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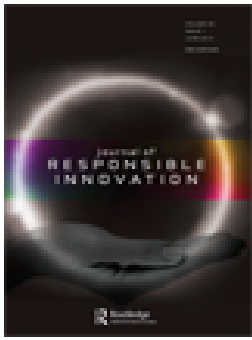
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Responsible Innovation in light of Levinas: rethinking the relation between responsibility and innovation

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ABSTRACT

To date, much of the work on Responsible Innovation (RI) has focused on the 'responsible' part of RI. This has left the 'innovation' part in need of conceptual innovation of its own. If such conceptual innovation is to contribute to a coherent conception of RI, however, it is crucial to better understand the *relation* between responsibility and innovation first. This paper elucidates this relation by locating responsibility and innovation within Emmanuel Levinas' phenomenology. It structures his work into three 'stages', each described in terms of their leading experience and objectivation regime. This analysis identifies a need for constant innovation of political and technological systems, originating from and motivated by our responsibility to others. It also shows the relation between responsibility and innovation to be threefold: foundational, ethical and structural. These insights could help RI to avoid some pitfalls of 'regular' innovation, and provide moral grounding for important aspects of RI.

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Introduction

The past decade has seen a fair amount of theorizing on the concept of Responsible Innovation (RI).¹ RI is an approach to research and innovation that aims to improve the '(ethical) acceptability, sustainability and societal desirability of the innovation process and its marketable products', and does this by getting a wide range of societal actors and innovators to become 'mutually responsive to each other' (von Schomberg 2011, 9).

This new approach is often deemed necessary in view of the 'grand challenges' of our time, such as climate change, the need for sustainable agriculture, secure and clean energy, etc. (von Schomberg 2013).² These grand challenges come with large uncertainties (in terms of both problem definitions and possible solutions), serious epistemic and moral disagreements among actors, and the need for a wide variety of those actors to successfully cooperate. In short, these are wicked problems (Rittel and Webber 1973). In the face of such problems, current regulation-based systems of innovation governance are said to be inadequate because they rely on an outdated responsibility regime based on

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predictability, consequentialist reasoning and top-down decision-making (Grinbaum and Groves 2013; Owen et al. 2013).

This critique points to a deficit in the 'process' dimension of innovation that hinders the achievement of good outcomes (i.e. the 'product' dimension) (von Schomberg 2013). This realization is reflected in the fact that most attempts to theorize about RI have focused on the 'process' dimension, often conceptualizing and/or formalizing more responsible and inclusive processes of stakeholder engagement or formulating the characteristics that would make an innovation process more responsible (e.g. Owen et al. 2013; Blok 2014; Pellé 2016; cf. Thorstensen and Forsberg 2016). In other words, research has often focused on formalizing the 'responsible' part of RI.

For all that, the focus on responsibility has allegedly left the other half of the RI dyad (i.e. innovation) problematically undertheorized (Blok and Lemmens 2015). This in turn led to a situation where the underlying assumption in RI research and practice has often been that 'responsible innovation = regular innovation + stakeholder involvement' (Blok and Lemmens 2015, 20). Given that this 'regular' notion of innovation is likely to hinder the achievement of responsible outcomes (Blok and Lemmens 2015), replacing it with a notion of innovation more specifically tailored to RI could provide a promising strategy for bolstering RI. This would in turn require a novel, RI-specific (re)conceptualization of innovation.

In addition to responsibility and innovation, however, there is another aspect to the RI dyad that runs the risk of remaining obscure despite the fact that its elucidation could be beneficial for a coherent conception of RI: the *relation* between RI's constitutive terms. Indeed, it stands to reason that coming to grips with the relation between responsibility and innovation is a crucial step towards conceptualizing and formalizing both of these terms in such a way that they can be properly integrated. As such, this paper aims to shed some light on the relation between responsibility and innovation. It does so through a process of partial *deformalization*,³ rather than reflecting on precise processes, outcomes, rules or definitions. That is, it reveals the crucial importance of responsibility and innovation as well as the nature of the relation between them by providing a phenomenological account of social existence in terms of the concrete experiences that form its foundation.

The account presented in this paper locates both responsibility and innovation within the broader structure of the ethical phenomenology of Emmanuel Levinas. Up to this point, Levinas' philosophy has only seen limited application in RI research, that is, in considering the implications of his ground-breaking work on the nature of responsibility for the 'responsible' part of RI (Costello and Donnellan 2008; Blok 2014; Pellé and Reber 2016).⁴ However, I argue that Levinas' *oeuvre* also points to a need for the constant innovation of technological and political systems, originating from *and* motivated by our responsibility to others. The second section first presents Levinas' existential analytic through the lens of a three-stage model that locates responsibility vis-à-vis technology and politics and shows that the latter are in constant need of change. In the third section, innovation is located in the third stage of the model, and its relation to responsibility is further specified. Finally, the fourth section discusses a number of implications of the relation between responsibility and innovation for RI, and our conception of innovation therein. Additionally, it shows that conceiving of the relation between responsibility and innovation in this way is compatible with and provides additional moral grounding for some already recognized aspects of RI.

Responsibility and the need for technological and political change in Levinas

The task for the following sections is to shed light on the relation between responsibility and innovation. This is done by locating them within the framework of the philosophy of Emmanuel Levinas,⁵ who provides a phenomenological description of human experience, discovering the source of ethics in the relationship to the human Other. This is the point of departure for the interpretation of the world, for politics and for technology (called Levinasian *techno-politics* in this paper). On this account, politics and technology both have their foundation in responsibility and, as I argue in this paper, are in infinite need of innovation. To show this, it is necessary to draw out more clearly Levinas' thinking on technology and its relation to responsibility and politics. To this end, this section is structured according to a number of 'stages' that are roughly recognizable but not explicitly present in Levinas' existential analytic, which describes the structure of subjectivity from its first separation from the outside world towards its problematic political existence.⁶ In this paper, three such stages are proposed, each being a precondition for the next one: 'Origins of the I: Egoism', 'In Light of the Other: Ethics' and 'Comparing Incomparables: Justice'. For each stage, two important aspects are discussed below. First, a stage's *leading experience* describes the experience that is both constitutive of that stage as well as motivates, animates and gives direction to it. Secondly, a stage's distinctive *objectivation regime* is concerned with how its leading experience is objectivated in the outer world through action. That is, it describes how a stage takes 'concrete'⁷ shape. For example, the second stage describes how its leading experience, that is, responsibility, is objectivated as giving away my possessions to those to whom I am responsible. Describing the three stages in this manner connects the more commonly considered elements of Levinas' work (i.e. enjoyment, responsibility and justice) to their all too often overlooked concrete correlates concerning the comprehension and handling of the world around us, culminating in the aforementioned techno-politics in the third stage (see [Table 1](#)).

Origins of the I: Egoism

The first 'stage' I glean from Levinas' phenomenological analysis is that in which the 'I' first arises as an existence in its own right, separated from the world. This fundamental separation comes about in the experience of *enjoyment*, which gives rise to the juxtaposition of the enjoying I on the one hand and the world it takes in and enjoys on the other, their relation described as a 'living from' (Levinas 1969, 110).⁸ Notably, such enjoyment does not belong to the order of knowledge, thought or practical problem-solving, but rather that of sentiment. That is, it does not invite a representation of the world but rather operates as *sensibility*. It is 'beyond instinct, beneath reason', the 'very narrowness

Table 1. Three 'stages' in Levinas' existential analytic.

Stage	=> is a precondition for =>		
	Origins of the I: Egoism	In Light of the Other: Ethics	Comparing Incomparables: Justice
Human-orientation	I	Other	Third
Leading experience	Enjoyment	Responsibility	Justice
Objectivation regime	Possession	Gift	Techno-politics

of life' (Levinas 1969, 138). It is quite simply the savoury enjoyment, in the moment, of 'thinking, eating, sleeping, reading, working, warming oneself in the sun'⁹ (Levinas 1969, 112) which provides 'nourishment, as a means of invigoration' (111). As such, enjoyment describes the I as an ego that takes the world into itself, consuming it and making it part of itself. This egoistic¹⁰ orientation describes 'a withdrawal into oneself, an involution' (Levinas 1969, 118). Such an ego can be said to exist for itself: not conscious as 'a representation of self by self [but rather] for itself as in the expression "each for himself"' (Levinas 1969, 118). As such, the leading experience of the 'Origins of the I: Egoism' stage is self-sufficient, unreflective, pre-conscious enjoyment; a nourishment that produces satisfaction (rather than fulfilling articulated needs); a life that lives off a love of life itself.

However, enjoyment is beset with 'concern for the morrow' (Levinas 1969, 150), with uncertainty about its future since enjoyment does not provide the objective conditions necessary for its own continuation. Those conditions are made possible only by labour and possession, both of which refer to a dwelling, the intimacy of a home, 'the first concretization' (Levinas 1969, 153). From the interiority of the home, the separated I can recollect itself, look out the window upon a world that is now at a distance. This makes possible 'a look that dominates, [...] the look that contemplates'; the outside world is now 'at the disposal of the I – to take or to leave' (Levinas 1969, 156). This 'taking' of the elements is the taking-*possession* through labour. Labour, which is the 'destiny of the hand' (Levinas 1969, 159),¹¹ draws things from the elements and relates them to the I's own ends. It does so, however, by 'separating it from immediate enjoyment, depositing it in a dwelling, conferring on it the status of a possession' (159).¹² This, then, constitutes the *objectivation regime* of this first stage: the I secures its future by taking possession of the elements through labour, which transforms them into 'raw materials' (Levinas 1969, 159) and relates them to the I's egoist ends.

In sum, the leading experience of the first stage is enjoyment, while its objectivation regime consists of possession that ensures enjoyment in the face of an uncertain future. However, despite separating the I from the non-I, enjoyment and possession through labour are still a movement towards oneself. That is, since the relation with the non-I is exhausted by that which is already enjoyed and possessed by the I,¹³ the I cannot by itself become conscious of itself. For that to happen (and thus open up the possibility of responsibility, politics, technology and innovation), the I has to be put into question by that which transcends it, that is, that which lies beyond its grasp, that which it cannot contain. Levinas locates this transcendence in the idea of infinity, which already overflows any thought or conception one could have of it and thus invites transcendence. Notably, however, the experience of infinity is not primarily an abstract or theoretical affair. Rather, '[t]he idea of infinity is the social relationship' (Levinas 1987, 54), that is, infinity manifests itself in responsibility to the human Other, in ethics.

In Light of the Other: Ethics

The second stage, 'In Light of the Other: Ethics', is concerned with the themes on which Levinas spent most of his philosophical energy. It presents the transition from the pre-conscious 'I' of the first stage to a subject that is capable of both reflection as well as knowledge of the things of the world.

This transition, Levinas explains, is made possible by coming face to face with infinity. That is, the I that was preoccupied with securing enjoyment through possession is now faced with an experience that lies permanently beyond its understanding and resists its attempts at mastery; it is faced with an Other that is infinitely beyond its grasp. Unlike possessions, this Other does not arise from labour. Rather, the Other *expresses itself* (Levinas 1969, 49–52) and in doing so, ‘presents itself as human Other’ (Levinas 1996, 12).¹⁴

The human Other, irreducible to the I, its thoughts and its possessions (Levinas 1969, 43), calls into question the I’s spontaneity. The Other is the ‘judge judging the very freedom’ (100) of the thought with which the I tries to grasp him (or her¹⁵). This resistance that the Other expresses against the spontaneity of the I is not a violence. Rather, the putting into question of the I is ‘a welcome to the [Other]’ (Levinas 1996, 17) which ‘has a positive structure, ethical’ (Levinas 1969, 197). Putting the I into question owes this positive structure to the fact that it does not entail the destruction of the I, but rather summons the enjoying I to respond to the challenge and command the Other makes ‘through his nakedness, through his destitution’ (Levinas 1996, 17) and through his (or her) hunger.¹⁶ The I thus called into question becomes conscious of himself in responsibility, absolutely unique since ‘nobody can respond in its place’ (Levinas 1996, 18). As such, the conscious I is not responsible to the Other by choice or contract (Levinas 1981, 88). Rather, the conscious I is, ‘by its *very position*, responsibility through and through’ (Levinas 1996, 17, emphasis in the original). Responsibility, then, is the *leading experience* of the second stage: the egoistic spontaneity of the I is called into question by the infinitely Other, which positively establishes the conscious I as fundamentally responsible to the Other.

Just as this stage’s leading experience involves putting into question the enjoyment of the I and its reorientation towards the Other as responsibility, its *objectivation regime* involves a disruption of possession and its reorientation towards the Other in the form of the *Gift*. This concrete articulation of responsibility in the form of the Gift is constituted by two instances of expression: dispossession of my possessions in conversation and their actual donation to the Other.

The first instance concerns the elementary response to the call of the Other, which lies in establishing a relationship with the Other in conversation. In conversation, I ‘*receive* from the Other beyond the capacity of the I’, that is, the Other *teaches* me by virtue of his (or her) infinite alterity (Levinas 1969, 151). In turn, I speak to the Other of the world I possess (Levinas 1969, 173). In so doing, the things of which I speak are put in common, receive a universality in language (Levinas 1969, 76) that detaches them from the self-centered situatedness of possession and enjoyment. As such, the generalization that underlies language is an ethical event: it is ‘a primordial dispossession, a first donation’ (Levinas 1969, 173) which ‘permits me to render the things [of which I speak] offerable, detach them from my own usage, alienate them, render them exterior’ (209)¹⁷. This allows for the second instance of the Gift: the actual donation of my possessions to the Other. As Levinas explains, responding to the Other is also a corporeal and substantial realization. It paralyzes enjoyment because it actually demands genuine sacrifice of myself and my possessions. That is, to respond to the Other’s hunger and destitution involves ‘taking the bread out of my mouth, and making a gift of my own skin’ (Levinas 1981, 138), it is ‘the openness, not only of one’s pocket book, but of the doors

of one's home' (74). Through such sacrifice, the conscious I gives concrete form to its existence as responsible-for-the-Other.

To summarize, responsibility is this stage's leading experience, while its objectivation regime is formed by the Gift. Both responsibility and the Gift signify a disruption and reorientation of the previous stage's leading experience and objectivation regime (i.e. enjoyment and possession) towards the Other. This positively produces an I that can speak for itself and is unique in its responsibility towards the Other. Responsibility signifies a relationship of radical asymmetry, it is a one-for-the-Other.

However, this relationship (i.e. ethics) is severely problematized with the arrival of a third party, another Other, 'other than the neighbour but also another neighbour, and also a neighbour of the other, and not simply their fellow' (Levinas 1996, 168). No longer can the I dedicate itself fully to the Other since the I is also responsible to the third party. A question now arises: 'What am I to do?', and a decision must be made. Doing so is to engage the question of justice, which institutes the third stage.

Comparing Incomparables: Justice

The third stage, 'Comparing Incomparables: Justice', imposes a dilemma onto the responsible 'I' since it positions the I in what one could call a properly social situation. That is, the I is no longer faced with just an Other, but with the Other and the third party: another Other, as unique as the first. What is the I to do now? How must it respond to them? This question redirects the I from its infinite responsibility for the Other to the primordial problem of justice (Levinas 1981, 161), which inescapably requires the *comparison* of Others 'in the very name of their dignity as unique and incomparable' (Levinas, Bouche-toux, and Jones 2007, 206). And to compare them is to ask: 'What [...] are the other and the third party with respect to one another?' (Levinas 1996, 168). In other words, the problem posed by the third party cannot be engaged by simply respecting the Other's alterity, but requires determining what Levinas calls others' *quiddity* (Levinas 1969, 177), that is, asking *what* they are on top of respecting *who* they are. Only thus can the 'comparison of incomparables' (Levinas 1981, 158) required by justice be made. This in turn gives rise to a 'search for a principle' (Levinas 1981, 161) that includes 'comparison, coexistence, contemporaneity, assembling, order, thematization, the visibility of faces, [...] the intelligibility of a system, and thence also a copresence on an equal footing as before a court of justice' (Levinas 1981, 157). Justice, thus described, constitutes the *leading experience* of the third stage. However, other than the leading experience in the previous two stages that had a straight-forward orientation (i.e. towards the I and the Other), the structure of justice is *dilemmatic*. It pulls in two directions: the entrance of the third party introduces the problem of justice in the name of responsibility, yet any attempt at solving it necessarily falls short of the responsibility that motivates it because it cannot help but efface the others for which justice is required.

Having established justice as the third stage's leading experience, it is now possible to shine some light on its objectivation regime. For this, I take inspiration from the second stage where the objectivation regime underwent a parallel transformation to that of the leading experience (i.e. a reorientation from the I towards the Other). In the third stage, the transformation of the leading experience from responsibility to justice stems from the entrance of the third, which problematizes the I's singular and infinite

responsibility towards the Other. The resulting problem of justice requires the consideration of others in terms of *what* they are, rendering them knowable, measurable, interchangeable, judgeable, which allows for the articulation and comparison of others' interests and needs. As such, the transformation of the leading experience in this stage revolves around opening up the possibility of *representation*. Its objectivation regime is likewise concerned with representation in two important ways: the representation of others in politics, and the representation of the world as 'ready to be given'.

First off, in responding to the problem of justice, consideration of the third party gives rise to 'the We, aspires to a State, institutions, laws, which are the source of universality' (Levinas 1969, 300), that is, to *politics*. And it is through the institutions of politics that the comparison of others (and the I) is concretely established and their interests can be articulated and weighed against one another. As an objectivation of dilemmatic justice, however, politics also has a much more ominous side. Since politics also understands others in terms of 'what' they are (by their works and through their clothing) they are grasped as interchangeable objects (Levinas 1989, 243–244). This constitutes a 'great "betrayal"' (Levinas 1969, 44), as the objectivation of others obscures their otherness that ushered in the question of justice and politics in the first place. Politics, when left to its own devices, 'judges them according to universal rules, and thus in absentia' (Levinas 1969, 300). As a consequence, 'the element of violence in the State, in the hierarchy, appears even when the hierarchy functions perfectly. [...] There are, if you like, the tears that a civil servant cannot see: the tears of the Other' (Levinas 1996, 23). As such, politics unavoidably falls short of the responsibility that inspires it because it cannot help but efface the Other. This calls for an amendment to politics which 'consists in making possible expression' (Levinas 1969, 298) so that the others can call politics into question by demonstrating its blind spots and dangerous excesses. In other words, in the face of totalizing politics, 'justice is a right to speak' (Levinas 1969, 298). In politics thus amended, which I call *just politics*, 'the third and all those who, alongside the third are numerous humanity [can] remain to me as "other", unique in its uniqueness, incomparable, and should concern me' (Levinas, Bouchetoux, and Jones 2007, 206).¹⁸ Imperfect and incessantly called into question by others, politics presents a perpetual puzzle consisting of political and institutional systematization, deconstruction and modification.

This vision of politics provides a partial response to the problem of justice in that it makes possible the actual processes of comparing others and articulating and weighing their interests, all while leaving room for the Other to call politics into question. However, actually fulfilling the demands of justice also requires a parallel transformation of the concrete 'donation of my possessions' in the objectivation regime of the previous stage (the Gift). That is, the quiddity of the Other finds another concrete correlate in a way of knowing and representing the *world* that is no longer caught in the immediacy of my responsibility to a specific Other, but rather opens up the possibility of setting up that world as 'ready to be given', allowing it to be divided among numerous others in need.

However, Levinas' work does not clearly provide a theme that is straight-forwardly fit for this position. Nonetheless, I would argue that such a way to set up the world as 'giftable' is probably best understood as *technology*. One finds support for this proposition in Levinas' (admittedly episodic) reflections on technology. In them, Levinas rejects Heidegger's negativity concerning modern technology¹⁹ as he is unwilling to let go of the two main promises it holds for humanity. First, a wholesale condemnation of technology is,

according to Levinas, 'forgetful of the responsibilities to which a "developing" humanity, more and more numerous, calls and which, without the development of technology, could not be fed' (Levinas 1998b, 9). In other words, through technology, humanity is supremely able to transform the world into nourishment, into matter that can be enjoyed.²⁰ These products of technology are separated from the responsibility to a specific Other and can thus be gifted to those numerous others that need it, thus providing politics with the 'raw materials' it needs to fulfil its responsibilities. Secondly, technology is secularizing. It teaches us that worship of the world, be it in terms of nature, blood or place, only serves to obscure the alterity and uniqueness of the Other. Technology shows us that these 'gods' are 'of the world, and therefore are things, and being things they are nothing much' (Levinas 2000, 166). Leaving behind such idolatries, an opportunity arises by virtue of secularizing technology: 'to perceive men outside the situation in which they are placed, and let the human face shine in all its nudity' (Levinas 1990, 233). In other words, technology is conducive of a just politics in which the Other can call both politics and technology into question.²¹

Like politics, however, technology poses a number of dangers, especially when left to its own devices. First, technical things can be actually dangerous. Not only can they pollute 'the air we breathe' (Levinas 1998b, 9), but they even 'risk blowing up the planet' (Levinas 1990, 231). Secondly, technology 'threaten[s] a person's identity' (Levinas 1990, 231). That is, in a technological society, the Other risks becoming little more than a cog in a larger technological machinery.²² Whether others are considered as simply 'desiring machines' (Levinas 1989, 240) or mere capital in the workings of capitalism (Levinas 2003, 50), their technological objectification could lead to their enslavement: 'in a totally industrialized society [which is the result] of supposedly perfected social techniques – the rights of man are compromised by the very practices for which they supplied the motivation' (Levinas 1993, 121).

Thus arises another parallel between technology and politics: both are motivated by our responsibility to others, yet both threaten that very motivation by virtue of their essential *modi operandi*. For politics, the solution was to open it up to the questioning of the Other, thus laying the foundation for a perpetually puzzling just politics. Conversely, technology is to be *subordinated* to such a just politics,²³ since 'giving precedence to politics over physics is to work for a better world, to believe the world to be transformable *and* human' (Levinas 1994, 143, my emphasis)²⁴ for several reasons. First, subordinating technology to a politics that is inspired and interrupted by responsibility is to align the specific technological set-up of the world with the needs of justice. Secondly, a just political process allows the Other to call into question (aspects of) both political and technological systems, thus avoiding the totalizing and objectifying excesses to which they are prone. This means that, like politics, technology is bound to be ever-changing: inspired by just politics, our technological set-up of the world is constantly in question and in need of improvement.

In sum, the entrance of the third party problematizes both the singular responsibility towards the Other and the Gift, evoking politics and technology, respectively, in order to tackle the problem of justice. However, both politics and technology have a dilemmatic structure vis-à-vis the responsibility that animates them. On the one hand, politics allows for the comparison of incomparable others and the responsibilities towards them and technology sets up the world as giftable and secularized. On the other hand, politics

and technology tend towards dangerous excesses. The remedy for these excesses lies in (1) welcoming the Other calling politics into question, thus forming the just politics that is the first way in which justice is 'objectivated' and (2) the subordination of the second objectivation of justice, that is, technology, to just politics and the questioning Other. This specific constellation of just politics and subordinated technology are hereafter referred to as Levinasian *techno-politics*, a term I introduce here to highlight both technology and politics' importance for justice. In the end, it follows from all this that Levinasian techno-politics is never final, always falling short of the responsibility that motivates it and thus incessantly in need of the improvements called for by others.

Locating innovation in Levinas and relating it to responsibility

Having discussed all three stages, it is now clear where responsibility (i.e. as the leading experience of the second stage) is located in relation to other themes in Levinas' work, including egoism, possession, justice, politics and technology. However, the analysis has not yet located innovation. If, however, innovation can be broadly construed as 'the process of bringing something new into the world, through a combination of intellectual and practical ingenuity' (Grinbaum and Groves 2013, 119), then only one stage stands out as a possible location for innovation: the third stage, 'Comparing Incomparables: Justice'. First, only in this stage are the world and the others that live in it represented in such a way that they can become part of intellectual or practical projects towards novelty. Moreover, a perpetual need for novelty is ingrained into Levinasian techno-politics if it is to do honour to the responsibility that inspires it. That is, in light of techno-politics' objectification and effacing of others, it is necessary to welcome the questioning Other and incessantly deconstruct, improve and reinvent current techno-political constellations. This process is where innovation takes place within the Levinasian framework presented above. Consequently, innovation is an inescapable part of a Levinasian techno-politics.

Having located responsibility in the second stage as its leading experience, and innovation in the need for novelty in the third stage, it is now possible to flesh out the relation between the two notions more thoroughly. From the analysis above, three ways in which responsibility and innovation are related can be deduced: one foundational, one ethical and one structural.

The first way in which responsibility is related to innovation is foundational. Since responsibility is metaphysically prior to innovation, it is a precondition for it. That is, innovation is the means of adjustment and improvement of techno-politics, and techno-politics only arises after the problematization of the second stage's leading experience (i.e. responsibility) by the entrance of the third party. In other words, innovation is always already grounded in responsibility.²⁵ The second way responsibility relates to innovation is ethical. Initially, our responsibilities towards the Other and the third party (including the dilemmas those responsibilities pose) are the ethical driving force behind the development of technology and politics. As such, responsibility motivates the development of that which can be innovated in the first place. More importantly, however, it is the responsibility towards the Other who puts into question techno-politics that necessitates innovation and determines its direction. In other words, innovation is a response to responsibility. Finally, responsibility and innovation are related structurally, that is, in terms of how the outcomes of innovation form the structures through which we can

actually work towards justice. Given that the outcomes of innovation consist of new political and technological means aimed at overcoming the dangers, omissions and excesses of current techno-political systems, innovation actively works towards justice by shaping and reshaping the structures and resources necessary to fulfil our responsibilities towards others.

In sum, responsibility is not only a metaphysical precondition for both technology and politics (that which is to be innovated) but, more importantly, it demands their creation as well as their innovation, which in turn provides (presumably) more and (ideally) better technological and political structures through which to fulfil our responsibilities. As such, innovation should first and foremost be a response to responsibility; a response that is always provisional given the dilemmatic structure of techno-politics. In the next section, thinking of innovation in this way is shown to help overcome at least some of the problems associated with the ‘regular’ notion of innovation.

Levinas, responsibility and innovation: implications and corroboration for RI

Locating both responsibility and innovation in Levinas’ philosophy established their relation as foundational, ethical and structural. While this does not provide fully conceptualized and formalized notions of either term, some implications for RI can still be induced.

One primary implication is that the relation between the ‘responsible’ and ‘innovation’ parts of RI should not be read, either philosophically or practically, in terms of addition. Responsibility is not something to be added onto innovation (cf. Blok and Lemmens 2015). Rather, it is built into the very experiential structure of innovation (as its foundation and motivation), and should be built into the very process of innovation too (to work towards outcomes that substantially contribute to addressing the problem of justice).

In what follows, other implications are explored by contrasting aspects of ‘Levinasian’ innovation that is explicitly founded on and motivated by responsibility with some of the possible pitfalls associated with innovation that does not explicitly aim to be responsible, understood here as ‘regular’ innovation²⁶ (Blok and Lemmens 2015).²⁷ Not only can these pitfalls be avoided by innovation that is related to responsibility as described above, but the Levinasian framework and its implications for RI are shown to be compatible with and to provide additional moral grounding for some features of RI that are already present in the literature.

The first pitfall one risks walking into is a disproportionate amount of attention for *technological* innovation. As the nature of a Levinasian techno-politics shows, however, responsibility calls for innovation in politics as well as in technology. This is compatible with calls by a number of RI scholars for value-sensitive institutional redesign (Taebi et al. 2014; Correljé et al. 2015) or institutional reflexivity, learning and development (Owen et al. 2013; Macnaghten et al. 2014). On top of this, however, Levinasian techno-politics dictates that in RI, technological innovation should be subject to just politics if it is to operate in service of justice and the responsibility by which it is inspired.

The second possible pitfall is that innovation may become seen as *inherently good*. That is, innovations are meant to solve known societal problems and supposedly deliver prosperity and employment (von Schomberg 2013). On the one hand, the introduction of

innovations simultaneously implies the destruction of some other established capital, institutions and practices (Schumpeter 1942; Blok and Lemmens 2015), which would seem to forfeit innovation's status as inherently good. On the other hand, according to the analysis above, this destruction can actually be part of what motivates innovation in the first place. Arguably, the aspects of techno-politics put into question by the Other might actually have to be 'destroyed', replaced or improved. Even so, innovations are always only provisional responses to the Other's scrutiny because they necessarily fall short of the responsibility that inspires them (see Section 'Comparing Incomparables: Justice'). It is in light of its metaphysical foundations, then, that innovation simply cannot be inherently good. This openness to the Other's questioning has three further implications for RI. First, it should welcome critical others and allow them influence concerning the focus and direction of innovation. This provides support for some features of RI that have long been recognized: that it should be deliberative (Owen et al. 2013) and that those potentially influenced by the innovations should be informed about them and be able to 'influence the setting up, carrying out, monitoring, evaluating, adapting, and stopping' of their implementation (van de Poel 2016, 680). Secondly, RI should be self-critical and reflective and produce institutional and technological innovations that are responsive to the need for future change or adaptation (Owen et al. 2013) and flexible so that their further implementation could be stopped and their negative impacts reversed or compensated (van de Poel 2016; Bergen 2016b). However, since systematization is still necessary for techno-politics to be effective (i.e. to be able to work towards justice), such flexibility will inevitably be limited (Bergen 2016a). Thirdly, all this means that the outcomes of RI are never final, and that RI is a perpetual process towards an inclusive techno-politics.

The third pitfall associated with 'regular' innovation is that economic feasibility could be seen as a necessary condition for its success. The analysis presented in this paper does not necessarily eschew economic considerations. After all, a focus on economic success can be understood from the point of view of techno-political necessity. The aggregation and weighing of needs and interests fits in the *modus operandi* of techno-politics without which 'humanity [...] could not be fed' (Levinas 1998b, 9). Notwithstanding this potential, the very economic calculations that enable justice also risk effacing those others in service of which they work. Economic parameters must not obscure the real responsibilities to which RI is a response. This is in line with similar reservations already present in the RI literature. For one, innovation should primarily serve those others who need it most (Soete 2013). Along similar lines, innovating responsibly requires attention for the just distribution of potential hazards and benefits as well as protection of those that are most vulnerable (van de Poel 2016).

Lastly, 'regular' innovation risks being blind to the asymmetries in knowledge and power between actors involved in or affected by innovation(s) (Stirling 2008; van Oudheusden 2014; Blok and Lemmens 2015).²⁸ However, the relation between responsibility and innovation provides a counterweight to such asymmetries, which can be said to arise in the third stage where both knowledge as well as power over others becomes possible through techno-politics. As in techno-politics generally, the counterweight to power asymmetries in RI lies in the asymmetry inherent in the responsibility of the I towards the Other. That is, the Other calling the I to responsibility defies and resists the I's ability for power to achieve its egoistic goals. It does so without needing power itself,

because the way the Other presents itself is 'not a force. It is an authority. Authority is often without force'(Levinas 1988).²⁹ The authority of the Other's ethical demand is a counterweight to power not because it is more powerful but because it puts into question the very right to that power and that which is to be achieved by it. However, this 'ethical' asymmetry is at odds with aspirations towards symmetrical 'mutual responsiveness' between stakeholders that currently underlies a lot of work on RI. Blok (2014) has nonetheless taken up the task of harnessing the potential of ethical asymmetry through the concept of dialogical responsiveness between RI stakeholders. Such dialogical responsiveness focuses on the very act of dialogue between stakeholders in which they would become critical towards themselves and where their identity is dialogically constituted and deconstructed. Such a model of stakeholder dialogue could help in living up to the ethical and structural relation between responsibility and innovation.

Conclusion

In order to contribute to a better understanding of RI, this paper shed light on the relation between responsibility and innovation and sketched some of its implications for RI.

To this end, both responsibility and innovation were located within the ethical phenomenology of Emmanuel Levinas, which was structured into three stages for the purposes of this paper. Each stage was discussed in terms of its 'leading experience' and 'objectivation regime'. Whereas the first stage is driven by enjoyment that becomes objectivated in the form of possession, the second stage disrupts this enjoyment and reorients the ego towards responsibility towards the Other. This responsibility becomes objectivated as the Gift, the dispossession of my possessions and their donation to the Other. With the entrance of the third party to which the I is also responsible, the third stage ushers in the problem of justice. Tackling this problem calls for the establishment of a Levinasian techno-politics. However, given the totalizing tendencies of such a techno-politics, it is vital to welcome the Other who questions techno-politics and identifies its blind spots and dangerous excesses. In so doing, the Other calls us to responsibility to change techno-politics for the better, that is, to innovate.

It was concluded that innovation and responsibility are intrinsically related in at least three important ways. First, they are related foundationally because responsibility is metaphysically prior to innovation and as such, a precondition for it. Secondly, they are related ethically since innovation is driven by responsibility, that is, by the Other calling on us to innovate for the better. Lastly, they are related structurally in the sense that the outcomes of innovation form the structures through which we can actually attempt to fulfil our responsibilities to others. Conceptualizing the relation between responsibility and innovation in this fashion establishes innovation as a response to responsibility, albeit one that should be seen as provisional and open to future innovation.

Rethinking the relation between responsibility and innovation in this way has a number of implications for RI. First and foremost, it means that responsibility cannot simply be added to innovation. It is already built into the experience of innovation and should also be an integral part of the process of innovation. Secondly, the Levinasian analysis confirms the need for both technological as well as political/institutional innovation in RI. Thirdly, the framework presented in this paper enriches our conception of the normative status of innovation in RI. That is, while innovation is motivated by and necessary in light

of responsibility, it is also inevitably provisional, and falls short of the responsibility that inspired it. On top of this, innovation's roots in responsibility and justice make it cautious of measuring RI's success in purely economic terms. Lastly, the authority of the Other calling innovators to responsibility can provide a counterweight to power asymmetries in RI processes. These implications resonate rather well with a number of more specific proposals in recent scholarship on innovating responsibly. These include calls for protection and prioritization of those most vulnerable, flexibility or responsiveness of the innovation process as well as its outcomes, and the need for deliberative and critical engagement of stakeholders so as to improve and provide direction to innovation. As such, the relation between responsibility and innovation provides moral grounding for such proposals for RI.

Notes

1. This is sometimes more inclusively formulated as Responsible Research and Innovation (RRI).
2. See <https://ec.europa.eu/programmes/horizon2020/en/h2020-section/societal-challenges>, Accessed 22 September, 2016.
3. 'Deformalization' describes Levinas' efforts to move some concepts (especially that of 'time' (e.g. Levinas 1998a, 175)) away from the schematisms, abstractions or ontological systematizations in terms of which they are usually described, and back to the concrete experiences that ground them (the interruption of egological existence by the Other being chief among them).
4. Blok's use of Levinas' concept of responsibility as the putting into question of the Ego and its totalizing tendencies is probably the most developed Levinasian account of (part of) RI (Blok 2014).
5. This structure is mainly inspired by Levinas' *Totality and Infinity* (Levinas 1969), amended with other works where applicable. I take *Totality and Infinity* to provide the most helpful thematic structure to think about how the experiences most central to Levinas' work are objectivated in the 'outer world'.
6. The irony of such a 'technical' presentation of Levinas' thought so as to locate his stance on technology and innovation is not entirely lost on me. For reasons of both brevity and clarity, however, this simplified account seems appropriate nonetheless. To counterbalance this (over-)systematization and let some of the sensitivity and atmosphere of Levinas' initial analysis shine through, I liberally cite Levinas' own writings.
7. As a phenomenologist, Levinas considers experience to be concrete and not abstract. However, throughout this paper, the word 'concrete' is used in terms of (experiences that involve) active and material engagement with the outer world, similarly to how Levinas does when he writes that '[t]he whole of the civilization of labor and possession arises as a concretization of the separated being effectuating its separation. But this civilization refers to [...] existence proceeding from the intimacy of a home, the first concretization' (Levinas 1969, 153).
8. Levinas emphasizes enjoyment as *the* foundational experience for the ego: 'enjoyment is not a psychological state among others [...] but the very pulsation of the I' (Levinas 1969, 113).
9. Enjoyment underlies every experience of the things around us, even of (technological) tools used pragmatically, whose existence 'is not exhausted by the utilitarian schematism that delineates them as having the existence of hammers, needles, or machines' (Levinas 1969, 110).
10. Levinas' conception of egoism should not be read as a condemnable selfishness in the face of others. It is pre-conscious and unreflective, and thus naïve rather than evil.
11. The labouring hand, Levinas tells us, is

no longer a sense-organ, pure enjoyment, pure sensibility, but is mastery, domination, disposition. An organ for taking, for acquisition, it gathers the fruit but holds it far from the lips, keeps it, puts it in reserve, possesses it in a home. (Levinas 1969, 161)

This is a telling illustration of Levinas' recognition that enjoyment, dwelling, habitation, and possession are only possible in an existence that is a body.

12. By selectively suspending the elemental in the home, possession com-prehends [*comprend*] or *grasps* the being of the existent. It is through labour and in possession that the thing first arises. (Levinas 1969, 158).
13. I regrettably have to exclude what would undoubtedly be an interesting discussion of Levinas' concept of the *il-y-a*.
14. I will not delve deeper into the intricacies of the phenomenology of the Other presenting itself, that is, of the face. For a discussion of the face of the Other, see *Totality and Infinity*, Section 3 (Levinas 1969).
15. Levinas uses the generic 'he' when discussing the Other, thus technically not excluding those of other genders. Nevertheless, this is language that risks being discriminatory and would preferably be amended to reflect Levinas' own inclusionary intentions. However, simply including more genders (e.g. 'his or her' or 'his/her') would not be appropriate here, since speaking of the Other in terms of gender already constitutes a *grasping* of the infinite Other in terms of objectifying categories and, as such, fails to do justice to the Other's alterity. Regrettably, conventional gender-neutral alternatives are equally inappropriate for talking about the infinitely Other. That is, using the gender-neutral pronoun 'it' would amount to dehumanizing the Other, the use of a singular 'they' is incompatible with the uniqueness of the Other, and less commonly used singular gender-neutral pronouns still conjure up the problem of gender categorization. As such, I also revert to generic 'he', if only for textual consistency with the Levinasian source material. However, I have added 'or her' between brackets to disavow any intentional exclusion and to indicate the sometimes awkward struggle to find the best terms in which to describe the Other.
16. Levinas' focus on hunger stems from a somewhat grim analysis of modern sensitivity to the Other:

Of all the appetites [...] hunger is strangely sensitive in our secularized and technological world to the hunger of the other man. All our values are worn except this one. The hunger of the other awakens men from their sated drowsing and sobers them up from their self-sufficiency. (Levinas 1998b, 11)

17. This explains Levinas' somewhat more cryptic statement of this relation: 'in order that I be able to see things in themselves, that is, represent them to myself, refuse both enjoyment and possession, I *must know how to give* what I possess' (Levinas 1969, 171, my emphasis).
18. This quote originally concerns money and its redemptive qualities in preserving alterity amidst more totalizing systems. However, Levinas' positive assessment of this quality in such a systematized economic totality prompted me to include it as a goal in this discussion of politics.
19. Levinas' reflections on technology were mainly made in reply to Heidegger's analysis in his famous essay 'The Question Concerning Technology' (Heidegger 1977), although other Heideggerian themes are also caught in the crossfire, notably his focus on Place and enrootedness.
20. While this may sound familiar to Heidegger's 'enframing' the world as 'standing reserve' (Heidegger 1977), its ethical implications are vastly different.
21. Levinas even goes so far as to say that '[s]cience and the possibilities of technology are the first conditions for the factual implementation of the respect for the rights of man' (Levinas 1993, 119).
22. This is the most important point that Levinas grants to Heidegger's analysis of humanity's fate in a modern technological world (Heidegger 1977), although he does not agree with Heidegger concerning its inevitability.

23. This is not always easy. Levinas demonstrates this with the example of the atomic bomb, the potential impact of which was so vast that it clouded any politics that was to take place in its threatening presence (Levinas 1994).
24. My translation from the original French: 'Donner le pas à la politique sur la physique est une invite à oeuvrer pour un monde meilleur, à croire le monde transformable et humain'.
25. It is important to note that there is a positive role for *enjoyment* in innovation too. For example, enjoyment underlies the activities of the engineer who (inspired by the needs of others) thinks, reads, works and uses tools to innovate (as described in 'Origins of the I: Egoism', above; see Florman 2013). So, while the structure of the experience of enjoyment is self-centred, activities that are enjoyed may nevertheless lead to outcomes that can nourish the Other and aid the cause of justice if they are ultimately motivated by responsibility.
26. It should be noted that, if the Levinasian analysis is correct, responsibility is also a precondition for 'regular' innovation, and can be a motivation for it. Still, it can be said that there is a considerably less developed role for responsibility in the techno-politics of 'regular' innovation.
27. Blok and Lemmens (2015) do not present their analysis in terms of possible pitfalls, but describe a concept of innovation that is purportedly 'self-evidently presupposed' in the RI literature (28). As this section shows, however, the RI literature already describes characteristics of innovation that are at odds with their notion of 'regular' innovation.
28. Blok and Lemmens (2015) argue that RI presupposes symmetry between actors in the way it attempts to include ethics in the innovation process, judging this specific assumption to be naïve. To me, this presupposes more conceptual content than their 'regular' notion of innovation contains, which I would rather attribute to the specific participatory interpretation of the 'responsible' part of RI. The regular notion of innovation has little to nothing to say about actor symmetry, hence my formulation of the fourth pitfall in terms of a blindness of asymmetries rather than the presupposition of symmetry.
29. See note 14 above.

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