundamental difference which is not lifted in an 'ultimate identity' of self and other, is there something like discourse. From the perspective of RI, we can argue that stakeholder dialogue is only relevant and necessary in the case of new and possibly controversial innovations to solve complex problems that are not easy to solve or even unsolvable (cf. Rip 1986).

Levinas' concept of discourse as conversation or dialogue is opposed to the concept of discourse as rhetoric. Rhetoric is understood as the *reduction* of the other to the same. In *Totality and Infinity*, Levinas (1969, 43) argues: 'Western philosophy has most often been an ontology: a reduction of the other to the same by interposition of a middle and neutral term that ensures the comprehension of being'. This middle term is the unifying principle in the light of which different things synthesize and appear *as* the same. One can think of Burke's notion of consubstantiality as the product of such a unifying principle in the light of which the different stakeholders appear as the same (ultimate identification). To what extent do we have to conceive such an interposition of a unifying principle as a *reduction*? According to Levinas, we neutralize the otherness of the other in order to find the same and similar: consubstantiality. In this, we recognize Deetz' critical remarks with regard to communication as a 'drive for sameness and certainty' and as an effort to *control* difference.

Lezaun and Soneryd (2007) provide an example of this drive. In a public engagement project on GM, the experience was that specific stakeholders 'hijacked' the public meetings in order to 'publicize their views'. As a response, all actors with a particular commitment or view on the GM issue were excluded from these meetings. In other words, all (radically) different interests and

value frames were excluded from the dialogue and a group of homogenized participants remained to deliberate GM-related issues (Lezaun and Soneryd 2007; see Blok 2014 for more examples).

This reduction of the other to the same in rhetoric does not, however, mean that differences among stakeholders are simply rejected. In light of such a unifying principle (ultimate identification, consubstantiality, etc.), the remaining differences (unique substantiality) are appreciated as ‘bridgeable’ (cf. Heugens 2006). In this respect, the difference *as* difference is reduced to a difference *within* the same. In our example of a dialogue between the meat industry and an NGO for animal protection, this unifying principle is found in the new brand for animal friendly meat products, while differences between both actors are respected in light of the common ground they agreed upon. And if conflicts of interest remain which are non-negotiable for one of the partners involved in the dialogue, they ‘agree to disagree’ (GEMI 2008). In this notion of difference as difference *within* the same, we recognize Burke’s and Habermas’ concept of difference: the difference between stakeholders is *a priori* understood as a difference *within* the same, namely as a difference within the light of an ‘ultimate identification’ (Burke) or an ‘ideal speech situation’ (Habermas).

Contrary to discourse as rhetoric, Levinas introduces his concept of discourse as conversation, in which the other can present himself as *other*. For Levinas, the other is not represented in an ultimate identification, but appears as absolutely foreign in our face-to-face conversation with another person. This distance means that the other always transcends our efforts to understand him, is fundamentally different compared with me and therefore, is in principle unknowable for us. In my conversation with another person, a relation with the other is possible which no longer reduces him to the same and similar. On the contrary, I experience the other *as* other in this conversation, i.e. I recognize him as the ‘master’ who solicits and appeals to us (Levinas 1969, 78) and asks us to act and behave ethically. While in my ‘understanding’ of the other, I reduce the other to the same, I am able to respect the otherness of the other in my ethical *behaviour* towards the other (cf. Levinas 1969, 77–79).

We see here a shift from dialogue as the locus of our efforts to *convince* the other to dialogue as the locus of our *responsiveness* to the appeal of the other. The other can be conceptualized as the public context that solicits and appeals to us to act and behave ethically (Blok 2013). In the context of RI, we can think of our case of societal concerns with regard to the killing of day-old male chicks in the laying hen sector (cf. de Buning et al. 2012). The increased societal resistance to these practices called for RIs in the laying hen sector. We can see the dialogue of the laying hen sector with researchers and NGOs for animal protection as an effort to become more responsive to the call of the public context, by developing farming practices with more societal support (cf. Bruijnjs et al. *forthcoming*).

For Levinas, however, the transition of dialogue as effort to convince the other to dialogue as effort to become responsive to the other is not primarily ‘my’ achievement. According to Levinas, the appeal to us in fact means that I am not the subject of this transition, but that the occurrence of the other itself is the starting point of conversation. This transition towards discourse as conversation ‘involves a calling into question of oneself, a critical attitude which is itself produced in face of the other and under his authority’ (Levinas 1969, 81). What is primarily questioned by the other is my ‘self’ or ‘identity’, i.e. my tendency to reduce the other to the same: ‘We think that existence *for itself* is not the ultimate meaning of knowing, but rather the putting back into question of the self, the turning back to what is prior to oneself, in the presence of the Other’ (Levinas 1969, 88). In the context of RI or technology assessment, this would mean that the organizers of the public engagement project on GM for instance become aware of their own reductive tendencies – the exclusion of all actors with a particular commitment or view on GM – in their confrontation with the public context and start to criticize their own tendency to reduce the other to the same.

In this calling into question of ourselves, we recognize Deetz' deconstruction of the fixed self in his dialogical responsiveness to the other. The self is questioned by the other, 'puts an end to power and emprise [domination]' (Levinas 1969, 50) and calls for another way of discourse that no longer consists in rhetoric, representation and its 'imperialism of the same' (Levinas 1969, 39). The subject of discourse as conversation acknowledges the experience of the other as the very basis of his subjectivity, which consists in (a) his exposure and *sensitivity* towards the other (Levinas 1998, 54), (b) his dialoguing *interaction* with the other (Levinas 1969, 101), (c) his *responsiveness* to the teaching or voice of the other (Levinas 1969, 92) and finally, (d) the *submission* or subjection of the self to the other (Levinas 1969, 86). The confrontation with the other *interrupts* my 'self' as reducing the other to the same and engenders the transition towards a concept of the self which takes in this way responsibility for the other.¹⁰

Does this mean that Levinas' concept of dialogue has solved the paradox of stakeholder dialogue? In the introduction, we saw that openness to other stakeholders presupposes that I am not open to others in favour of the self-referentiality of the actors involved in the dialogue. Although Levinas does not refer to the concept of self-referentiality himself, he points to the necessity to maintain the self in my confrontation with the other. He provides two reasons for this.

First, because the other can affect and overwhelm the self, the self has to identify himself: 'The way of the I against the "other" of the world consists in *sojourning*, in *identifying oneself* by existing here *at home with oneself*' (Levinas 1969, 37). The reduction of the other to the same is not only negative, but is a necessary condition for the appearance of the self in front of the other: conversation maintains the distance between self and other and with this, prevents the occurrence of an 'ultimate identification' because of the reduction of the other to the same (cf. Levinas 1969). Such an ultimate identification in superordinated goals is not only impossible in the case of conflicting value frames as we have seen in the introduction (cf. Rip 1986). It is also undesirable because such an identification only leads to the loss of legitimacy of the actors involved. In recent research on RI in the Dutch food sector, Blok, Hoffmans, and Wubben (*forthcoming*) found that NGOs explicitly limit their dialogue with companies because it could harm their legitimacy.

According to Levinas, this 'egoism' of the self consists in its existence as identification of the other as the same, which constitutes my 'self' amidst others as that which is affecting and undermining me. 'The I is identical in its very alterations. It represents them to itself and thinks them. The universal identity in which the heterogeneous can be embraced has the ossature of a subject, of the first person' (Levinas 1969, 36). The egoism of the self is a necessary condition of my own identity in front of the other. It enables actors to maintain their own identity *as* a company for instance with a special focus on the creation of added economic value in front of an NGO with a special focus on the creation of added social value.

Second, this self is a necessary condition for the appearance of the other in my conversation with him. 'It is in order that alterity be produced *in being* that a "thought" is needed and that an I is needed' (Levinas 1969, 39). The maintenance of the distance between me and the other cannot undo the egoism of the self. In my conversation with the other, I make and execute this difference between me and the other, and with this, I become the one who is responsive to the other, according to Levinas.

With this, it becomes clear instead that the paradox of dialogue is not solved by Levinas' concept of dialogue as conversation, but is reinforced. The confrontation with the other interrupts my tendency to reduce the other to the same and enables me to become responsive to the other as other in my ethical behaviour. But this achievement does not mean that I become completely open, transparent and responsive to the other. The confrontation with the other *as* other interrupts my responsiveness to the other in order to maintain myself in the confrontation with the other. The maintenance of the distance between me and the other cannot undo the egoism of the self, but

presupposes the identification of the other as the same in which the self is constituted, i.e. the self-referentiality of the self amidst others. In this respect, all my efforts to act and behave respectfully to others will remain imperfect, because of the self-referentiality of the self (egoism), which is a necessary condition of my responsiveness as well. This fate does not necessarily mean, however, that discourse as conversation is limited. On the contrary, the paradox of dialogue can be seen as the *driver* of my ‘imperfect’ efforts to become responsive to the other, i.e. as a driver to continue the necessarily limited and biased dialogue between self and other.

In the next section, we will synthesize the findings of this section and reflect on a concept of stakeholder dialogue, which will be applied in the domain of RI.

2. Analysis: towards a concept of stakeholder dialogue to address grand challenges in RI processes

The first question we raised was about the role of stakeholder dialogue in the assessment of the grand challenges and the risks and uncertainties involved in RI processes to address these challenges. In Section 1.1, we saw that stakeholder dialogue enables cooperation among different stakeholders by transcending the individual interests of actors involved. Stakeholder dialogue can therefore be seen as a driver to find a common ground among multiple stakeholders in the RI process.

It became clear, however, that the common ground of multiple stakeholders (consubstantiality and consensus) is the product of a preliminary *reduction* of the other to the same, of difference to identity. This ideal of identity over difference in Burke’s and Habermas’ concept of dialogue can be seen as the philosophical background of the ideal of harmony and alignment in current theories about stakeholder dialogue on the one hand and may explain on the other hand why fundamental controversies among stakeholders often remain unsolved in the case of grand challenges (cf. Hansen 2006; see introduction). Because fundamental differences with regard to the grand challenges and the risks and uncertainties involved in innovation processes are normally neglected or reduced during the dialogue, the second question of this article was raised: what concept of dialogue is able to respect both the necessity of openness towards other stakeholders *and* the fundamental differences among the actors involved.

In Section 1.2, we introduced Levinas’ concept of dialogue, which is characterized by both a radical openness towards the other and by the self-referentiality of the actors involved at the same time. In this section, we develop a concept of stakeholder dialogue suitable to addressing wicked problems or grand challenges in general and to enhancing RI processes in particular. In order to develop such a concept, we use the work of philosophers and communication theorists like Burke, Deetz, Habermas and Levinas as stepping stones.

The point of departure for our reflection is Deetz’s concept of dialogue, because it involved a shift from the *actors* as the fundamental subjects of communication processes (companies, NGOs and other stakeholders) towards the dialogical *relation* with the other.¹¹ The starting point of the dialogue is no longer the actor with his or her interests and value frames that may subsequently turn out to be conflicting with the value frames of other stakeholders during the dialogue, but my *dialogical responsiveness* towards the other. The primary role of this responsiveness is not to *convince* the other as in rhetoric. In my dialogue with the other, my own interests and my own value frames become questionable; NGOs can broaden my perspective on the grand challenges and on the role and responsibility I have in solving these problems for instance. An example can be found in the case of societal resistance against the killing of day-old male chicks in the laying hen sector. In this case, NGOs for animal protection not only questioned the business practices of the laying hen sector, but the sector took responsibility to develop innovative farming practices with more societal support in response to this criticism.

We encounter here a first characteristic of our concept of stakeholder dialogue in RI processes: (1) the primary goal of dialogue is no longer the self-expression of the actors involved in order to convince the other, but to become critical towards ourselves, i.e. towards our own interests and value frames. In this concept of stakeholder dialogue for RI, we no longer focus on the pre-fixed ideas, positions and values of the subject as input in the dialogue, but on the ideas, positions and values as the output of my responsiveness to the other during the dialogue; innovative farming practices like *in ovo* gender determination in order to prevent the killing of day-old male chicks and with this, to increase farming practices with more societal support (Bruijnjs et al. [forthcoming](#)).

In order to enhance self-criticism in RI processes, actors should not only speak with complementary or comparable stakeholders but with fundamentally different stakeholders as well. According to research of Rip, technology-related controversies among multiple stakeholders will increase social learning processes and can function as informal technology assessments (1986). At a deeper level, dialoguing with fundamentally different stakeholders enhances our critical stance towards our own interests and value frames as well. What is more, it will also enhance and secure our openness towards other perspectives and other possible solutions during the innovation process. On the one hand, radically different stakeholders may harbour the creative resources to find radically new opportunities to address the grand challenges. On the other hand, stakeholder dialogue with fundamentally different stakeholders will help to keep open various options for innovation during the process, increase our adaptivity to changes in the environment, and accommodate plurality in innovation (cf. Owen et al. 2013). In the previous section, however, we have seen that radically different stakeholders are often excluded from dialogues and that the otherness of the other is reduced to the same and similar.

Our consultation of the work of Levinas showed that the dialogue not only concerns my critical attitude towards my own interests and value frames, but primarily my self or identity. Habermas as well would agree that my self or identity is constituted during the dialogue (cf. Habermas 1990b). For Levinas, the *other* is the origin of the self and the self is the origin of the other:

Neither the subject nor the other are objects with a set of existing properties that confront each other. Rather, ... Levinas' idea is that the face of the other and the subject are produced as such in the encounter ... In the activity of the "Saying", I, at once, evoke another and emerge as a response to that other's demand. (Perpich 2008, 76; Mackin 2011, 69)

The confrontation with the other is the pre-origin of the identification of the 'self' and at the same time, the destructed 'self' is the pre-origin of our experience of the other *as* other (Section 1.2).

We can also argue that the dialogue itself gets primacy because the dialogue points two ways; my 'self' is constituted in my dialogical responsiveness towards the other, and the other is constituted in his appeal to me to act and behave in an ethical way.¹² Self-constitution can be seen as the product of the dialogue itself, if we remember that the identification of the other as the same, i.e. the constitution of my self amidst others, is a response to the overwhelming status of the other (Section 1.1); I have to *make* the distance between self and other. The distance between self and other is, however, not only produced and maintained but also criticized during the dialogue. In the other's appeal to us during the dialogue, we become not only critical towards our own interests and value frames (the first characteristic of our concept of stakeholder dialogue) but, more importantly, we become critical towards our tendency to reduce the other to the same, for instance our tendency to exclude all actors with radically different commitments or views on GM (cf. Section 1). Exactly because we have a 'bad conscience' of our reductive tendency (cf. [van der Ven Working paper](#), 6), we become critical towards ourselves (self-destruction) and responsive

to the other who solicits and appeals to us and asks us to act and behave ethically; we start to involve radically different stakeholders in our stakeholder dialogue for RI in the laying hen sector. In our responsiveness to the other during the dialogue, the self is constituted as the one that is self-referential *and* responsive to the appeal or demand of the other.

We encounter here a second characteristic of our concept of stakeholder dialogue in RI processes: (2) the starting point of the dialogue is no longer found in a pre-established self or identity of the actors involved in the dialogue, but my identity emerges in my dialogical responsiveness towards the appeal of the other. This means that the self or identity is primarily involved in the dialogical process and that this self is destroyed and constituted during the dialogue.

It is important to stress the relevancy of both self-constitution and self-destruction in the case of RI processes. On the one hand, the production of the self during the dialogue with the other (reduction of the other to the same) is a prerequisite for information exchanges among actors, for understanding each other and for finding a common ground of the innovation processes during the dialogue. On the other hand, the destruction of the self during the dialogue (the appeal of the other) is a prerequisite to seeing the limited character of my self-referentiality, i.e. of my current approaches and strategies to address the grand challenges of our time.

Levinas has shown that our responsiveness to the other does not primarily consist in our *understanding* of the other during the dialogue. Our understanding of the other is indeed a prerequisite for information exchanges and finding a common ground as we have seen, but is also the result of a reduction of the other to the same. According to Levinas, only in our actual performance of the dialogue in response to the appeal of the other, are we able to respect the otherness of the other. Only in such a performativity or interpellation of the dialogue is the otherness of the other maintained (Levinas 1969, 69), and is my responsiveness real.¹³

Here we encounter a third characteristic of stakeholder dialogue in RI processes: (3) the starting point of the dialogue is no longer found in the *intentions* or *willingness* of the actors to be responsive to each other and in the agreement among multiple stakeholders about the shared objectives of the innovation process (cf. Section 1.1), but rather in the continuous enactment or performance of the dialogue. Why?

The enactment of the dialogue does not (only) integrate interests and value frames of other stakeholders in the RI process. The other not simply represents another viewpoint, interest or value frame which is oppressed and denied by me and should be taken into account in my future deliberations. For Levinas, the other is absolutely foreign and unknowable for me. This means that the other represents the fundamental alterity of the grand challenges and of the future impact of my innovations to address these challenges. This alterity is especially important to take into account in the case of wicked problems like the grand challenges and in the case of innovations with uncertain and unpredictable impacts and consequences (cf. Blok and Lemmens 2014), because our understanding of these challenges and the risks and uncertainties involved are always limited and always biased by our self-referentiality.

For an example, we return to our case of the killing of day-old chicks in the laying hen sector. Several alternative innovations are under development right now, ranging from the development of a dual use breed of chickens to *in ovo* gender determination with the help of GM, but all these possible solutions of the problem lead to new economic, social or ethical problems (Bruijnjs et al. [forthcoming](#)). Because the other shows the limited and biased character of our current approaches to grand challenges like animal welfare, the continuation of the dialogue bears witness to our *epistemic insufficiency* to predict the future impact and the consequences of our innovations. In other words, it is the complexity of the grand challenges and the uncertainty of the future impact of our innovations which calls for a continuous enactment of the dialogue with the other. This continuous enactment of the dialogue prevents a unilateral focus on one technology or solution, enhances our open debate with society about the various possible solutions, involves

stakeholders to define the right impact of the innovation, prevents innovation lock-in and path dependency (Stirling 2007, 2008), enhances corrigibility (Collingridge 1980) and accommodates plurality in innovation strategies.

Our discussion of Deetz and Levinas made clear that the transition of discourse as rhetoric to discourse as dialogue is not a decision of the subject. This point becomes clear if we realize that this transition concerns the subject itself, i.e. the transition of self-referentiality to dialogical responsiveness to the other. According to Levinas, this transition is due to the confrontation with the face of the other, as we have seen in the previous section. Also for Deetz, dialogical responsiveness is not a simple occurrence but arises in case such a transformation is *demanded*. But for Deetz, this ‘demand situation’ is not limited to the face-to-face encounter with another person: ‘The “demand situation” arises when obstacles block routine responses, routines are seen as inadequate, and fundamental conflicts are encountered’ (Deetz 1996, 25). If our current approaches and strategies do not work anymore, such as in the case of the killing of day-old chicks, such a transition towards dialogical responsiveness can take place.

Contrary to Levinas and with Deetz, we argue that the transition towards dialogical responsiveness does not (only or not necessarily only) come up in our confrontation with another person. We can extend Levinas’ concept of the face, which was originally restricted to another *person*, to the environment and its inhabitants as a whole (cf. Casey 2003). It is a grand challenge with regard to the environment as a whole – climate change, the alleviation of poverty, animal welfare – that calls us to act in an ethical way. In other words, the transition towards dialogical responsiveness can not only come up in our confrontation with another person but in our confrontation with grand challenges as well. The grand challenges block our routine responses, show the inadequacy of our current strategies and responses and call for our dialogical responsiveness to the other. In other words, the experience of such a grand challenge makes clear that our interests and value frames are always limited and biased by our self-referentiality, that our knowledge is insufficient to predict the future impact and the consequences of our innovations, and this situation demands our responsiveness to the other as other.

We thus encounter a fourth and last characteristic of stakeholder dialogue in RI processes: (4) the self or identity of the actors involved is not primarily responsive to other stakeholders during the dialogue, but to grand challenges like animal welfare. These grand challenges call for our collective action with multiple stakeholders. In this concept of dialogue, the interdependency of actors to address the grand challenges is stressed. This interdependency is especially important in the case of complex problems like the grand challenges, because different societal spheres – governments, civil society organizations and the private sector – are dependent on each other in their collective action to address these challenges, as the examples of animal friendly meat and dairy production made clear.

3. Conclusions

In our analysis of stakeholder dialogue in the context of the grand challenges of our time, we have encountered four characteristics of stakeholder dialogue in RI processes, which are summarized in Table 1.

With this characterization of stakeholder dialogue in RI processes, it becomes clear that stakeholder dialogue has specific consequences for the input, throughput and output of the communication processes in RI. Traditionally, the input of communication processes is found in the fixed ideas, positions and value frames of the actors involved in the dialogue and in the presence or absence of the intention to find a common ground among multiple stakeholders. During the process of the dialogue (*throughput*), these ideas and value frames are exchanged and aligned

Table 1. Discourse as rhetoric versus discourse as dialogue.

Traditional concept of stakeholder dialogue as rhetoric (ideal of harmony and alignment)	Concept of stakeholder dialogue characterized by self-referentiality <i>and</i> responsiveness to the other
(1) Focus on the self-expression of the actors involved in the dialogue in order to <i>convince the other</i>	(1) Focus on the dialogical responsiveness of the actors involved in the dialogue in order to become <i>critical towards their own identity</i> (interests and value frames)
(2) The self or identity (interests and value frames) of the actors involved is seen as the fixed <i>input</i> of the subsequent dialogue with each other	(2) The self or identity of the actors is <i>included</i> in the dialogue, i.e. the self is destructed and constituted in our dialogical responsiveness to the appeal of the other
(3) Focus on the <i>intentions</i> or <i>willingness</i> of the actors involved in the dialogue and the agreements (consubstantiality) among actors as the result of my responsiveness to the other	(3) Focus on the <i>continuous enactment</i> or <i>performance</i> of the dialogue. Only in our <i>actual</i> responsiveness to the other during the dialogue, is the other <i>as</i> other respected
(4) During the dialogue, the self or identity (interests and value frames) of the actors involved is primarily responsive to the interests and value frames of the other	(4) During the dialogue, the self or identity of the actors involved is primarily responsive to the grand challenges of our time and its demand for collective action

by the ‘ultimate identification’ of a common ground, which results in agreements among multiple stakeholders about the shared objectives of the innovation process (*output*).

In our concept of stakeholder dialogue, on the contrary, the input of the communication process is found in the grand challenges of our time. The grand challenges block our routine responses, show the inadequacy of our current innovation strategies and call for our dialogical responsiveness to the other. The grand challenges are the input of stakeholder dialogue, since grand challenges destroy my self and demand that I become responsive to these challenges together with multiple stakeholders. The *throughput* of the communication process is characterized by the continuous and unceasing interplay between self-constitution amidst others (self-referentiality as a prerequisite to finding a common ground among stakeholders during the dialogue) and self-destruction amidst others (responsiveness to the appeal of the other during the dialogue). This concept of stakeholder dialogue enables me to find a common ground for the innovation processes among multiple stakeholders and enhances self-criticism, corrigibility and plurality in innovation processes at the same time. The *output* of the communication processes is the constitution of a self *as* responsive to the other, i.e. an actor who actually innovates responsibly in order to address the grand challenges of our time and at the same time acknowledges our epistemic insufficiency to predict the future impact and the consequences of our efforts.

The advantage of our concept of stakeholder dialogue in the context of grand challenges and RI is that it is characterized by self-identification *and* self-destruction. In the introduction, we already noted that four main limitations of stakeholder dialogue – self-interest, political processes, power imbalances and lack of voice – can be understood in terms of the self-referentiality of the actors involved in communication processes. Our concept of stakeholder dialogue acknowledges the necessity of self-constitution and self-referentiality in order to find a common ground among stakeholders, but at the same time it acknowledges the necessity to destroy this self. It is this aspect of self-destruction which challenges the dominance of the self-referentiality and enhances self-criticism, responsiveness, corrigibility and plurality in stakeholder dialogue.

We finish this article by elaborating the central concept of responsiveness in the RI literature (cf. Lee and Petts 2013; Owen et al. 2013; von Schomberg 2013), based on our concept of stakeholder dialogue. In the introduction, we have seen that stakeholders have to become ‘mutual

[ly] responsive to each other' (von Schomberg 2013). Based on our concept of stakeholder dialogue, we can determine the nature of this responsiveness in RI processes. Dialogical responsiveness primarily concerns a responsive *identity* of stakeholders involved in RI processes, which is characterized by both self-destruction and self-constitution. On the one hand, the production of the self during the dialogue (self-constitution by the reduction of the other to the same) is a prerequisite for information exchanges among actors, for understanding each other and for finding a common ground among multiple stakeholders. On the other hand, the destruction of the self during the dialogue (self-destruction as a response to the appeal of the other) is a prerequisite to acknowledging the limitations and biases of my self-referentiality and to enhancing self-criticism, responsiveness, corrigibility and plurality in innovation processes. In my dialogical responsiveness to the other, my identity *as* responsive to the demands of the other is constituted. Because my responsiveness is always limited and biased by our self-referentiality, our dialogical responsiveness consists in the continuous enactment and performance of the dialogue with the other. In this way, I am primarily responsive to the grand challenges of our time in my effort to innovate in a responsible way.

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Notes

1. The concepts of public and stakeholder engagement are used interchangeably in this article, although we acknowledge the differences between the two concepts; while a specific and fixed stake or interest is characteristic of stakeholders, the interests of the public may be less fixed (Lezaun and Soneryd 2007) and related to more general values like the values of the EU (cf. von Schomberg 2013). In the discourse on science and technology governance, the concept of public dialogue is more common (cf. Macnaghten and Chilvers 2013), while in the discourse on innovation management, the concept of stakeholder engagement is more frequent (cf. Gould 2012; Blok and Lemmens 2014). Because we concentrate on the engagement and dialogue of actors with different interests and values frames, this broader concept of stakeholder engagement – including public values – is legitimate (see for other researchers who use the concepts of public and stakeholder engagement interchangeably, for instance, von Schomberg 2013).
2. For a detailed description of the influence of problem definitions on policy changes, see Fifer and Orr (2013).
3. A more subtle example can be found in the work of Lezaun and Soneryd. The transparency forum on mobile telecom industry 'tried to *move* the stakeholders in a more subtle way: by bringing them together and forcing them to act as if each other's views had some merit, the organizers hoped to make future exchanges easier and keep the flame of "dialogue" alive' (Lezaun and Soneryd 2007, 293).
4. Also in empirical research on inter-firm collaborations, there is evidence that actors only select partners which are strategically aligned, i.e. are not opposed or conflicting with their self-interest (Wubben, Runge, and Blok 2012).
5. In the cross-sector partnership literature, it is acknowledged that radical openness to the interests of 'other' stakeholders without this self-referentiality may lead to a legitimacy loss (van Huijstee, Francken, and Leroy 2007).
6. See Bos, Blok, and van Tulder (2013) for an explanation why animal welfare can be seen as a wicked problem or grand challenge.
7. Although we admit that such a symmetry enhances the achievement of superordinated goals, we have to acknowledge that such a symmetry does not always exist or is even enforced in the case of new and controversial technologies. In our case of the collaboration between an NGO for animal protection and the meat industry, it is clear that more radical NGOs for animal protection were excluded from the dialogue (Bos, Blok, and van Tulder 2013). This perspective is compatible with other research finding that radical viewpoints or value frames are excluded from the public dialogue as well (cf. Lezaun and

- Soneryd 2007). The concept of trading zones presupposes this common ground as well and is therefore not sufficiently able to deal with fundamental differences among stakeholders.
8. With this example, we do not want to imply that the meat industry in fact adjusted their interests and core values based on this dialogue. In fact, the newly created brand of animal friendly meat products is only one brand for this company next to the traditional and non-animal friendly product lines. If a company really adjusts its interests and core values based on the dialogue with stakeholders, we would expect that it has consequences for all relevant brands of the company.
 9. The work of Mouffe is in fact inspired, among others, by the work of Jacques Derrida, while Derrida is heavily influenced by the work of Levinas. A further elaboration of the relation between the work of Mouffe, Derrida and Levinas is beyond the scope of this article.
 10. For Levinas, responsibility consists in our submissive responsiveness to the voice of the other as other. Since we focus on the development of a concept of stakeholder dialogue, we will leave aside the question about Levinas' concept of responsibility in this article.
 11. In Kaptein and van Tulder's (2003, 201) characterization of stakeholder dialogue, the concept of dialogue is actor-centred; the point of departure is found in the actors involved in the dialogue who can decide to cooperate with, listen to, be vulnerable to the other, etc. In this concept of stakeholder dialogue, self and other are fixed and subsequently responsive to each other.
 12. The discussion whether Levinas would agree with the primacy of the *dialogue* with the other, in which the relation between self and other is stressed, over the other himself, as one of the *relata* in this relation, is beyond the scope of this article.
 13. For the relation between performative speech acts and ethical behaviour, see Blok (2013).

Notes on contributor

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